ORIGINAL RESEARCH

Analysis of Cognition, Protection, Psychological, and Job-search Intentions Among Medical and Nonmedical College Students During COVID-19 Epidemic

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ABSTRACT

Context • Since December 2019, medical practitioners discovered a novel coronavirus causing an acute respiratory-tract infection in some hospitals in Wuhan, Hubei Province. COVID-19 has spread globally, making it an epidemic worldwide at present. Understanding the mental-health responses of college students to COVID-19 can help a school staff to better guide students seeking education.

Objective: • The study aimed to explore the differences between nonmedical and medical college students during the COVID-19 epidemic in their cognitive interest about the disease, preventive behaviors, psychological effects, and job-search intentions, hoping to provide more targeted measures for virus-coping education for college students.

Design • The research team conducted a cross-sectional study, using an anonymous online questionnaire.

Setting • The study took place at Shanghai, China.

Participants • Participants were 1648 college students studying different specialties in various provinces of China, 485 nonmedical students and 1163 medical students.

Outcome Measures • The survey's questions covered the respondents': (1) general demographic characteristics, (2) cognitive interest and knowledge about COVID-19 and its infectiousness as well as efforts at active learning about infectious diseases and viruses, (3) awareness of precautionary behaviors against COVID-19, (4) effects on mental health, and (5) effects on job-search intentions. The research team used descriptive statistics and Chi-square tests to analyze the survey data.

Results • Among nonmedical students: (1) 297 participants (61.2%) were interested in learning about COVID-19, (2) 321 participants (66.2%) took the initiative to learn about the virus, (3) 301 participants (62.1%) took the initiative to learn about infectious disease, and (4) 151 participants (31.1%) watched medical-themed movies or TV series about COVID-19. Among medical students, the corresponding proportions were 772 participants (66.4%), 855 participants (73.5%), 791 participants (68.1%), and 791 participants (68.1%), respectively. Among nonmedical students, 223 participants (46.0%) had N95 masks available, 429 participants (88.5%) had disinfectant supplies available, 271 participants (55.9%) wore goggles in public places, 75 participants (15.5%) chose public transportation, and 77 participants (15.9%) were exposed to public places in the week prior to the survey. Among medical students, the corresponding proportions were 470 participants (40.4%), 935 participants (80.4%), 575 participants (49.4%), 243 participants (20.9%), and 297 participants (25.5%), respectively. Furthermore, COVID-19 had a stronger effect on medical students' psychology and job-search ambitions.

Conclusions • The news about COVID-19 piqued the interest of medical students. Nonmedical students had stronger protective behavior than medical students. The COVID-19 outbreak had a significant influence on medical students' lives, studies, and moods. In addition, COVID-19 had a greater impact on the job-search intentions of medical students. (*Altern Ther Health Med.* 2023;29(2):206-212)

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Medical practitioners had discovered several cases of inexplicable pneumonia in hospitals in Wuhan, Hubei Province, China in December 2019, and these patients had a new kind of acute, respiratory, infectious disease that a novel coronavirus had caused.[1,2] The World Health Organization named it 2019-nCoV on January 12, 2020, and on February 11, it became coronavirus disease 2019 (COVID-19).[3,4]

COVID-19 poses a threat to global health, and it has become the most serious atypical pneumonia since severe acute respiratory syndrome (SARS). As of 10 am in Beijing on March 22, 2020, 81 498 cases had been diagnosed in China, with 3267 deaths.[5] COVID-19 has spread worldwide to over 150 countries, including the USA, Italy, Japan, and Iran.[6] As of April 12, 2020, the number of infected individuals had reached 1.8 million.[7-9]

Investigation of preventive knowledge about and psychological behavior related to COVID-19 is vital. According to some prior studies, knowledge levels, attitudes toward disease, and risk perceptions have affected peoples' behavior related to preventing respiratory infectious diseases, such as SARS and H1N1.[11,12] Because of the impact on their families and their openness to new knowledge, college students have played a critical role in promoting prevention behavior against COVID-19 in the Chinese population.[10]

Since medical students have related professional knowledge, they tend to have a better knowledge of virus protection and psychological coping. Moreover, during the pandemic medical students were increasingly sent to the frontline to overcome the shortage of certified physicians.[22] They also were aware that the might be called upon to even if they weren't already actively working during the epidemic. They also experienced sadness and anxiety as they continued to see family members suffer from COVID-19.[23] Meo et al found that 23.5% of medical students felt discouraged and depressed during the epidemic.[20]

However, studies haven't explored the differences between medical and nonmedical college students in the prevention of and protection against respiratory infectious diseases. Lei et al found high rates of anxiety and depression among isolated college students.[19] Understanding the mental-health responses of college students can help a school staff to better guide students seeking education.[18]

Medical educators should help students, not only medical students but also nonmedical students, to correctly understand their mental-health situation and encourage them to actively seek psychological assistance when suffering from psychological damage, by which the negative effects of posttraumatic psychological problems in special populations might be avoided.[26,27] After experiencing the COVID-19 outbreak, educators should now help college students to realize that the feelings and reactions from mental and physical maladjustment aren't disease or timidity but a normal reaction in an extraordinary period.[24,25]

Since the outbreak of the COVID-19, all sectors of society have paid great attention to the first-line medical staff, actively carried out logistics-support work, and taken intervention measures to prevent possible mental-health problems. However, a lack of awareness existed about the cognitive protection and mental-health status of college students during the epidemic.[15] During the COVID-19 epidemic, universities stopped face-to-face teaching and learning, which might have affected the psychology of college students and caused worries and anxiety for many.

A survey of 2083 graduate students and undergraduates in different departments at Jordan University found that 80.1% of college students mastered overall knowledge of COVID-19 and had a good basic understanding of the disease.[16] Matusiak et al, however, found that medical students had better defenses.[17] Two other studies found that COVID-19 deepened the professional identity of medical college students and helped them to better devote themselves to clinical work in the future.[29,30]

However, Sharma et al found that lost in-hospital, clinical clerkships have resulted in students' fears about lack of practical skills, reduced training, and imposter syndrome, including self-doubt and the inability of students to evaluate themselves scientifically.[21] Those researchers found that the feelings weren't limited only to medical students, but also surgical trainees reported concerns about preparation for surgery due to interruptions in elective surgery and face-to-face training.

COVID-19 pandemic caused some enterprises to reduce the staff, inevitably leading to an increasing difficulty in college students' employment. The employment guidance centers at educational institutions should adhere to efforts to link students and the job market and guide college students to strengthen their confidence in future employment and adaptation to the employment situation.[28]

The current study aimed to explore the differences between nonmedical and medical college students during the COVID-19 epidemic in their cognitive interest about the disease, preventive behaviors, psychological effects, and job-search intentions, hoping to provide more targeted measures for virus-coping education for college students.

METHODS

Participants

The research team conducted a cross-sectional study, using an anonymous online questionnaire. The study took place at Shanghai, China. Potential participants were college students studying different specialties in various provinces of China.

All respondents voluntarily participated in this study. Each participant provided written informed consent before the study. The institutional ethics committee of Tongji University School of Medicine approved the study's protocols (20#TJU-1203).

Procedures

Groups. The research team selected participants using the snowball sampling method and divided them into two groups, students pursuing nonmedical majors, the nonmedical group, and those pursuing medical majors, the medical group.

Survey administration. The research team designed a questionnaire about COVID-19. The team used a professional, online, questionnaire platform that is widely employed in China (Changsha Ranxing Information Technology Co., LTD, Changsha, Hunan). The time for filling out the questionnaire was set to be from 8:00 AM on March 3, 2020 to midnight on March 10, 2020.

A cross-sectional study was performed from 8:00 on March 3, 2020, to 24:00 on March 10, 2020, to assess the cognition, protection, psychological, and job-search intentions among college students during the epidemic of COVID-19 by an anonymous online questionnaire. A self-report questionnaire was utilized in our research, which was modified from a previously developed questionnaire.

Outcome measures. The questionnaire covered respondents': (1) general demographic characteristics, such as genders and degrees; (2) cognitive interest and knowledge about COVID-19; (3) awareness of precautionary behaviors against COVID-19; (4) effects on mental health; and (5) job-search intentions.

The participants also completed the Generalized Anxiety Disorder-7 (GAD-7) scale[13] and the Center of Epidemiological Studies—Depression (CES-D) scale.[14]

Outcome Measures

Cognitive interest. This category identified each participant's ability to actively understand relevant knowledge after the outbreak—awareness of COVID-19, of its infectiousness, and of its contagious quality; attentiveness to news reports about it; interest in the disease; and efforts to learn about the virus and about infectious disease.

Protective behaviors. This category identified each participant's awareness of the availability of masks, N95 masks, and disinfectant supplies; the need to wear goggles in public; use of public transport; and avoidance of public exposure.

Psychological effects. This category assessed COVID-19's impact on each participant's life, learning, family; effects on mood; fears about infection; effects on experimental progress; impact on graduation; and levels of anxiety and depression.

GAD-7. The scale is a reliable and valid, self-report measure for anxiety in the general population. Respondents provide a score from 1 to 3 according to the severity of each problem.[13] For the scoring, 0-4 = no anxiety, 5-9 = a mild anxiety disorder, 10-14 = a moderate anxiety disorder, and 15-21 = a severe anxiety disorder.

CES-D. The scale is a self-rating depression scale giving respondents' answers to psychological questions that relate to symptoms in the prior week.[14] For the scoring, 0-15 points no depressive symptoms, 15-20 points = depressive symptoms, and above 20 points = most likely depression.

Job-search intentions. This category assessed COVID-19's impact on job-search intentions and vocational recruitment for each participant as well as on an indication if the participant would choose medicine again.

Statistical Analysis

The research team analyzed the data from the questionnaires using the Statistical Product and Service Solutions (SPSS), version 20.0 (IBM, Armonk, NY, USA). The team used the χ^2 test to conduct the comparisons between the groups. $P < .05$ was considered to be statistically significant.

RESULTS

Participants

The research team received 1709 questionnaires, but the information on gender and major was missing in 28 and 33 questionnaires, respectively. Therefore, 61 questionnaires were eliminated from the analysis, providing 1648 valid questionnaires, and the effective response rate was 96.4% (Table 1). The nonmedical group included 485 participants, and the medical group included 1163 participants.

For the nonmedical group, 224 participants (46.2%) were male, and 261 participants (53.8%) were female. For the medical group, 412 participants (35.4%) were male, and 751 participants (64.6%) were female.

For the nonmedical group, 480 participants (98.97%) were undergraduates, and 5participants (1.03%) were working toward master's degrees and doctorates. For the medical group, 577 participants were undergraduates (49.61%), and 586participants (50.39%) were working toward master's degrees and doctorates.

For the nonmedical group, 3 participants (0.6%) were from Hubei province, and 482 participants (99.4%) were from other areas. For the medical group, 66 participants (5.7%) were from Hubei province, and 1097 participants (94.3%) were from other areas.

Table 1. Demographic Characteristics of Participants (N = 1648)

Characteristics	Nonmedical Group n = 485 n (%)	Medical Group n = 1163 n (%)
Gender		
Male	224 (46.2%)	412 (35.4%)
Female	261 (53.8%)	751 (64.6%)
Degree		
Undergraduates	480 (98.97%)	577 (49.61%)
Masters and doctors	5 (1.03%)	586 (50.39%)
Family's Location		
Hubei Province	3 (0.6%)	66 (5.7%)
Other areas	482 (99.4%)	1097 (94.3%)

Table 2. Comparison of Cognitive Interest in COVID-19 for the Medical and Nonmedical Groups (N = 1648)

Cognitive Interest	Nonmedical Group n = 485 n (%)	Medical Group n = 1163 n (%)	χ^2	*P* value
Aware of COVID-19			1.083	.298
Yes	478 (98.6)	1145 (98.5)		
No	7 (1.4)	18 (1.5)		
Aware of COVID-19 as an Infectious Disease			0.115	.734
Yes	482 (99.4)	1153 (99.2)		
No	3 (0.6)	10 (0.8)		
Aware of COVID-19 as Highly Contagious			0.056	.813
Yes	459 (94.6)	1103 (94.9)		
No	26 (5.4)	60 (5.1)		
Attentive to News			0.372	.542
Yes	392 (80.8)	954 (82.0)		
No	93 (19.2)	209 (18.0)		
Interested in the Disease			4.062	.044[a]
Yes	297 (61.2)	772 (66.4)		
No	188 (38.8)	391 (33.6)		
Actively Learning About the Virus			9.163	.002[a]
Yes	321 (66.2)	855 (73.5)		
No	164 (33.8)	308 (26.5)		
Actively Learning About Infectious Disease			5.533	.019[a]
Yes	301 (62.1)	791 (68.1)		
No	184 (37.9)	372 (31.9)		
Watching Medical Movies or TV Dramas about COVID-19			190.702	.000[a]
Yes	151 (31.1)	791 (68.1)		
No	334 (68.9)	372 (31.9)		

[a]$P < .05$, indicating that the cognitive interest of medical students was significantly greater than that of nonmedical students

Table 3. Comparison of Protective Behaviors Against COVID-19 Between the Medical and Nonmedical Groups (N=1648)

Protective Behavior	Nonmedical Group n = 485 n (%)	Medical Group n = 1163 n (%)	χ^2	*P* value
Masks Available			3.141	.076
Yes	471 (97.1)	1106 (95.1)		
No	14 (2.9)	57 (4.9)		
N95 Masks Available			4.296	.038[a]
Yes	223 (46.0)	470 (40.4)		
No	262 (54.0)	693 (59.6)		
Disinfection Supplies Available			15.347	.000[a]
Yes	429 (88.5)	935 (80.4)		
No	56 (11.5)	228 (19.6)		
Needed to Wear Goggles in Public			5.598	.018[a]
Yes	271 (55.9)	575 (49.4)		
No	214 (44.1)	588 (50.6)		
Used Public Transport			6.519	.011[a]
Yes	75 (15.5)	243 (20.9)		
No	410 (84.5)	920 (79.1)		
Had a party in the last week			1.992	.158
Yes	11 (2.3)	42 (3.6)		
No	474 (97.7)	1121 (96.4)		
Exposed to public places in the last week			18.280	.000[a]
Yes	77 (15.9)	297 (25.5)		
No	408 (84.1)	866 (74.5)		

[a]$P < .05$, indicating that the nonmedical students showed significantly greater protective behavior than the medical students did

Cognitive Interest

For the nonmedical group (Table 2): (1) 478 participants (98.6%) knew about COVID-19, (2) 482 participants (99.4%) knew that COVID-19 was an infectious disease, (3) 459 participants (94.6%) knew that COVID-19 was highly contagious, and (3) 392 participants (80.8%) were attentive to news reports about COVID-19.

For the medical group: (1) 1145 participants (98.5%) knew about COVID-19, (2) 1153 participants (99.1%) knew that COVID-19 was an infectious disease, (3) 1103 participants (94.9%) knew that COVID-19 was highly contagious, and (4) 954 participants (82.0%) were attentive to news reports about COVID-19.

No significant differences existed between the medical and nonmedical group for those variables (all $P > .05$).

For the nonmedical group: (1) 297 participants (61.2%) were interested in learning about COVID-19, (2) 321 participants (66.2%) took the initiative to learn about the virus, (3) 301 participants (62.1%) took the initiative to learn about infectious disease, and (4) 151 participants (31.1%) watched medical-themed movies or TV dramas about COVID-19.

For the medical group: (1) 772 participants (66.4%) were interested in learning about COVID-19, (2) 855 participants (73.5%) took the initiative to learn about the virus, (3) 791 participants (68.1%) took the initiative to learn about infectious disease, and (4) 791 participants (68.1%) watched medical-themed movies or TV dramas about COVID-19.

For the previous four variables, the cognitive interest of the medical group was significantly higher than that of the nonmedical group: (1) $\chi^2 = 4.062$ and $P = .044$; (2) $\chi^2 = 9.163$ and $P = .002$; (3) $\chi^2 = 5.533$ and $P = .019$; and (4) $\chi^2 = 190.702$ and $P = .000$.

Protective Behaviors

For the nonmedical group (Table 3): (1) 471 participants (97.1%) had masks available, (2) 223 participants (46.0%) had N95 masks available, (3) 429 participants (88.5%) had

disinfectant supplies available, (4) 271 participants (55.9%) said that they needed to wear goggles in public, (5) 75 participants (15.5%) still chose to use public transport, (6) 11 participants (2.3%) had had a party in the week prior to the survey, and (7) 77 participants (15.9%) had been exposed to public places in the week prior to the survey.

For the medical group, the corresponding numbers were: (1) 1106 participants (95.1%) had masks available, (2) 470 participants (40.4%) had N95 masks available, (3) 935 participants (80.4%) had disinfectant supplies available, (4) 575 participants (49.4%) said that they needed to wear goggles in public, (5) 243 participants (20.9%) still chose to use public transport, (6) 42 participants (3.6%) had had a party in the week prior to the survey, and (7) 297 participants (25.5%) had been exposed to public places in the week prior to the survey.

No significant differences existed between the groups for (1) the availability of basic masks and (6) holding a party (both p>0.05). For the other variables, the protective behavior of the nonmedical group was significantly greater than that of the medical group: (2) $\chi^2 = 4.296$ and $P = .038$; (3) $\chi^2 = 15.347$ and $P = .000$; (4) $\chi^2 = 5.598$ and $P = .018$; (5) $\chi^2 = 6.519$ and $P = .011$; and (7) $\chi^2 = 18.280$ and $P = .000$.

Psychological Effects

For the nonmedical group (Table 4): (1) 224 participants (46.2%) thought that COVID-19 had a large impact on their lives, (2) 145 participants (29.9%) believed that COVID-19 had a great impact on their learning, (3) 149 participants (30.7%) considered that COVID-19 had a large impact on their families, (4) 125 participants (25.8%) thought that COVID-19 had a large influence on their moods, and (5) 132 participants (27.2%) were anxious, nervous, or even scared.

For the medical group: (1) 606 participants (52.1%) thought that COVID-19 had a large impact on their lives, (2) 594 participants (51.1%) believed that COVID-19 had a great impact on their learning, (3) 430 participants (37.0%) considered that COVID-19 had a large impact on their families, (4) 386 participants (33.2%) thought that COVID-19 had a large influence on their moods, and (5) 421 participants (36.2%) were anxious, nervous, or even scared.

For all the previous variables, the psychological effects on the medical group were significantly higher than those on the nonmedical group: (1) $\chi^2 = 4.872$ and $P = .0027$; (2) $\chi^2 = 62.299$ and $P = .000$; (3) $\chi^2 = 5.926$ and $P = .015$; (4) $\chi^2 = 8.864$ and $P = .003$; (5) $\chi^2 = 12.467$ and $P = .000$.

For the nonmedical group: (1) 257 participants (53.0%) thought that COVID-19 was terrible, (2) 158 participants (32.6%) thought that COVID-19 had affected their experimental progress, (3) 113 (23.3%) thought that the epidemic had an impact on their graduation, (4) 37 (7.6%) thought that they needed psychological help, (5) 19 (3.9%) considered that they may have been contaminated with COVID-19, (6) 28 participants (7.1%) had moderate or severe anxiety according to GAD-7 scale, and (7) 76 participants (15.7%) had depression on the CES-D scale.

Table 4. Comparison of the Psychological Effects of COVID-19 on the Medical and Nonmedical Groups (N=1648)

COVID-19's Psychological Effects	Nonmedical Group n = 485 n (%)	Medical Group n = 1163 n (%)	χ^2	*P* value
Impacted Life			4.872	.027[a]
Yes	224 (46.2)	606 (52.1)		
No	261 (53.8)	557 (47.9)		
Impacted Learning			62.299	.000[a]
Yes	145 (29.9)	594 (51.1)		
No	340 (70.1)	569 (48.9)		
Impacted Family			5.926	.015[a]
Yes	149 (30.7)	430 (37.0)		
No	336 (69.3)	733 (63.0)		
Affected Mood			8.864	.003[a]
Yes	125 (25.8)	386 (33.2)		
No	360 (74.2)	777 (66.8)		
Felt Anxious, Nervous, or Scared			12.467	.000[a]
Yes	132 (27.2)	421 (36.2)		
No	353 (72.8)	742 (63.8)		
Thought Virus Is Terrible			15.839	.000[a]
Yes	257 (53.0)	738 (63.5)		
No	228 (47.0)	425 (36.5)		
Affected Experimental Progress			3.787	.052
Yes	158 (32.6)	230 (19.8)		
No	327 (67.4)	933 (80.2)		
Impacted Graduation			30.780	.000[b]
Yes	113 (23.3)	235 (20.2)		
No	372 (76.7)	928 (79.8)		
Needed Psychological Help			3.591	.058
Yes	37 (7.6)	124 (10.7)		
No	448 (92.4)	1039 (89.3)		
Possibility of that they had COVID-19 infection			20.443	.000[a]
Yes	19 (3.9)	126 (10. 8)		
No	466 (96.1)	1037 (89.2)		
GAD-7 Level	28 (7.1)	78 (11.7)	5.844	.016[a]
CES-D Level	76 (15.7)	180 (15.9)	0.017	.896

[a]$P < .05$, indicating that the medical students experienced significantly greater psychological effects than the nonmedical students did

[b]$P < .05$, indicating that the nonmedical students experienced a significantly greater psychological effect than the medical students did

Abbreviations: CES-D, Center of Epidemiological Studies—Depression scale; GAD-7, Generalized Anxiety Disorder-7 scale.

For the medical group: (1) 738 participants (63.5%) thought that COVID-19 was terrible, (2) 230 participants (19.8%) thought that COVID-19 had affected their experimental progress, (3) 235 (20.2%) thought that the epidemic had an impact on their graduation, (4) 124 (10.7%) thought that they needed psychological help, (5) 126 (10.8%)

Table 5. Comparison of Job-search Intentions Between the Medical and Nonmedical Groups (N = 1648)

Job-search Intentions	Nonmedical Group n = 485 n (%)	Medical Group n = 1163 n (%)	χ^2	*P* value
Influenced Job-search Intentions			8.079	.004[a]
Yes	174 (35.9)	499 (42.9)		
No	311 (64.1)	664 (57.1)		
Influenced Whether Would Choose Medicine Again			35.933	.000[a]
Yes	236 (48.7)	750 (64.5)		
No	249 (51.3)	413 (35.5)		
Impacted Vocational Recruitment			8.082	.004[a]
Yes	350 (72.2)	914 (78.7)		
No	135 (27.8)	249 (21.4)		

[a]$P < .05$, indicating that the medical students experienced significantly greater changes in their job-search intentions than the nonmedical students did

considered that they may have been contaminated with COVID-19, (6) 78 participants (11.7%) had moderate or severe anxiety according to GAD-7 scale, and (7) 180 participants (15.9%) had depression on the CES-D scale.

No significant differences existed between the groups for (2) effect on experimental progress, (4) need for psychological help, and (7) depression on the CES-D scale (all $P > .05$). For three other variables, the psychological effects on the medical group were significantly higher than those on the nonmedical group: (1) $\chi^2 = 15.839$ and $P = .000$; (5) $\chi^2 = 20.443$ and $P = .000$; and (6) $\chi^2 = 5.844$ and $P = .016$. For the final variables, the psychological effects on the nonmedical group were significantly higher than those on the medical group: (3) $\chi^2 = 30.780$ and $P = .000$.

Job-search Intentions

For the nonmedical group (Table 5): (1) 174 participants (35.9%) thought that COVID-19 had had an impact on their job-hunting intentions, (2) 236 participants (48.7%) said that they would still choose medicine again, and (3) 350 (72.2%) said that the pandemic had affected job hunting.

For the medical group: (1) 499 participants (42.9%) thought that COVID-19 had had an impact on their job-hunting intentions, (2) 750 participants (64.5%) said that they would still choose medicine again, and (3) 914 (78.7%) said that the pandemic had affected job hunting.

For all the previous variables, the effects on job-search intentions were significantly higher for the medical group than for the nonmedical group: (1) $\chi^2 = 8.079$ and $P = .004$; (2) $\chi^2 = 35.933$ and $P = .000$; and (3) $\chi^2 = 8.082$ and $P = .004$.

DISCUSSION

The current survey found that participants in the medical group were more interested after the outbreak than those in the nonmedical group in COVID-19 news, made efforts to understand viruses and infectious diseases, and watched medical-themed movies and TV dramas about COVID-19.

However, the protective behavior of nonmedical students was better than that of medical students. For example, more participants in nonmedical group than in the medical group reserved disinfectant supplies, wore goggles, chose nonpublic transport, and avoided exposure to public places.

COVID-19 had a large influence on the life, studies, and moods of medical students than on nonmedical students. Participants in the medical group showed stronger anxiety and felt that COVID-19 would have a large influence on their graduation. In addition, COVID-19 had a great impact on the medical group's job-search intentions and the career recruitment of medical students.

The current survey drew similar conclusions about students' knowledge of COVID-19 as a prior study of students in Jordan.[16] For example, over 90% of respondents had a correct understanding of the nature and infectiousness of the virus, and >80% were concerned about epidemic-related news. The current survey also indicated that college students had a general understanding of the transmission, symptoms, complications, and risk factors of COVID-19.

No significant variations in knowledge of COVID-19, virus awareness, and infectiousness existed between the medical and nonmedical groups. However, participants in the medical group, compared with the nonmedical group, paid more attention to COVID-19 news and were more active in learning about the virus and acquiring infectious disease-related knowledge, showing greater initiative. In addition, the medical group used more ways to acquire knowledge, and they also obtained information through medical-themed movies and medical TV dramas in addition to the traditional way.

Interestingly, although the nonmedical group in the current survey didn't show advantages in their COVID-19 cognitive level compared to the medical group, they were better in obtaining personal protection than the medical students. The survey showed that more participants in the nonmedical group had disinfectant supplies available, and they had a higher awareness of wearing goggles compared with the medical students. In addition, awareness of the problems of gathering in public places during the epidemic was stronger in the nonmedical group than in the medical group. Fewer nonmedical participants chose the subway, bus, and other public transport, and the proportion of nonmedical group being exposed in public places during the epidemic was also lower. Compared with the medical students, the nonmedical group showed a stronger sense of protection.

Those results differ from those of Matusiak et al's study, which found that medical students had better defenses.[17] The current research team suspects that the nonmedical group may have had deeper anxiety and concern about public places because more of them lacked relevant professional knowledge. On the other hand, the medical group had to shoulder responsibility due to the epidemic, couldn't leave their posts, and had no choice but to travel by public transportation to ensure that they carried out their work.

The current survey showed that COVID-19 had a greater influence on the life, study, family, and mood of medical group compared to nonmedical students and brought greater anxiety for three possible reasons. First, more participants in the medical group may have thought that COVID-19 was harmful and that the possibility of being infected was high. Therefore, they might have been more anxious. Second, more participants in the medical group may have believed that COVID-19 would have a great impact on their graduation, resulting in their anxiety. Third, some participants in the medical group were already doing internships. They had direct contact with patients during the outbreak.

COVID-19 also showed a greater impact on the job search of medical students. The current research team found that 42.9% of the respondents thought that COVID-19 might affect their job-seeking intentions, and such a proportion was higher than that of nonmedical group at 35.9%. In addition, more medical students believed that the epidemic would affect job recruitment.

The current research team was pleased that during the outbreak of COVID-19, more medical student still would choose medicine than nonmedical students, and 64.5% of the medical group said that they would still choose a medicine-related major again, showing a better sense of professional identity, consistent with the findings of other studies.[29,30]

CONCLUSIONS

The current study found that medical students paid more attention to the news and knowledge about COVID-19. Interestingly, nonmedical students took more protective measures to control infection than medical students. The life and mood of the college students were both affected seriously by the COVID-19 pandemic, and medical students were more anxious. Additionally, COVID-19 may have had a greater impact on the employment of medical students.

AUTHOR CONTRIBUTIONS

Xuan Long, Kai Sun and Kai Wang contributed equally to this work.

AUTHORS' DISCLOSURE STATEMENT

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