Awareness, risk perceptions, and academic performance toward COVID-19 among undergraduate nursing students

Samia Eaid Elgazzar
Assistant Professor of Medical-Surgical Nursing Department, Faculty of Nursing, Port-Said University, Egypt & Assistant Professor of Medical-surgical Nursing department, Nursing College, Qassim University, Saudi Arabia
Corresponding author email: s.elgazzar@qu.edu.sa

Abstract---Background: This research is carried out to assess awareness, risk perception, and academic performance toward COVID-19 among undergraduate nursing students
Design and Methods: This cross-sectional study was carried out in the nursing college of Qassim University from 5 March to 20 April 2020. A self-administered online survey made available on particular social media was used for the study. This study had 190 students in total.
Results: The findings revealed that the majority of students had good Knowledge of COVID, that 53.7% of them described high perceived academic performance, and the level of risk perception was 51.6% of the students reported moderate risk perception regarding COVID. Additionally, the high-knowledge student nurses displayed moderate academic performance \( r =0.377, p=<0.001 \). Moreover, students with higher academic performance also showed lower risk perception \( r=-0.216, p=0.003 \).
Conclusion: Our research indicated that Saudi Arabia’s future frontline healthcare workers, nursing students, demonstrated a high degree of understanding, risk perception, and academic achievement toward COVID-19. When employing suitable preventative measures to stop the spread of the disease, it is also crucial to update the student’s Knowledge of the diagnosis and case treatment of COVID-19.

Keywords---awareness, risk perception, academic performance, nursing students, COVID-19.

Introduction

Coronavirus infections are new respiratory viruses linked to the common cold and severe acute respiratory syndrome. [1], [2]On January 30, the World Health
Organization (WHO) proclaimed the 2019 new coronavirus illness (COVID-19) a public health emergency of worldwide concern. [3] The COVID-19 outbreak was distinct from other coronavirus outbreaks due to its high pathogenicity and mortality rates [4]. The COVID-19 pandemic has impacted the educational system at all levels [5]. Around 1.7 billion students worldwide are affected by the temporary closures or localized closures of educational institutions in 192 different nations ([6]. To reduce gatherings and hence the spread of viruses, many institutions worldwide either delayed or canceled all on-campus events. But these actions have more negative economic, medical, and social effects on the undergraduate and graduate population [5].

Several governmental actions have been implemented to reduce the chance of disease spreading. These tactics include limiting travel, requiring passengers to remain in quarantines, social isolation, forbidding public meetings, closing schools, and colleges and businesses, requesting individuals to work from home, curfews, and lockdowns [7], [8]. Curfews or lockdowns have been imposed by authorities in several nations worldwide as a precaution against the rapid spread of viral infection [9]. These policies adversely affect the economic, education, health, and tourist sectors [10]. As a result of the suspension of classroom instruction in many colleges and universities, undergraduate and graduate students will now be taught online[11]. This kind of education offers an alternative method for minimizing interactions between lecturers and students or between students and each other [10]. However, many students cannot participate in online education due to the economic and technological divide.

How people perceive danger is influenced by social and cultural factors, as well as by experiences, beliefs, Knowledge, and attitudes. Risk perception was inversely associated with self-efficacy in a study on the avian flu epidemic, meaning that the higher one's level of self-efficacy, the lower their risk perception was [12]. Risk perception and self-efficacy [13, 14] impact people's willingness to take precautions during outbreaks. In addition, recent studies [15, 16] have demonstrated that self-efficacy is critical in encouraging health-related intents and behaviors. Nursing students have been reported to exhibit higher anxiety levels as a result of their study than students in other health professions[17]. Additional pressures associated with social and academic adaptations resulting from COVID19 in the community [18] and its impact on nursing education delivery are likely to exacerbate this. Anxiety hurts one's quality of life, academic achievement, and clinical work [19]. Therefore, this study aimed to assess nursing students' awareness, risk perceptions, and academic performance toward the novel coronavirus disease (COVID-19).

**Materials and Methods**

The questionnaires were online from 5 March to 20 April 2020. afterward, the Nursing Research Ethical Committee at Qassim University surveyed and approved this study. Students were sent an online survey link through phone numbers, university e-mails, and social media. This link https://forms.gle/HQ5x4DbyMW39Rym1A was divided into four parts: demographics, Knowledge, risk perception, and academic performance. Part 1 Demographic variables included educational level and age.
Part 2 to assess the COVID-19 knowledge [15]. The questionnaire was created following the "guidelines for clinical and community management of COVID-19" published by the Chinese National Health Commission. Twelve questions made up the questionnaire, including five about COVID-19 prevention and control, three about transmission routes, and four about clinical signs. Answers to these questions ranged from "I don't know" to true/false. An accurate response scored 1 point, whereas a wrong or uncertain response scored 0. The total knowledge score ranged from 0 to 12, and a higher score indicated better familiarity with COVID-19. The knowledge questionnaire’s internal consistency was adequate in our sample, with a Cronbach’s alpha coefficient of 0.71 [16]. Part 3 contains a modified scale from [17] to measure academic performance. This scale included ten items with a 4-point Likert scale answer format ranging from 1 (never) to 4 (always). The lowest and maximum scores were 10 and 40, respectively, with a reliability of 0.92. Low academic performance is represented by scores of up to 24, moderate self-efficacy by scores of 25 to 29, and high self-efficacy by scores of 30 or more. Part 4 measures risk perception [18], composed of nine items, and all things were scored using a 5-point ordinal scale of 1 to 5 (1 = strongly disagree, 2 = slightly disagree, 3 = neutral, four agree somewhat, five agree strongly. The scores of the various components were added to determine the total scores, with higher scores denoting a higher perceived COVID-19 risk. The total score, expressed in standardized sten units, represents the degree of risk assessment overall. Scores of less than 10, between 10 and less than 20, and between 20 and 30 points indicate low-risk, moderate, and high-risk perceptions, respectively. The instrument has a 0.85 Cronbach’s alpha.

Data Analysis

The IBM SPSS software program version 20.0 was used to examine the data fed into the computer. (IBM Corp., Armonk, NY) Quantitative data were described in terms of percentage and number. To confirm the distribution’s normality, the Kolmogorov-Smirnov test was utilized. The range (minimum and maximum), mean, standard deviation, and median were used to describe quantitative data. The 5% level was used to determine the results’ significance.

Results

Nearly two-thirds of the participants (64.7%) were between the ages of 20 and 26 years. The majority of the participants in the current study were nursing students from urban areas (88.4%), making up 190 of the nursing students at Qassim University in Saudi Arabia. (96.8% and 79.5%, respectively) Most of them do not have corona and have never been exposed to it. Most (71.6%) don’t know of coronavirus-related deaths, but 67.4% have family members, acquaintances, or relatives who are ill with the disease. (Table 1)

The average knowledge score was 9.83 -SD 1.92, range (0-12), signifying an overall 81.89 % correct rate on this knowledge test representative that the greatest of them had good Knowledge concerning COVID of the 190 respondents, 94.0 % overall score at the preventative Knowledge with COVID-19. In terms of transmission routes, 76.18 % of respondents. However, 69.30 % of the new Knowledge concerning the prevention of COVID-19 is revealed in table (2).
Fig. 1 shows that, out of 101 students, 52.2% reported high perceived academic performance, 27.9% reported low self-efficacy, and 18.9% reported moderate academic performance. There was a mean of 29.96 for the level of academic performance. Of the students, 51.6% reported moderate risk perception, and 48.4% had high-risk perceptions regarding COVID. Table 3 shows that there was a moderately positive correlation between self-efficacy and Knowledge (r = 0.377, p < 0.001), in addition, there was a negative weakly relationship between self-efficacy and risk perception (r = -0.143, p = 0.048). Moreover, there was no or negligible relationship between risk perception and Knowledge (r = -0.216, p = 0.003).

As shown in Table 4, there was a significant relationship between age, educational level and, overall Knowledge, academic performance, and risk perception, with a high mean score in the age group between 20-26 years, but statistically significant differences were found between relatives, family or friends previously been infected with Coronavirus and risk perception.

Table 1. Frequency and percentage of the studied nursing students according to their Socio-demographic characteristics (n = 190)

<table>
<thead>
<tr>
<th>Demographic data</th>
<th>No (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>&lt;20 years</td>
<td>67(35.3)</td>
</tr>
<tr>
<td>20–26 years.</td>
<td>123(64.7)</td>
</tr>
<tr>
<td>Educational level</td>
<td></td>
</tr>
<tr>
<td>Second</td>
<td>68(35.8)</td>
</tr>
<tr>
<td>Third</td>
<td>64(33.7)</td>
</tr>
<tr>
<td>Fourth</td>
<td>58(30.5)</td>
</tr>
<tr>
<td>Residence area</td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>22(11.6)</td>
</tr>
<tr>
<td>Urban</td>
<td>168(88.4)</td>
</tr>
<tr>
<td>Have you had corona before?</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3920.5</td>
</tr>
<tr>
<td>No</td>
<td>15179.5</td>
</tr>
<tr>
<td>Do you currently have corona?</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>63.2</td>
</tr>
<tr>
<td>No</td>
<td>18496.8</td>
</tr>
<tr>
<td>Has corona affected any of your friends, family, or relatives recently?</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>2613.7</td>
</tr>
<tr>
<td>No</td>
<td>16486.3</td>
</tr>
<tr>
<td>Have any of your close acquaintances, family members, or relatives ever had the Coronavirus?</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>128(67.4)</td>
</tr>
<tr>
<td>No</td>
<td>62(32.6)</td>
</tr>
<tr>
<td>Has the Coronavirus claimed any lives?</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>54(28.4)</td>
</tr>
<tr>
<td>No</td>
<td>136(71.6)</td>
</tr>
</tbody>
</table>
Table 2. Descriptive analysis of the nursing students regarding scores of Knowledge (n = 190)

<table>
<thead>
<tr>
<th>Knowledge of COVID</th>
<th>%</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signs and Symptoms</td>
<td>75.13±26.04</td>
<td>3.01 (1.04)</td>
</tr>
<tr>
<td>Transmission Routes</td>
<td>66.84±30.57</td>
<td>2.01 (0.92)</td>
</tr>
<tr>
<td>Preventative measures</td>
<td>91.89±18.73</td>
<td>4.59 (0.94)</td>
</tr>
<tr>
<td>Overall Knowledge</td>
<td>80.04±18.14</td>
<td>9.61 (2.18)</td>
</tr>
</tbody>
</table>

Fig. 1. Total score academic performance and risk perception (n = 190)

Table 3. Correlation between Knowledge, academic performance, and risk perception (n = 190)

<table>
<thead>
<tr>
<th>Variable</th>
<th>r</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic performance vs Risk perception</td>
<td>-0.283*</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Knowledge vs academic performance</td>
<td>0.221*</td>
<td>0.002*</td>
</tr>
<tr>
<td>Knowledge vs Risk perception</td>
<td>-0.640*</td>
<td>&lt;0.001*</td>
</tr>
</tbody>
</table>

r: Pearson coefficient  *: Statistically significant at p ≤ 0.05

Table 4. Relation between socio-demographic, overall Knowledge, risk perception, and academic performance (n=190)

<table>
<thead>
<tr>
<th>% score</th>
<th>Knowledge</th>
<th>Academic performance</th>
<th>Risk perception</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean ± SD</td>
<td>Median</td>
<td>Mean ± SD</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;20 years</td>
<td>73.65±23.29</td>
<td>79.17</td>
<td>60.53±19.38</td>
</tr>
</tbody>
</table>
Discussion

The newly discovered COVID-19 illness, which was first discovered in Wuhan, China, in December 2019, spreads quickly not only there but also internationally. As a result, governments worldwide have temporarily shut down or enacted localized closures of educational institutions, which affect more than 60% of students globally. To maintain the educational process during the epidemic, some 155 countries worldwide have established various tools and learning platforms [6].

Your results showed that Saudi nursing students widely accepted COVID-19. Showed that the majority of participants were aware that treating and isolating those who are infected with the Coronavirus is an effective way to stop the virus from spreading, that an infected person should be monitored for 14 days, and that the Coronavirus is spread through the respiratory droplets of infected people, and that the Coronavirus has three main symptoms. Additionally, I conclude that Knowledge is a crucial issue in the COVID-19 knowledge dimension, as evidenced by many studies [19]-[22]. For students' health behaviors to change and their compliance with preventive measures, better student comprehension and encouraging positive attitudes are essential. Public health and COVID-19 preparation might be significantly enhanced by adopting positive attitudes and following limitation measures [19], [21], [23], [24]. Finally, in reaction to the
COVID-19 pandemic, healthcare personnel from all over the world offered to assist hospitals, providing vital support to hospital operations and patient care in healthcare systems [25], [26].

According to [27], [28], online education enables students to learn at their own pace and helps them develop as self-directed learners. Since an online environment provides a broader choice of instructional materials delivered in various interactive approaches that match their needs, students felt it was more beneficial. Additionally, visual learning is more successful than aural learning at helping students understand the course material. Students who study at home have more time [28] to study because they don't have to commute. Exam results showed that each of these qualities improved students' academic performance.

The results showed a moderately positive correlation \( (r =0.377, p=0.001) \) between Knowledge and academic performance. The results of this study corroborated those of prior studies showing a relationship between study COVID-19 knowledge and health beliefs, self-efficacy, and behavioral intention in all nursing students. The data [29] show that all nursing students had Knowledge of COVID-19, assessed their health beliefs, increased their sense of self-efficacy, and engaged in an activity to prevent COVID-19 spread.

Additionally, [1], [30], [31] found that those with higher levels of education have higher levels of Knowledge, self-esteem, and talent belief. A student's conceptual thinking and Knowledge of COVID-19 may be influenced by their level of academic performance, according to [32], which may also restrict their access to online learning. On the other hand, mobile learning (M-learning) is a technique for learning via a mobile device that is being used to increase students' understanding of the COVID-19 curriculum. [33]– [35] Reports indicate that 81.8% of students think that M-learning can improve their Knowledge of the subject they are studying. [33] Due to the increasing epidemic, remote learning has become more popular and offers medical students a level of flexibility that is challenging to match.

In this study, I discovered that knowledge and risk perception had no or very weak correlation \( (r= -0.216, p=0.003) \). Because COVID-19 stimulates people to take measures against risks, previous research has demonstrated that the perceived threat it causes is predicted to positively impact preventive behaviors and mental health [36]. While [37] found that in Spanish university students utilizing the modification of the Specific Perceived Self-Efficacy Scale in Conferment Situations by COVID-19, perceived academic performance was significantly negatively correlated with anxiety. According to other studies [38], students’ attitudes and comprehension of preventative measures will increase their education level.

This study showed a significant relationship between age, education levels, overall Knowledge, academic performance, and risk perception, with a high mean score in the 20–26 age group. Contrary to earlier research [39, 40], this finding indicated that participants’ ages affected their precautions and perception of risk: the older they were, the more precautions they took. Older teachers also had low levels of self-efficacy and risk perception. While another researcher [41]
discovered that COVID-19 Knowledge did not differ significantly according to age, sex, field, or hospital site. This result is in line with the findings of [42], who discovered that COVID-19 knowledge levels were comparable regardless of age, gender, academic standing, or profession. This finding might be the result of multidimensional variables.

Other studies [43] have shown that the majority of study participants have a college degree or higher, which may account for the high level of Knowledge among them, or it may be attributable to the widespread media coverage, which includes all media outlets, and the pandemic's effects on social life, which compel people to follow. The most significant worldwide concern is the COVID-19 Infection, spreading quickly around the world. Health care professionals who interact directly with affected patients can help manage infections to a large extent [44].

Students at universities are going through rapid, interconnected changes in their cognitive abilities and social connections that span infancy and maturity [45] [46]. In an escalating and dynamic pandemic, universities have developed several measures to limit the virus's spread. Numerous new and different things have hurt university students while there has been a coronavirus lockdown. To learn remotely using textbooks or online resources, the majority of students around the world are forced to stay at home, where they are cut off from peers, professors, and university learning tools.

More demands, stress, and independent decision-making were all part of this new academic life [47]. Additionally, it required different study and interpersonal strategies. This study found that nursing students had a decent level of Knowledge, which is consistent with the results of past studies. [48]–[50]. Assessing risk perception can lead to bias and distortion, one of the study's shortcomings. Future training programs should therefore consider the risk assessment and academic performance of nursing students, as well as their comprehension of the effectiveness of recommendation strategies for carrying out COVID-19 preventative actions.

**Conclusion**

For student nurses to develop academic performance during the COVID-19 outbreak, this study raises some important issues regarding the quality of information and risk assessment. Academic performance training programs are needed to support risk perception and understanding. Nursing students should feel assured that they can provide their patients with the best care possible while protecting themselves.

**Acknowledgments**

I would like to thank all the students who participated in the research and the nursing program at Qassim University for facilitating this study.

**Conflict of interest**

Nothing conflict of interest to pronounce
Sources of funding

There was no direct financing for this study from public, private, or nonprofit organizations.

References


