

## Effect of COVID-19 Pandemic on Knowledge and Anxiety Level Among Nursing Internship Students

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### Abstract

**Background:** The corona virus disease 2019 (COVID-19) has caused devastating effects by spreading rapidly throughout society worldwide since it was identified at the end of December 2019 in Wuhan City, China. **Aim of the study:** was to assess effect of COVID-19 pandemic on knowledge and anxiety level Among nursing internship students. **Subjects and Methods:** **Research design:** A descriptive design was used to conduct this study and to achieve the aim of this study. **Setting:** The study was carried out at Technical Institute of Nursing in Zagazig University. **Subjects:** A convenience sample of all available internship students (618 students) at the technical institute of nursing in Zagazig University. **Tools of data collection:** Two tools were used for data collection. Tool I: Structured Interviewing Questionnaire, It was composed of 2 parts, General Characteristics of the nursing internship students, Self-administered Knowledge questionnaire. Tool II: Hamilton Anxiety scale. **Results:** 37.9% of the studied subjects had fair knowledge regarding COVID -19. In addition, 54.9% of the studied subjects had moderate anxiety level. On the other hand, knowledge score was inversely correlated with the Hamilton anxiety score ( $r=-0.122$ ,  $p=0.005$ ). **Conclusion:** More than one third of studied subjects had fair knowledge regarding COVID -19. As well, more than half of them had moderate anxiety level. **Recommendations:** Continuous campaigns are required for nurses to prevent and control COVID-19 successfully with illustrated booklets for maintaining knowledge, emphasis should also be placed on training and retraining health professionals in the correct hand washing steps as well as media awareness campaigns on this disease.

**Keywords:** COVID-19 Pandemic, Knowledge, Anxiety, Nursing Internship Students.

### Introduction

Corona viruses a family of viruses that can cause illnesses such as the common cold, severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS). In 2019, a new corona virus identified as the cause of a disease outbreak that originated in China. The virus known as severe acute respiratory syndrome corona virus 2 (SARS-CoV-2). The disease causes called corona virus disease 2019 (COVID-19). Severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS) and the common cold are examples of corona viruses that cause illness in humans<sup>(1)</sup>.

Corona viruses often found in bats, cats and camels. The viruses live in but don't infect the animals. Sometimes viruses then spread to different animal species. The viruses may change (mutate) as transfer to other species.

Eventually, the virus can jump from animal species and begin to infect humans. In the case of SARS-CoV-19, the first people infected thought to have contracted the virus at a food market that sold meat, fish and live animals<sup>(2)</sup>.

On 31 December 2019, the World Health Organization (WHO) was informed of a cluster of cases of pneumonia of unknown cause detected in Wuhan City, Hubei Province, China. Quickly spread throughout the world. On 12 January 2020, announced that a novel corona virus had identified in samples obtained from cases and initial analysis of virus genetic sequences suggested that the cause of the outbreak. In March 2020, considered a pandemic by the World Health Organization, affecting a variable level of severity, with important repercussions in terms of public health.

Virus is referred to as SARS-CoV-2, and the associated disease as COVID-19 <sup>(3)</sup>.

The number of records as of December 12, 2020 was 69,808,588 cases of COVID-19 worldwide, with 1,239,157 deaths. In Brazil, the numbers were 6,781,799 cases and 179,765 deaths. As of 22 February 2021, over 109 million cases have diagnosed globally with more than 2.4 million fatalities. In the 14 days to 17 February, more than 5.7 million cases reported. Over 217.5 million cases reported globally, with approximately 4.5 million deaths according to the World Health Organization. The US has the highest number of reported infections and deaths in the world. India, Brazil, Russia, and the UK have the highest number of infections after the US. Brazil, India, Mexico, and Peru have the highest number of deaths after the US <sup>(4)</sup>. Egypt is an African Arab country, with more than 100 million inhabitants, as reported in 2020. The primary case of COVID-19 in Egypt affirmed on 14 February 2020 <sup>(5)</sup>. In the first corona virus wave, Egypt was among the five countries reporting the highest number of cases in Africa with a total of 17, 265 cases <sup>(6)</sup>.

The healthcare workforce is facing substantial physical essential to consider unconventional strategies aiming at expanding the national nursing workforce in order to embrace the impact of COVID-19. Thus, trying to utilize nursing interns and senior nursing students, if appropriately deployed and supported, could be the quickest way to meet the growing demands of the healthcare delivery system and to maximize the nation's ability to respond to the COVID-19 pandemic <sup>(7)</sup>.

Anxiety is very prevalent among nursing students even in normal circumstances. Since nursing students carry out internships and applied courses in clinics, were one of the groups that experienced the most problems during the COVID-19 pandemic. The students experienced anxiety because were not able to perform clinical practices, and classes and exams carried out as

distance education. The impact of stress among NIs brought about by the pandemic is overwhelming. Stress alone disrupts the focus and attention of a person and the perception of external indicators <sup>(8)</sup>.

Nursing students' professional identity development and health are negatively affected by stress and anxiety. Negative effects directly associated with coping behaviors. Previous studies have showed that students do not use effective coping strategies during stressful situations. Few studies have investigated the anxiety and stress coping strategies of nursing students during the pandemic. During the COVID-19 pandemic, NIs reported that acquiring the COVID 19 and infecting family members are the most stressful situations. In general, challenging circumstances led to the burden of an increased workload due to the pandemic, causing students to reconsider whether or not to continue with internship <sup>(9)</sup>.

Nurses play essential roles in the fight against infectious diseases. During the COVID-19 pandemic, nurses faced higher risks of death than physicians in some countries. The pandemic caused not only morbidity and mortality but also psychological and social problems. High expectations, lack of time, skills, and social support may lead to occupational stress that, in turn, causes anxiety, post-traumatic stress disorder, distress, burnout, and other psychological problems. Nurses may also experience a range of somatic symptoms, including palpitations, nausea, dyspnea, and dizziness. Unclear disease status and uncertainty regarding COVID-19 treatment and care policies exacerbate stress on nurses, affecting nursing care quality and even causing resignations <sup>(10)</sup>.

Among the factors influencing nurses' anxiety sudden changes in patient status, frequent contact with patients' sufferings, shift work and night shifts, the uncertainty of treatment, heavy workload, mandatory overtime, job insecurity, different working environments, entering a new working

environment, difficulties of nursing profession, conflicts with physicians, conflicts with colleagues, high working hours, low income, lack of commitment of the manager or supervisor, discrimination between employees, lack of proper facilities and adequate medical equipment, nonstandard and inappropriate and physical activity conditions, and disregard for the dignity and position of nurses in society <sup>(11)</sup>.

During the COVID-19 pandemic, many studies focused on nurses' mental health while caring for patients with confirmed disease in isolation wards. A better understanding of EDFC nurses' anxiety, stress, and coping mechanisms can help design intervention and training programs. Several studies have assessed the mental health outcomes among health care workers treating patients exposed to COVID-19. During a pandemic, nursing intern students are also exposed to additional stressful components, such as the fear of contracting the disease, high levels of worry, stress, and despair. Furthermore, fear of contagion, workplace stress, social isolation, and prejudice may disproportionately affect health care professionals (HCPs) <sup>(12)</sup>.

### **Significance of the Study:**

Since nursing students carry out their internships and applied courses in clinics, they were one of the groups that experienced the most problems during the COVID-19 pandemic. The students experienced anxiety because they were not able to perform clinical practices and their classes and exams were carried out as distance education <sup>(13)</sup>.

A systematic review carried out during the pandemic found that university students' problems due to the COVID-19 pandemic as were "transition from face-to-face classes to web-based classes", "how exams will be held", "transportation restrictions", "mental health", and "the support of the university"<sup>(14)</sup>. Another study investigated the problems of nursing students during the pandemic and

found that most of them had difficulty keeping up with their classes because they had difficulty coping with anxiety, stress and moods caused by the pandemic <sup>(13)</sup>.

### **Aim of the study:**

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#### **The aim of the study was:**

To assess effect of COVID-19 pandemic on knowledge and anxiety level Among nursing internship students.

This aim was fulfilled through the following objectives: -

1. Identify the level of knowledge of the nursing internship students about COVID 19.
2. Describe the effect of COVID 19 pandemic on the anxiety level of the nursing internship students.

#### **Research questions:**

- 1) What is the level of knowledge of the nursing internship students about COVID 19?
- 2) What is the effect of COVID 19 pandemic on the anxiety level of the nursing internship students?

### **Subjects and Methods:**

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#### **Research design:**

A descriptive design was used to conduct this study

#### **Study Setting:**

The study was carried out at Technical Institute of Nursing in Zagazig University which composed from two floors and 6 classrooms; each classroom has a capacity of 300 students. There is a room for student affairs, a room for graduates, a library room, an accounting room, a secretarial room, a control room, as well as a room for the director and agent of the institute, and there are also five rooms for nursing specialists in the institute, and each floor has 3 bathrooms and an elevator. The technical internship nursing students distributed in the University Hospital and Sednawi in departments (Internal department,

Intensive care and operations, Reception and emergency).

### Study Subjects:

A convenience sample of all available internship students (618 students) at the technical institute of nursing in Zagazig University

### Tool for data collection:

In order to fulfill the objectives of the study two tools were used to collect necessary data:

#### Tool 1:

#### Tool I: Structured Interviewing Questionnaire:

It was designed by the researcher after reviewing related literature to collect the required data. It was written in simple Arabic language and it consists of two parts.

**Part I:** General Characteristics of the nursing internship students which include: age, gender, marital status, place of residence, work department and income. As well as questions about have any of the family member or a friend infected with COVID-19, the college provide with enough information about COVID-19 and how to deal with it. Additionally source of information about COVID-19. Moreover, it includes questions regarding would like to attend formal lectures related to COVID-19 and well prepared to deal with COVID-19.

**Part II:** Self-administered Knowledge questionnaire: it was adapted from **Jangra et al** <sup>(15)</sup>, included 27 questions at MCQ question form as definition of COVID-19, agent causing COVID-19 infection, causes of COVID-19, high risk group, common symptoms of COVID-19, diagnose the COVID-19, vaccine and treatment for COVID-19 infection, Method of prevent spread of disease and complication.

#### Scoring system:

The total scores of the 27 questions were 27 degree which equal 100%, each question was assigned a score according to students' knowledge responses were correct answer scored with 1 and incorrect answer scored with 0. The students' knowledge was checked with a model key answer and accordingly the nurses' knowledge was categorized into good, fair and poor. These scores were summed and were converted into a percent score. It was classified into 3 categories:

- **Good** knowledge if total score  $\geq 75\%$ .
- **Fair** knowledge if total score from 60- < 75%.
- **Poor** knowledge if total score from < 60%.

#### Tool II: Hamilton Anxiety scale

This tool was adopted from **Hamilton anxiety level (ham-a) (1959)**. The original self-administered anxiety level scale was consisted of 14 items, each defined by a series of symptoms, and measures both psychic anxiety (mental agitation and psychological distress) and somatic anxiety (physical complaints related to anxiety). It was used to assess the anxious mood, tension, fears, insomnia, intellectual (cognitive), depressed, mood, somatic (muscular), somatic (sensory), cardiovascular symptoms, respiratory symptoms, gastrointestinal symptoms, genitourinary symptoms, autonomic symptoms, behavior at interview

#### Scoring system:

Each item scored as none = 0 mild = 1 moderate = 2 severe = 3 severe, grossly disabling = 4. These scores were summed up and were converted into a percentage score. It was classified into 3 categories:

- sever anxiety if total score >70%.
- Moderate anxiety if total score from 50-70%.
- Mild anxiety if total score from < 70%.

#### Content Validity and Reliability:

Validity: it was ascertained by a group of experts in community health nursing (3) professor. Their opinions elicited regarding the format, layout, consistency, accuracy and relevancy of the tools. Reliability analysis by measuring of internal consistency of the tool through Cranach's alpha test. Structured interviewing questionnaire 0.840 "good" knowledge 0.876 "good" Hamilton anxiety scale 0.882 "good"

#### **Field work:**

Data were collected through six months, from the beginning of October 2021 to the end of March 2022. The researcher firstly met with the students at the previously mentioned settings, explained the purpose of the study after introducing herself. Then, individual interviewing was done after obtaining students consent to participate. The researcher was visiting the study setting 2 days / week (Sunday and Wednesday) at (9am -2pm). The questionnaire was filled by students which take 15-30 minutes.

#### **Pilot study:**

The pilot study was carried out on 10% those represent (60) of students in order to test the applicability of the constructed tools and the clarity of the questions. The pilot has also served to estimate the time needed for each subject to fill in the questionnaire. According to the results of the pilot, no corrections and omissions of items were performed, so the nurses were included in the study sample.

#### **Administration and Ethical consideration:**

The research approval was obtained from the ethical committee of the faculty of nursing Zagazig University. The researcher was clarified the objectives and aim of the study to students included in the study before starting. oral consent was obtained from the students before inclusion in the study; a clear and simple explanation was given according to their level of understanding. They secured that all the gathered data was confidential and used for research purpose only. The researcher was

assuring maintaining anonymity and confidentiality of subjects' data included in the study. The students were informed that allowed to choose to participate or not in the study and have the right to withdrawal from the study at any time.

An official permission was obtained by submission of a formal letter issued from the dean of faculty of nursing, Zagazig University to the director of technical institute of nursing in Zagazig University. Collect the necessary data for current study after a brief explanation of the purpose of the study and its expected outcomes. Using proper channels of communication from authorized personnel.

#### **Statistical Analysis:**

Data collected from the studied sample was revised, coded and entered using Personal Computer (PC). Computerized data entry and statistical analysis were fulfilled using the Statistical Package for Social Sciences (SPSS) version 24. Data were presented using descriptive statistics in the form of frequencies, percentages. Chi-square test ( $\chi^2$ ) was used for comparisons between qualitative variables. Spearman correlation measures the strength and direction of association between four ranked variables.

#### **Results:**

**Table (1)** shows that the mean age of the studied subjects was  $20.4 \pm 0.6$  years, while 57.1% of the studied subjects were female and 20.4% of them married. Furthermore, 66.2% of the studied subjects from rural areas and 41.1% of them worked in internal department. Moreover, 42.2% mentioned their income was sufficient and 67% had family history of COVID-19.

**Table (2)** reveals that 67.6% know the causative agent of COVID -19, 64.1% reported correct answer about the most common group affected by COVID -19. Concerning mood of transmission of disease, common sign & symptom and method of diagnosis 64.1%, 66% and 63.4 % respectively reported correct

answer. Regarding the preventive method and complication of COVID 19 more than, 60% of study sample mentioned correct answer about prevent the spread of disease, used of mask, personal protective kit used by the staff members, dispose mask and duration of hand washing. Also, 66% of the internship student reported correct answer about complication of disease.

**Figure (1)** illustrates distribution of studied subjects according to their total knowledge about COVID-19, it showed that 32, 0% of the studied subjects had good level of knowledge and 37.9% had fair knowledge and 30.1% had poor level of knowledge about COVID -19.

**Figure (2)** Indicates distribution of studied subjects by their total Hamilton anxiety level according the figure 54.9% of the studied subjects had moderate anxiety level and 31.4% of them had severe anxiety and only 13.8% had mild anxiety level.

**Table (3)** demonstrates that 63.3% of studied subjects had information provided by faculty about COVID-19, while 57.4% of them attend lecture related COVID-19. In addition, 49.2% of studied subjects not able to deal with COVID- 19. Furthermore, the primary sources of information for nursing internship students' knowledge about COVID19 were from TV (29.3%), followed by doctor and internet (23.5%) and person recovering from COVID-19 (13.6%).

**Table (4)** displays that statistically significant association between the General characteristics Internship Students income and their total knowledge about COVID19. ( $p= <0.001$ )

**Table (5)** demonstrates that statistically significant difference between General characteristics of nursing internship students (income) and their Hamilton anxiety level.

**Table (6)** portrays present of statistically significant association between information provided to them and their total knowledge and information provided to them in faculty about COVID-

19 and attended special course about the disease. ( $p= <0.001$ )

**Table (7)** presents statistically significant difference between information provided to internship student about COVID 19 in faculty and attend lecture related COVID-19, and ability to deal with COVID-19) and their total Hamilton anxiety level. ( $p= <0.001$ )

### **Discussion:**

Nursing students (NSs) are exposed to a variety of stressful situations during their university studies; some of these situations may foster academic development, while others may have a detrimental effect on well-being and quality of life (QoL) **Salvi et al** <sup>(16)</sup>. The knowledge and practice of health and social work were associated with the professional identity obtained from the claims of psychosocial expertise on health and disease. For nursing students who are about to enter a clinical internship, the large number of healthcare worker infections and the enormous work pressure of the clinical register nurses during the COVID-19 pandemic has caused nursing students to show anxiety and fear about the professional identity of nursing work **Sun et al** <sup>(17)</sup>.

As regard to age of the studied nurses, the present study showed that the mean age of the studied subjects was  $20.4 \pm 0.6$  years. From the researcher point of view; this might be due to most of student in the technical institute of nursing graduated from secondary school at the age of 18. This finding matched with study by **Soltan et al** <sup>(18)</sup>, who conducted study about "Knowledge, risk perception, and preventive behaviors related to COVID-19 pandemic among undergraduate medical students in **Egypt**" and showed that Age of the studied students ranged between 18 and 25 years old with a mean of 20.1 years.

Concerning on gender, the result of current study illustrated that less than two thirds of the studied nursing students were females, this result might be due to number of females more than males.

This result consistent with study by **Ebrahim & Jassima** <sup>(19)</sup>, who conducted study about "Attitude and practices among nursing students toward COVID-19 prevention" and reported that less than two thirds (64.8%) of the studied nursing students were females in **Iraq**.

One of the mean research question of this study was about identifying the level of knowledge of the nursing internship students about COVID 19, the result of current study revealed that about two thirds of them know the causative agent of COVID-19, the most common group affected by COVID -19, mood of transmission of disease, common sign & symptom and method of diagnosis . From researcher point view, this result might be due to role of faculty and mass media have effective role to provide population as general and nursing students especially with necessary information about COVID-19. These findings in same line with **Alsoghair et al** <sup>(20)</sup>, who conducted study about " Medical students and COVID-19: knowledge, preventive behaviors, and risk perception in **Saudi Arabia** " and reported that about three quarters of the studied student had correct knowledge about know the causative agent of COVID-19, the most common group affected by COVID-19, mood of transmission of disease, common sign & symptom and method of diagnosis.

Regarding the **Prevention** of COVID -19, the present study displayed that less than two thirds of the studied nursing students mentioned correct answer about prevent the spread of disease, used of mask, personal protective kit used by the staff members, dispose mask and duration of hand washing. From researcher point view, what about the rest who did not know or reported wrong information about the methods of prevention? This may be due to several factors, including obtaining information from unreliable sources indeed, the results of the current study indicated that most of students get information through multiple resources followed by mass media. Surely unauthenticated data can be easily

accessed in real time and an increase in social media rumors. In this epidemic circumstance, generate a new kind of terror. The finding supported with study by **Hasab Allah et al** <sup>(21)</sup>, who conducted study about "Knowledge, Attitudes and Practice Regarding COVID-19 amongst Nursing Students at Minia University in **Egypt**" and reported that less than two thirds of the studied nursing students mentioned correct answer about prevent the spread of disease.

Related to total level of knowledge about COVID-19, the result of present study showed that less than one third of the studied subjects had good level of knowledge and less than two fifths of them had fair knowledge and less one third of them had poor level of knowledge about COVID-19. this finding in same line with study by **shrestha et al** <sup>(22)</sup>,who conducted study about "knowledge, practices and anxiety related to corona virus disease-19 (COVID-19) among nursing students in **Nepal**" and showed that more than one third (42.5%) of the studied nursing students have poor knowledge related to corona virus disease-19 (COVID-19). on other hand, this result disagreement with study by **Abd El Fatah et al** <sup>(23)</sup>,who conducted study about " knowledge, attitude, and behavior of Egyptian medical students toward the novel corona virus disease-19 in **Egypt**: a cross-sectional study" and showed that less than two thirds (63.4%) of the nursing student had poor knowledge about COVID-19.

Regarding second research question of this study was about describing the effect of COVID 19 pandemic on the anxiety level of the nursing internship students, the result of present study Indicated that more than half of the studied subjects had moderate anxiety level and less than one third of them had severe anxiety and only less than one fifth had mild anxiety level. From researcher point view, this result might be due to majority of studied participants were females was considered risk factor for

higher psychological impact also, the number of cases/deaths in Egypt and other countries where relevant studies were conducted, the regions where students live and when the data were collected during the pandemic. Studies conducted before the pandemic this finding in same line with **Lai et al**<sup>(24)</sup>, who conducted study about "Factors associated with mental health outcomes among health care workers exposed to corona virus disease 2019 in **China**" and reported that less than half (44.6%) of the studied sample moderate anxiety level. and, **Shrestha et al**<sup>(22)</sup>, who conducted study about "Knowledge, Practices and Anxiety related to Corona Virus Disease-19 (COVID-19) among Nursing Students in **Nepal**" and showed that only 6.10% had mild to moderate anxiety level. Conversely, this result contraindicated with study by **Aly et al**<sup>(25)</sup>, who conducted study about "Stress, anxiety and depression among healthcare workers facing COVID-19 pandemic in **Egypt**" and showed that the highest percent (90.5%) of the studied sample had mild anxiety followed by moderate anxiety about one third then about one fifth had severe anxiety.

Concerning on attend lecture related COVID-19, the result of current study showed that less than half of the nursing student attend lecture related COVID-19. From researcher point view, this result might be due to the faculty's preparedness strategy for coping with the epidemic, which involves offering preparation courses for internship students to cope with the pandemic. However, some students did not attend it because they were in a remote area with limited internet access. this result in same line with **El-Hossany et al**<sup>(26)</sup>, who conducted study about " knowledge, perception and attitude of nursing students at Suez Canal university, **Egypt** toward COVID-19 patients" and represented that less than half of the nursing student attend lecture related COVID-19.

As regards to Source of information about COVID-19, the present study showed that the primary sources of information for nursing internship students' knowledge about COVID19 were from TV, followed by doctor, internet and person recovering from COVID-19. From researcher point view, students should be responsible and focus on factual information they see on social media. This finding implies the need for nursing education to develop programs, such as educational and awareness campaigns aimed to guide students for reliable student-centered sources of information about COVID-19. Nurse educators should assist students in selecting the right sources of information, provide student-centered resources, and correct misinformation. Additionally, this finding may help in modifying the contents of some courses (e.g., Infection Control in Nursing and Nursing Informatics) and enhance the means for acquiring dependable sources of information related to COVID-19. Conversely, these findings contraindicated with study by **Albaqawi et al**<sup>(27)</sup>, who conducted study about " Nursing students' perceptions, knowledge, and preventive behaviors toward COVID-19 in **Saudi Arabia** " and reported that social media is the foremost source of COVID-19 information among the studied Nursing students.

In relation to Association between General Characteristics of The Nursing Internship Students and Their Total Knowledge about COVID19; the present study revealed that, there statistically significant association between the General characteristics Internship Students income and their total knowledge about COVID19 ( $p = <0.001$ ) . on other hand, this finding disagreement with **Yakout et al**<sup>(28)</sup>, who conducted study about " Sustainability Awareness and Preparedness of COVID-19 Pandemic among University Students in Egypt" and founded that there statistically significant association between the General characteristics Internship Students gender, Residence and their total knowledge about COVID19 ( $p = <0.001$ ).



Regarding to Association between General Characteristics of Nursing Internship Students and Their Hamilton Anxiety Level, the result of present study displayed that statistically significant difference between General characteristics of nursing internship students (income) and their Hamilton anxiety level. From researcher point view, this result might be due to worries about their families' well-being, are apprehensive of sickness, have the desire to support and care for youngsters, and experience difficulty with distance education. This outcome matched with study by **Sun et al** <sup>(29)</sup>, who conducted study about "Disease prevention knowledge, anxiety, and professional identity during COVID-19 pandemic in nursing students in **Zhengzhou, China**" and proved that income is factor on level of anxiety among nursing students.

In relation to association between Information provided to internship student and their total knowledge about COVID-19, the present study revealed that there statistically significant association between information provided to them and their total knowledge and information provided to them in faculty about COVID-19 and attended special course about the disease. And there were no significant differences among total knowledge and source of information. these findings supported with **ELmetwaly et al** <sup>(30)</sup>, who conducted study entitled "Knowledge and Attitude of Nursing Students about COVID-19: An Intervention Study in **Egypt**" and showed that there statistically significant association between information provided to them and their total knowledge and information provided to them in faculty about COVID-19 and attended special course about the disease. Moreover, this result supported with **Olaimat et al** <sup>(31)</sup>, entitled "Knowledge and information sources about COVID-19 among university students in **Jordan**" and showed that there were no significant differences among Knowledge and a source of information.

As regards to association between Information provided to internship student and their total Hamilton Anxiety level about COVID-19, the current study presented that there statistically significant difference between information provided to internship student about COVID 19 in faculty and attend lecture related COVID-19, and ability to deal with COVID-19) and their total Hamilton anxiety level (**p= <0.001**). these result accordance with study by **Temiz** <sup>(32)</sup>, entitled "Nursing students' anxiety levels and coping strategies during the COVID-19 pandemic in **Turkey**," and showed that there statistically significant difference between ability to deal with COVID-19) and their total Hamilton anxiety level. (**p= <0.001**).

### **Conclusion:**

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In light of the current study, it can be concluded that, almost one third of the studied subjects had good level of knowledge and more than one third of them had fair knowledge and less than one third of them had poor level of knowledge about COVID -19, while more than half them had moderate anxiety level and less than one third of them had severe anxiety and less than one fifth had mild anxiety level.

### **Recommendation:**

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Based on the findings of the study results, the following recommendations were advocated:

- Continuous campaigns are required for nurses to prevent and control COVID-19 successfully with illustrated booklets for maintaining knowledge, emphasis should also be placed on training and retraining health professionals in the correct hand washing steps as well as media awareness campaigns on this disease.
- Taking measures to improve working conditions and reduce nurses' anxiety is necessary.
- Early psychological interventions targeting this vulnerable group may be beneficial.

- Create a suitable environment for nurses to continue their professional activities.

This study could be replicated to larger sample and in different settings to generalize the findings.

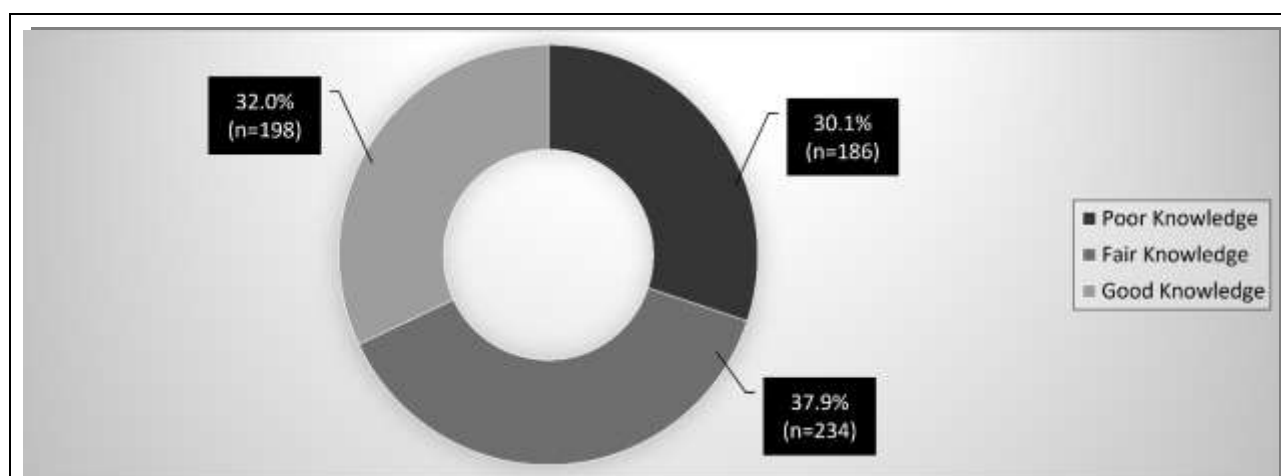
**Table 1.** Distribution of Nursing Internship Students by Their General Characteristics (N =618)

| General Characteristics           | n              | %    |
|-----------------------------------|----------------|------|
| <b>Age (years)</b>                |                |      |
| 20                                | 383            | 62.0 |
| 21                                | 208            | 33.7 |
| 22                                | 27             | 4.3  |
| Mean $\pm$ SD                     | 20.4 $\pm$ 0.6 |      |
| <b>Gender</b>                     |                |      |
| Male                              | 265            | 42.9 |
| Female                            | 353            | 57.1 |
| <b>Marital Status</b>             |                |      |
| Single                            | 492            | 79.6 |
| Married                           | 126            | 20.4 |
| <b>Residence</b>                  |                |      |
| Urban                             | 209            | 33.8 |
| Rural                             | 409            | 66.2 |
| <b>Department</b>                 |                |      |
| Internal department               | 254            | 41.1 |
| Intensive care and operations     | 237            | 38.3 |
| Reception and emergency           | 127            | 20.6 |
| <b>Income</b>                     |                |      |
| Insufficient                      | 229            | 37.1 |
| Sufficient                        | 261            | 42.2 |
| Sufficient and saving             | 128            | 20.7 |
| <b>Family history of COVID-19</b> |                |      |
| Yes                               | 414            | 67.0 |
| No                                | 204            | 33.0 |

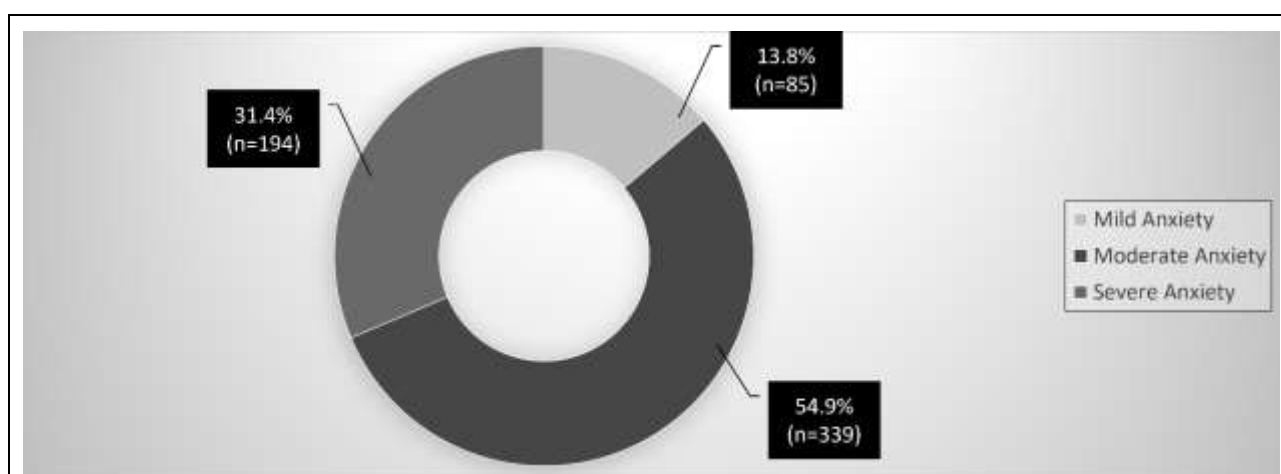
**Table2.** Distribution of Knowledge Among Nursing Internship Students about COVID-19 (N =618)

| Knowledge about COVID-19   | Correct |      | Incorrect |      |
|--|---------|------|-----------|------|
|  | n       | %    | n         | %    |
| <b>Definition and Causative Agent</b>                                    |         |      |           |      |
| You know the cause of COVID-19?  | 418     | 67.6 | 200       | 32.4 |
| <b>Transmission of COVID-19 infection</b>                                |         |      |           |      |
| COVID-19 is commonly spread in special age group?                        | 396     | 64.1 | 222       | 35.9 |
| Who's at high risk to get an infection?                                  | 237     | 38.3 | 381       | 61.7 |
| How long does the Corona virus survive on the surface or an object?      | 527     | 85.3 | 91        | 14.7 |
| Does the COVID-19 spread from pets?                                      | 360     | 58.3 | 258       | 41.7 |
| Does the dead body of a COVID-19 positive person transmit the infection? | 332     | 53.7 | 286       | 46.3 |
| <b>Signs &amp; Symptoms</b>  |         |      |           |      |
| What are the common symptoms of COVID-19?                                | 408     | 66.0 | 210       | 34.0 |
| What are primarily systems affected in COVID-19 patient?                 | 459     | 74.3 | 159       | 25.7 |
| <b>Diagnosis of COVID-19</b>   |         |      |           |      |
| The test is used to diagnose the COVID-19?                               | 392     | 63.4 | 226       | 36.6 |
| Where the COVID-19 test to be done?                                      | 382     | 61.8 | 236       | 38.2 |
| <b>vaccine and Treatment</b>   |         |      |           |      |
| Is there any treatment for COVID-19 infection?                           | 383     | 62.0 | 235       | 38.0 |
| Any specific medication available to treat COVID-19 infection            | 207     | 33.5 | 411       | 66.5 |
| Is there any vaccine available for the clients of COVID-19?              | 458     | 74.1 | 160       | 25.9 |
| Do you know national helpline number for COVID-19                        | 406     | 65.7 | 212       | 34.3 |
| <b>Prevention</b>  |         |      |           |      |
| Method of prevent spread of disease?                                     | 396     | 64.1 | 222       | 35.9 |
| Method of protect myself and my family?                                  | 362     | 58.6 | 256       | 41.4 |
| Who is necessary wear mask?  | 394     | 63.8 | 224       | 36.2 |
| When medical staff used mask during their work?                          | 395     | 63.9 | 223       | 36.1 |
| Used personal protective kit to prevent the spread of infection?         | 392     | 63.4 | 226       | 36.6 |
| Way of dispose-off the used mask?  | 396     | 64.1 | 222       | 35.9 |
| Duration of washing hand?  | 390     | 63.1 | 228       | 36.9 |

|  |     |      |     |      |
|--|-----|------|-----|------|
| The recommended percentage of ethyl alcohol/ isopropyl alcohol or n- propanol in sanitizer that kills maximum micro-organisms? | 416 | 67.3 | 202 | 32.7 |
| The type of drinking water as precautions?   | 396 | 64.1 | 222 | 35.9 |
| What is the appropriate distance to maintain social distancing (as per the guideline by the WHO)?                              | 360 | 58.3 | 258 | 41.7 |
| <b>Complications</b>   |     |      |     |      |
| Complication resulting from COVID-19?  | 408 | 66.0 | 210 | 34.0 |



**Figure 1.** Distribution of Internship Students by Their Total Level of Knowledge about COVID-19 (N =618)



**Figure 2.** Distribution of the Nursing Internship Students by Their Total Hamilton Anxiety Level (N =618)

**Table 3.** Distribution of Nursing Internship Students by Their Sources of Knowledge about COVID 19 (N =618)

| knowledge about COVID-19                              | n   | %    |
|---|-----|------|
| <b>information provided by Faculty about COVID-19</b> |     |      |
| Yes   | 391 | 63.3 |
| No  | 227 | 36.7 |
| <b>Attend lecture related COVID-19</b>                |     |      |
| Yes   | 263 | 42.6 |
| No  | 355 | 57.4 |
| <b>Ability to deal with COVID-19</b>                  |     |      |
| Not able to deal with COVID-19                        | 304 | 49.2 |
| to Somewhat also to deal with COVID-19                | 288 | 46.6 |
| can able to deal with COVID-19                        | 26  | 4.2  |
| <b>Source of information about COVID-19</b>           |     |      |
| Doctor  | 145 | 23.5 |
| TV  | 181 | 29.3 |
| Internet  | 145 | 23.5 |
| Person recovering from COVID-19                       | 84  | 13.6 |
| Friends   | 63  | 10.2 |

**Table 4.** Association Between General Characteristics of The Nursing Internship Students And Their Total Knowledge about COVID19 (N=618)

| Variables                         | Knowledge level |      |              |      |              |      | Chi-Square     |          |
|-----------------------------------|-----------------|------|--------------|------|--------------|------|----------------|----------|
|                                   | Poor (n=186)    |      | Fair (n=234) |      | Good (n=198) |      | X <sup>2</sup> | P        |
|                                   | n               | %    | n            | %    | n            | %    |                |          |
| <b>Age (years)</b>                |                 |      |              |      |              |      |                |          |
| 20                                | 103             | 55.4 | 154          | 65.8 | 126          | 63.6 |                |          |
| 21                                | 77              | 41.4 | 69           | 29.5 | 62           | 31.3 |                |          |
| 22                                | 6               | 3.2  | 11           | 4.7  | 10           | 5.1  | 7.620          | 0.107    |
| <b>Gender</b>                     |                 |      |              |      |              |      |                |          |
| Male                              | 85              | 45.7 | 100          | 42.7 | 80           | 40.4 |                |          |
| Female                            | 101             | 54.3 | 134          | 57.3 | 118          | 59.6 | 1.101          | 0.577    |
| <b>Marital Status</b>             |                 |      |              |      |              |      |                |          |
| Single                            | 152             | 81.7 | 185          | 79.1 | 155          | 78.3 |                |          |
| Married                           | 34              | 18.3 | 49           | 20.9 | 43           | 21.7 | 0.769          | 0.681    |
| <b>Residence</b>                  |                 |      |              |      |              |      |                |          |
| Urban                             | 75              | 40.3 | 77           | 32.9 | 57           | 28.8 |                |          |
| Rural                             | 111             | 59.7 | 157          | 67.1 | 141          | 71.2 | 5.841          | 0.054    |
| <b>Department</b>                 |                 |      |              |      |              |      |                |          |
| Internal department               | 74              | 39.8 | 96           | 41.0 | 84           | 42.4 |                |          |
| Intensive care and operations     | 74              | 39.8 | 93           | 39.7 | 70           | 35.4 |                |          |
| Reception and emergency           | 38              | 20.4 | 45           | 19.2 | 44           | 22.2 | 1.314          | 0.859    |
| <b>Income</b>                     |                 |      |              |      |              |      |                |          |
| Insufficient                      | 68              | 36.6 | 115          | 49.1 | 46           | 23.2 |                |          |
| Sufficient                        | 75              | 40.3 | 98           | 41.9 | 88           | 44.4 |                |          |
| Sufficient and saving             | 43              | 23.1 | 21           | 9.0  | 64           | 32.4 | 48.823         | <0.001** |
| <b>Family history of COVID-19</b> |                 |      |              |      |              |      |                |          |
| Yes                               | 125             | 67.2 | 147          | 62.8 | 142          | 71.7 |                |          |
| No                                | 61              | 32.8 | 87           | 37.2 | 56           | 28.3 | 3.844          | 0.146    |

**Table 5.** Association Between General Characteristics of Nursing Internship Students and Their Hamilton Anxiety Level (N=618)

| Variables                         | Hamilton Anxiety level |      |                  |      |                |      | Chi-Square     |          |
|-----------------------------------|------------------------|------|------------------|------|----------------|------|----------------|----------|
|                                   | Mild (n=85)            |      | Moderate (n=339) |      | Severe (n=194) |      | X <sup>2</sup> | P        |
|                                   | n                      | %    | n                | %    | n              | %    |                |          |
| <b>Age (years)</b>                |                        |      |                  |      |                |      |                |          |
| 20                                | 53                     | 62.4 | 208              | 61.4 | 122            | 62.9 |                |          |
| 21                                | 27                     | 31.8 | 120              | 35.4 | 61             | 31.4 |                |          |
| 22                                | 5                      | 5.9  | 11               | 3.2  | 11             | 5.7  | 2.905          | 0.574    |
| <b>Gender</b>                     |                        |      |                  |      |                |      |                |          |
| Male                              | 38                     | 44.7 | 150              | 44.2 | 77             | 39.7 |                |          |
| Female                            | 47                     | 55.3 | 189              | 55.8 | 117            | 60.3 | 1.180          | 0.554    |
| <b>Marital Status</b>             |                        |      |                  |      |                |      |                |          |
| Single                            | 64                     | 75.3 | 282              | 83.2 | 146            | 75.3 |                |          |
| Married                           | 21                     | 24.7 | 57               | 16.8 | 48             | 24.7 | 5.910          | 0.052    |
| <b>Residence</b>                  |                        |      |                  |      |                |      |                |          |
| Urban                             | 25                     | 29.4 | 113              | 33.3 | 71             | 36.6 |                |          |
| Rural                             | 60                     | 70.6 | 226              | 66.7 | 123            | 63.4 | 1.443          | 0.486    |
| <b>Department</b>                 |                        |      |                  |      |                |      |                |          |
| Internal department               | 30                     | 35.3 | 143              | 42.2 | 81             | 41.8 |                |          |
| Intensive care and operations     | 32                     | 37.6 | 128              | 37.8 | 77             | 39.7 |                |          |
| Reception and emergency           | 23                     | 27.1 | 68               | 20.1 | 36             | 18.6 | 3.114          | 0.539    |
| <b>Income</b>                     |                        |      |                  |      |                |      |                |          |
| Insufficient                      | 27                     | 31.8 | 150              | 44.2 | 52             | 26.8 |                |          |
| Sufficient                        | 36                     | 42.4 | 138              | 40.7 | 87             | 44.8 |                |          |
| Sufficient and saving             | 22                     | 25.9 | 51               | 15.0 | 55             | 28.4 | 23.197         | <0.001** |
| <b>Family history of COVID-19</b> |                        |      |                  |      |                |      |                |          |
| Yes                               | 56                     | 65.9 | 229              | 67.6 | 129            | 66.5 |                |          |
| No                                | 29                     | 34.1 | 110              | 32.4 | 65             | 33.5 | 0.117          | 0.943    |

**Table 8.** Association Between Information Provided to Internship Students and Their Total Knowledge (N=618)

| Variables  | Knowledge level |      |              |      |              |      | Chi-Square     |          |
|--|-----------------|------|--------------|------|--------------|------|----------------|----------|
|  | Poor (n=186)    |      | Fair (n=234) |      | Good (n=198) |      | X <sup>2</sup> | P        |
|  | n               | %    | n            | %    | n            | %    |                |          |
| <b>Faculty information provided about COVID-19</b> |                 |      |              |      |              |      |                |          |
| Yes  | 130             | 69.9 | 130          | 55.6 | 131          | 66.2 |                |          |
| No   | 56              | 30.1 | 104          | 44.4 | 67           | 33.8 | 10.215         | 0.006*   |
| <b>Attend lecture related COVID-19</b>             |                 |      |              |      |              |      |                |          |
| Yes  | 73              | 39.2 | 85           | 36.3 | 105          | 53.0 |                |          |
| No   | 113             | 60.8 | 149          | 63.7 | 93           | 47.0 | 13.436         | <0.001** |
| <b>Ability to deal with COVID-19</b>               |                 |      |              |      |              |      |                |          |
| Not at all ready                                   | 90              | 48.4 | 138          | 59.0 | 76           | 38.4 |                |          |
| Somewhat prepared                                  | 86              | 46.2 | 87           | 37.2 | 115          | 58.1 |                |          |
| Well prepared                                      | 10              | 5.4  | 9            | 3.8  | 7            | 3.5  | 20.23          | <0.001   |
| <b>Source of information about COVID-19</b>        |                 |      |              |      |              |      |                |          |
| Doctor   | 51              | 27.4 | 57           | 24.4 | 37           | 18.7 |                |          |
| TV   | 58              | 31.2 | 66           | 28.2 | 57           | 28.8 |                |          |
| Internet   | 38              | 20.4 | 56           | 23.9 | 51           | 25.8 |                |          |
| Person recovering from COVID19                     | 21              | 11.3 | 31           | 13.2 | 32           | 16.2 |                |          |
| Friends  | 18              | 9.7  | 24           | 10.3 | 21           | 10.6 | 6.570          | 0.584    |



**Table 9.** Association Between Information Provided to Internship Student about COVID 19 and Their Total Hamilton Anxiety Level (N=618)

| Variables  | Hamilton Anxiety level |      |                  |      |                |      | Chi-Square     |          |
|--|------------------------|------|------------------|------|----------------|------|----------------|----------|
|  | Mild (n=85)            |      | Moderate (n=339) |      | Severe (n=194) |      | X <sup>2</sup> | P        |
|  | n                      | %    | n                | %    | n              | %    |                |          |
| <b>Faculty information provided about COVID-19</b> |                        |      |                  |      |                |      |                |          |
| Yes  | 51                     | 60.0 | 196              | 57.8 | 144            | 74.2 |                |          |
| No   | 34                     | 40.0 | 143              | 42.2 | 50             | 25.8 | 14.75          | <0.001** |
| <b>Attend lecture related COVID-19</b>             |                        |      |                  |      |                |      |                |          |
| Yes  | 36                     | 42.4 | 126              | 37.2 | 101            | 52.1 |                |          |
| No   | 49                     | 57.6 | 213              | 62.8 | 93             | 47.9 | 11.198         | 0.004*   |
| <b>Ability to deal with COVID-19</b>               |                        |      |                  |      |                |      |                |          |
| Not at all ready                                   | 40                     | 47.1 | 181              | 53.4 | 83             | 42.8 |                |          |
| Somewhat prepared                                  | 41                     | 48.2 | 155              | 45.7 | 92             | 47.4 |                |          |
| Well prepared                                      | 4                      | 4.7  | 3                | 0.9  | 19             | 9.8  | 26.383         | <0.001** |
| <b>Source of information about COVID-19</b>        |                        |      |                  |      |                |      |                |          |
| Doctor   | 17                     | 20.0 | 78               | 23.0 | 50             | 25.8 |                |          |
| TV   | 29                     | 34.1 | 91               | 26.8 | 61             | 31.4 |                |          |
| Internet   | 13                     | 15.3 | 84               | 24.8 | 48             | 24.7 |                |          |
| Person recovering from COVID19                     | 15                     | 17.6 | 47               | 13.9 | 22             | 11.3 |                |          |
| Friends  | 11                     | 12.9 | 39               | 11.5 | 13             | 6.7  | 10.677         | 0.221    |

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