






# University Health Students' Challenges and Coping Strategies During the COVID-19 Pandemic: An Integrative Literature Review

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**Abstract. Background:** This integrative review is aimed to explore the COVID-19-related challenges among university health students, explore the strategies that students developed to cope with the pandemic-associated challenges and explore the support and benefits gained from the universities to their students during the pandemic period. Whittemore's and Knaff's five-step integrative review method was used to critically analyze and synthesize the literature regarding university health students' challenges and coping strategies during the Coronavirus-19 pandemic.

**Methods:** A systematic search of seven electronic databases (Medline, CINAHL, EBSCO, PubMed, Scopus, EMBASE, Cochrane) and Google scholar were conducted in October 2021. Nineteen articles were included in the final sample.

**Results:** The results revealed three main themes and six subthemes. The first main theme was the COVID-19-related challenges among university health students. This theme included two subthemes: psychological impact and educational impact. The second main theme is coping strategies which include three subthemes: developing a daily routine and distraction strategies, social support, and negative coping strategies. The third main theme is the support gained from universities. This theme included one subtheme of support and benefits gained from universities during the COVID-19 pandemic period.

**Conclusion:** University health students faced many challenges during the COVID-19 pandemic. A health awareness campaign could be initiated to tackle the coping strategies and health habits needed to overcome the existing challenges.

**Keywords:** "university health student\*" · "COVID-19" · "cop" · "challenge" · "experience"

## 1 Introduction

By March 2020, the Coronavirus (COVID-19) disease had spread globally, prompting the World Health Organization [WHO] to declare that COVID-19 was a pandemic [1] due to widespread in all global regions infecting more than 2.8 million cases and resulting in 260,000 confirmed deaths [2].

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The pandemic affected the teaching and learning process worldwide due to education institutes' shutdown and shift from face-to-face to online learning [3]. Many countries worldwide suspended in-person educational instruction and adopted the remote learning model of delivery [4]. According to United Nations Educational, Scientific and Cultural Organization (UNESCO), about 186 countries shut down their educational institutions affecting about 74% of enrolled learners globally, and a majority of institutions chose to transition learning services to an online mode of delivery [5]. This transition affected the quality of teaching and learning greatly as little time and consideration was given to the transition to an online mode of delivery [5]. Online learning requires a greater sense of self-discipline and motivation. Thus, students taking online learning for the first time need a good guidance and mentorship to manage their learning. In addition, the COVID-19 outbreak led to many students delaying graduation, withdrawing from classes, intending to change majors, and decreasing their study hours and academic performance [6].

Regarding university health students, the absence of practical classes was considered an essential inhibiting factor for medical and nursing education by both students and teachers [3]. Many health students were concerned about delayed board exams and lack adequate training and skill development due to losing opportunities to practice necessary skills [7].

During the pandemic, university health students faced many challenges, including mental, financial, and educational problems [4]. Exploring the COVID-19-related challenges and coping strategies that health students applied to handle the situation is significant. Exploration and understanding of university health students' challenges and coping strategies can help educational institutes develop programs to better support students psychosocially, emotionally, and financially during unprecedented crises.

The COVID-19 crisis has affected education adversely across the globe, with teachings and assessments being delayed or cancelled due to the lockdown [8]. Educational institutions developed pandemic management strategies such as online learning to promote continued student learning [8]. However, the rapidly changing nature of communication between students and academics and learning mediums added additional stress and anxiety.

Potentially, health-related fields were uniquely affected by the COVID-19 pandemic directly or because of COVID-19-related restrictions. Health students who completed their practical training in nursing, medicine, or allied health students have experienced a higher risk of COVID-19 acquisition due to patient exposure during their clinical placements [7] and subsequent illness. Further, COVID-19-related restrictions impaired the opportunities for some students to complete practical components [3].

In a similar vein, university students experienced the external pressures of an uncertain environment where finances along with current labour market participation, and expectations about future employment were unfolding [6].

Psychological and emotional influences have been apparent since the COVID-19 pandemic [8]. There is a paucity of review studies focusing on university health students' challenges and coping strategies during the COVID-19 pandemic. This integrative review of published evidence will contribute to a deeper understanding of these students' challenges and coping strategies during the pandemic.

The aim of this integrative review is to explore the COVID-19-related challenges among university health students, explore the strategies that students developed or adapted to cope with the pandemic-associated challenges and explore the support and benefits gained from the universities to their students during the pandemic period.

## 2 Method

This integrative literature review was conducted using a five-stage approach: problem identification, literature search, data evaluation, data analysis (data reduction/extraction, data display, data comparison, and conclusion drawing and verification), and presentation [9].

### 2.1 Literature Search

An extensive search of literature published from January 2020 to October 2021 was conducted using electronic databases, including MEDLINE, CINAHL, Scopus, EMBASE, EBSCO, and Cochrane library. Google Scholar was also searched for possible additional articles. The keywords used included: “university health student” \*, “health student\*”, COVID-19\*, “Coronavirus pandemic\*”, adapt\*, cope\*, adjust\*, challenge\*, barrier\*, burden\*, experience\*, perspective\*. The search used all the keywords across all databases.

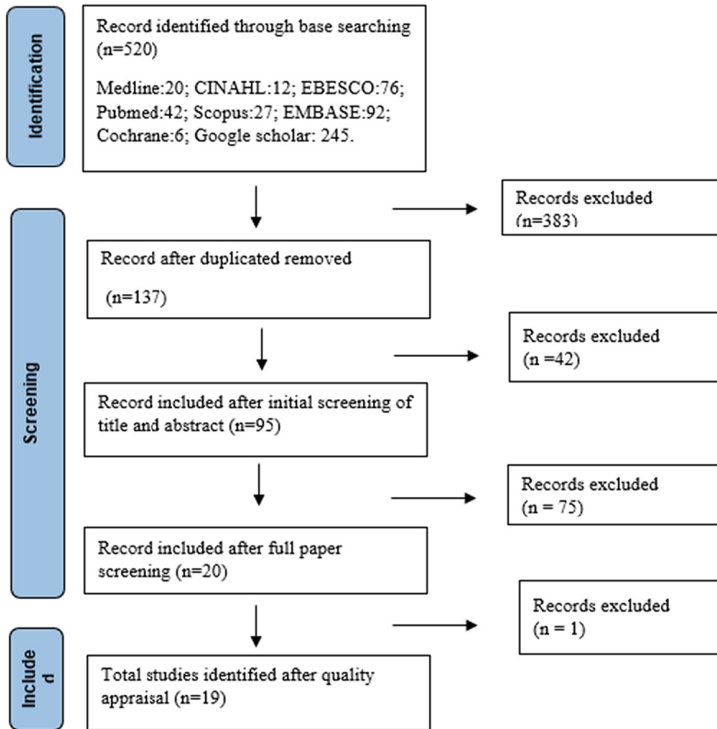
### 2.2 Inclusion and Exclusion Criteria

This review included studies conducted in any university. It focused on university students studying in a health-related course at the undergraduate, graduate, or postgraduate level (both local and international health students). This review also included studies that focused on COVID-19-related challenges among university health students and their coping strategies during the pandemic. The review included all qualitative, quantitative, and mixed-method studies. Unpublished studies, textbooks, reports, expert opinion papers, narratives, commentaries, conference preceding, and grey literature were excluded. All literature published in a language other than English and the literature studied the experience of vocational education students were excluded.

The initial search identified 520 titles. All retrieved studies were imported into Endnote 20 to assist with removing duplicates. After removing the duplicates, 137 studies remained. The title, abstract and full text was assessed based on the inclusion and exclusion criteria. 117 articles were removed, with 20 remaining for critical appraisal (Fig. 1).

### 2.3 Data Quality Evaluation

The Joanna Briggs Institute, Critical Appraisal tools, were used to assess the methodological quality of the studies (JBI-QARI), including. JBI Critical Appraisal Checklist for Qualitative Research and JBI Critical Appraisal Checklist for Analytical Cross-Sectional Studies. The mixed Method Appraisal Tool (MMAT) was used to appraise the quality



**Fig. 1.** Flowchart; screening process for reviewing university health students' challenges and coping strategies during COVID-19 pandemic period.

of the mixed-method study [10]. After the quality appraisal, 19 studies were included in this review: eleven qualitative studies, seven quantitative studies, and one mixed method study.

## 2.4 Data Analysis

Data analysis started with extracting data from the included studies into a table to synthesize results across the studies [9]. Data were extracted independently by the researcher into a summary table to capture the following information: author, year published, country of origin, study aim, design, sampling, data collection method, and the key findings for each study. See (Table 1).

The next step is the data comparison, to examine the extracted data in order to identify themes. Similar themes were grouped, and colour-coded was used to differentiate the themes. Study themes and subthemes were identified by reviewing the extracted data. By comparing and contrasting the themes, the main themes of 1) student challenges, 2) coping strategies, and 3) university support were formed. The researcher referred to the primary source as needed to verify context and help clarify the subthemes. A final list was generated and the final placement of each subtheme into a theme was determined through

**Table 1.** Extracted data from reviewed studies

| First Author/ Year/Country                 | Aim  | Design                                    | Sample   | Data collection method   | Key findings  |
|--|--|---|--|--|---|
| Abdulghani, et al., (2020)<br>Saudi Arabia | To study the effects of the covid 19 on student learning and the association of stress with coping, educational, and psychological variables | Quantitative study cross-sectional design | 1st-5 <sup>th</sup> year medical students (n = 243)<br>Mean age of 20<br>667% = female<br>94% = single | Psychological Distress instrument Kessler-10<br>Researcher-developed questionnaire | The stress level was reported as no stress 44.9%, mild stress 30.9% moderate stress 11.5% and severe stress 12.8%. 40% in females, and 3 <sup>rd</sup> year students 48.8%, & age group of 18–21 year 28%, those who found online learning a burden, found regular class lectures easy to understand, believed in anxiety before exams, & found no pleasure in the study during the covid.<br>Coping strategies used in mild stress were regular exercise, watching online movies, playing online games, online fun with family and friends, religious activities, and learning to live in the current COVID situation and accept it. In severe stress, they indulged in religious activities, watched online movies, played online games & had online fun with family and friends. |

(continued)

**Table 1.** (continued)

| First Author/ Year/Country    | Aim  | Design                                       | Sample  | Data collection method   | Key findings  |
|-------------------------------|--|--|---|--|---|
| Al-Qerem (2021) Jordan        | To assess anxiety and depression among pharmacy students before and during the COVID-19 pandemic                                       | A quantitative study, designed not mentioned | Pharmacy students (n = 1085)<br>Mean age of 20.55<br>72% = female<br>61% = Jordanian<br>70% = resided in Jordan   | The BDI-II & the STAI questionnaires   | Depression & anxiety were higher during covid than before covid.<br>Anxiety was higher among those who did not live with family, their family resided in Jordan & those in the first three years of the study.  |
| August & Dapkevicz (2021) USA | Exploring perceived benefits in Covid-19 through meaning-focused coping  | Qualitative study                            | University students (n = 63) psychology major 1-4 <sup>th</sup> year of study   | Analysis of students' written responses to an unstructured question about covid-19 in an assignment. | Negative emotional reactions include 1. Fear, anxiety, and stress 2. Dislike for online learning 3. Feeling bored   |
| Bdair (2021) Saudi Arabia     | To understand the lived experiences of nursing students and faculty members regarding online distance learning during the COVID19 era. | Qualitative study.                           | Purposeful sample (n = 20)<br>10 = bachelor students,<br>10 = nursing faculty member.<br>5 = male students.<br>5 = female students<br>1-4 years of study. | Semi-structured interview<br>Face to face and telephone.   | Three main themes in perceived advantages<br>1. flexible learning environment, 2. Academic achievement 3. Students-centered learning.<br>Four themes in perceived challenges<br>1. Inadequacy 2. Academic integrity 3. Learning environment 4. Family burden. |

(continued)

Table 1. (continued)

| First Author/ Year/Country      | Aim   | Design            | Sample  | Data collection method  | Key findings  |
|---------------------------------|---|-------------------|---|---|---|
| Farsi et al. (2021)<br>Iran.    | To explain the impact of the COVID-19 pandemic on nursing education from administrators, educators, and students' perspectives        | Qualitative study | Purposive sampling. Nursing students and educators. (n = 13)<br>3 = Ph.D. educator<br>3 = Master's degree educator<br>4 = Master's degree students, 3 = Bachelor's degree students.<br>Mean age = 36.07years                                      | In-depth semi-structured interviews (face to face).<br>Open-ended questions               | Main themes are 1. Safe management in an ambiguous situation. a) Provision of health safety grounds b) Requirements for successful confrontation. c)Outcome. 2. Perceived situation 3. Adaptive coping 4. Educational facilitators and challenges 5. Continuing education in an uncertain context. a) Unstable clinical education. b) Unstable theoretical education  |
| Fawaz et al., (2021)<br>Lebanon | To examine the current situation, emotional reactions of university students and their coping mechanisms during the COVID-19 pandemic | Qualitative study | Purposive sampling, (n = 20) undergraduate senior students.<br>5 = health science students<br>3 = business students<br>3 = law students<br>3 = art students<br>3 = engineering students<br>55% = females<br>45% = males<br>All domestic students. | Semi-structured interviews on two occasions. During the quarantine and three months later | The findings emerged five themes during quarantine<br>1. Concerns regarding learning and evaluation methods. 2. Overwhelming load 3. Dealing with technical difficulties 4. Confinement 5. Coping with problems.<br>Negative coping mechanisms: smoking and eating a lot.<br>Emerg themes after quarantine:<br>1. Relief of academic stress. 2. Fear of becoming infected and jeopardizing family health 3. The stigma of being infected. |

(continued)

**Table 1.** (continued)

| First Author/ Year/Country  | Aim  | Design            | Sample  | Data collection method                         | Key findings  |
|-----------------------------|--|-------------------|---|--|---|
| Godbold et al. (2021)<br>UK | To record and learn from the experiences of students working on clinical placement in a pandemic | Qualitative study | Purposeful sampling, (n = 16) nursing students in the final stage of pre-registration<br>15 = females | Semi-structural interview through Zoom meeting | Five themes were identified: 1. Rationale for undertaking the extended placement: All students elected to undertake an extended placement. 2. Role tensions 3. Caring for patients and their families is limited to the essential tasks and activities because of COVID19. Using PPE is a barrier to communicate 4. The impact on teaching and learning: Some students preferred face-to-face engagement and struggled with the virtual approach 5. Personal health and wellbeing: Students experienced physical effects from wearing PPE. The main impact was anxiety due to the COVID-19 situation. |

(continued)



Table 1. (continued)

| First Author/ Year/Country         | Aim   | Design                              | Sample  | Data collection method   | Key findings   |
|------------------------------------|---|-------------------------------------|---|--|--|
| Guldager et al., (2021)<br>Denmark | To examine the role of changes in teaching methods on academic stress among university students during the first lockdown in Denmark. | Quantitative cross-sectional study. | Purposive sampling, (n = 1,541) health, and medical students.<br>80% = female<br>mean age = 26.23 years<br>44.32% = bachelor<br>45.97% = master<br>9.15% = PhD. | An online survey distributed by email to all health and medical students | Academic stress, work capacity, and teaching satisfaction: 39% of health students reported academic stress caused by changes in the teaching methods, 31% reported increased workload, and 30% worried about not being able to complete the academic year. 49% evaluated education quality as poor. 54% knew little about course expectations, 60% were satisfied with the university's way to introduce protective measures after the outbreak. 53% had sufficient information about the COVID19 changes at university. 92% had sufficient financial resources. Academic stress is higher for female's students and those worried about being infected with COVID-19. |

(continued)

**Table 1. (continued)**

| First Author/ Year/Country            | Aim  | Design   | Sample  | Data collection method   | Key findings   |
|---------------------------------------|--|--|---|--|--|
| Hamadi et al., (2021)<br>Saudi Arabia | To examine the relationship between nursing students' stress levels and coping strategies before and during the pandemic.                                    | Quantitative design. Repeated-measures study design. | Purposeful sample. (n = 131) undergraduate nursing students, 1-4 <sup>th</sup> years of study. Before the COVID19 survey: (n = 61) nursing students, 8 = male, 53 = female. During the COVID19 survey: (n = 70) students 24 = male, 46 = female | The Perceived Stress Scale (PSS). The Coping Behaviour Inventory (CBI) survey. Fill up the questionnaires through online or in-person immediately. | The largest change was found in the stress category "lack of professional knowledge and skills". The smallest change was in the stress category "the environment". Coping strategies score was lower before COVID-19 than during COVID-19. The largest change in the coping strategy category is "transference". The smallest change in the coping strategy category is "stay optimistic".             |
| Kelly et al. (2021)<br>US             | To understand the effects of the COVID-19 pandemic on U.S. third-year medical students' experiences of education, skill development, and career expectations | Qualitative study                                    | Purposeful sampling (n = 59)<br>3 <sup>rd</sup> -year medical students<br>30 = males<br>64.3% white<br>24.2% Asian  | Analysis of student's written responses to an unstructured question about covid-19 in an essay(online)   | Six main themes were identified: 1. Infection fears<br>2. Negative feelings of impact on education/exams<br>3. Loss of skill development: less opportunity to practice physical exam skills 4. Need for adaptability<br>5. Perspective change and finding meaning included<br>strengthening the desire to be a physician, and better focus on every patient encounter 6. Public education and advocacy |

(continued)

**Table 1.** (continued)

| First Author/ Year/Country            | Aim   | Design   | Sample   | Data collection method   | Key findings  |
|---------------------------------------|---|--|--|--|---|
| Kerbage et al., (2021)<br>Australia   | To investigate undergraduate nursing students resilience during the COVID-19 pandemic and to explore key challenges experienced and supports utilized by the nursing student during the pandemic. | Mixed method. cross-sectional descriptive design | Convenience Sampling, (n = 121) bachelor nursing students<br>1-3 years of study<br>Median age:22 years<br>106 = Female<br>15 = Male<br>99 = domestic<br>22 = international<br>74.4% = Employed | The demographic survey includes qualitative questions. The Connor Davidson Resilience Scale. | Six major themes were identified in terms of the challenges faced and the coping strategies:<br>1. Mental health problems 2. Fear of the virus.<br>3. Feelings of isolation 4. Developing daily routines<br>5. Staying connected 6. Self-help techniques.   |
| Khalil et al., (2020)<br>Saudi-Arabia | To Explore undergraduate medical students perceptions regarding the effectiveness of synchronized online learning   | Qualitative design                               | Purposeful sampling (n = 60) medical students, 24 = male<br>36 = females<br>1-5 <sup>th</sup> year of study  | Virtual focus group discussions  | Four core themes were identified:1. Educational impact:<br>a) Content understanding: two-thirds of students agreed that online learning works better for some disciplines. b) Content perception challenges: encompass variations in demand of content reception and learning by different types of learners 2. Time management: All agreed that online sessions saved time and improved performance.<br>3. Challenges encountered: a) Methodological challenges. b) technical challenges. c) Behavioral challenges<br>4. Preferences for the future: Most students preferred online learning while clinical students expressed interest in the continuation of campus-bound classes and live clinical participation. |

(continued)

Table 1. (continued)

| First Author/ Year/Country | Aim   | Design  | Sample   | Data collection method                   | Key findings   |
|----------------------------|---|---|--|--|--|
| Li et al., (2021)<br>China | Explore the quality of the online education in China for international medical and nursing students from low- and middle-income countries and the factors that influenced their satisfaction with online education during the COVID19 pandemic. | Descriptive quantitative design/<br>Cross-sectional | Purposeful sampling, (n = 230) international students, 90% = medical 10% = nursing. 64.3% = female, 35.7% = male, 56.5% = Asian 43.5% = African. Inside China = 77 Outside China = 153. 1-5 <sup>th</sup> year of study. | Self-administered questionnaire (online) | 36.5% of the students were positive about online learning and 72.5% negative. 80.5% of students inside & 54.9% outside China were dissatisfied. Five barriers to online education included: the severity of the COVID-19 situation, absence of experimental/ practical classes, uncertainty on the university-opening date and teaching arrangements. Economic issues related to COVID-19, & lockdown due to the COVID-19. Five factors facilitating success in online learning:<br>1. Well-accomplished assignments<br>2. Adequate frequency to access the internet for online learning<br>3. Adequate support and help from the university<br>4. Adequate self-discipline<br>5. Adequate use of the course resources.<br>Five obstacles for students outside China: 1. Severity of the COVID-19 situation 2. Uncertainty of university-opening date and teaching arrangements 3. Sense of distance 4. Lockdown 5. Severity of economic issues related to COVID-19. |

(continued)

Table 1. (continued)

| First Author/ Year/Country        | Aim   | Design              | Sample   | Data collection method  | Key findings  |
|-----------------------------------|---|---------------------|--|---|---|
| Lovrić et al., (2020)<br>Croatia  | To explore how students perceive the COVID-19 crisis and what their personal experiences were while studying during the global pandemic | Qualitative study   | Purposeful sampling, (n = 33)<br>29 = females<br>4 = male,<br>mean age 21 years.   | Open-ended written questions.<br>(Via email)  | Mild fear of becoming infected in the classroom. Severe fear of becoming infected in the clinical setting.<br>Significant problems with online learning, such as lack of motivation, impaired concentration, and impaired memory.                               |
| Luberto et al., (2020)<br>US      | To explore the practical application of mindfulness practice for student well-being during a COVID-19 crisis                            | Qualitative design. | Purposeful sample,<br>(n = 8) nursing students and speech students.<br>100% = female<br>Average age 38.13 years.   | Themes are extracted from the discussion board and use illustrative quotes from students.                 | All students responded that mindfulness practices helped them to cope by using short breathing practices, yoga, and meditation.<br>Mindfulness practice reduces stress, keeps students calm, and more focused, and provides them a great sense of appreciation. |
| Mortazavi, et al., (2021)<br>Iran | To investigate the challenges of virtual learning from the students' perspectives.  | Qualitative study   | Purposeful sampling,<br>(n = 52) student,<br>22 = nursing students,<br>12 = midwives,<br>6 = hygiene, 12 = paramedical students<br>20.8 = mean age<br>1–8 semesters. | Semi-structured (virtual interview)<br>Through WhatsApp.<br>Students responded by texts or voice records. | Two main themes: 1. Dissatisfaction with the virtual teaching 2. Solutions to the modification of virtual teaching: Improving the produced contents, feedback possibility and improvement of the communication channel  |

(continued)

**Table 1.** *(continued)*

| First Author/ Year/Country   | Aim  | Design            | Sample   | Data collection method                      | Key findings  |
|------------------------------|--|-------------------|--|---|---|
| Roca et al., (2021)<br>Spain | To explore the experiences and emotional responses of final-year nursing students who volunteered to carry out healthcare relief tasks during the peak of the COVID-19 pandemic, and to identify the coping strategies they adopted to deal with this situation. | Qualitative study | Purposive sampling, (n = 22) final-year undergraduate nursing students who worked as auxiliary health staff in nursing homes, hospitals, or specialized units in contact with COVID19 patients.<br>3 = males,<br>19 = females.<br>Age = 20-30 years. | Semi-structured interviews (skype software) | Perceived risk of contagion and transmission of the disease. Fear and stress of being infected.<br>Homesickness due to lack of contact with family/environment<br>Personal satisfaction derived from clinical practice. Positive experiential assessment. Suffering compensated by feeling useful.<br>Learning opportunity and Sense of acknowledgment from gratitude expressed by the patients.<br>Three themes emerged in coping strategies 1. Strategies in the work context. 2. Strategies in the daily life context 3. Strategies in the personal context. |

*(continued)*

Table 1. (continued)

| First Author/ Year/Country     | Aim  | Design  | Sample   | Data collection method  | Key findings  |
|--------------------------------|--|---|--|---|---|
| Savitsky et al., (2021) Israel | To assess the change in the level of anxiety and ways of coping at the end of the lockdown that took place in May in comparison to the period of the lockdown. among nursing students.                                       | Descriptive quantitative study.                 | Convenience sample<br>n = 215 the first survey.<br>n = 192 for the second survey.<br>1-4 <sup>th</sup> year of study.<br>Mean age: 25.1 years.<br>First survey<br>188 = females<br>26 = males<br>Second survey<br>171 = females<br>18 = males. | Used the Generalized Anxiety Disorder 7-Item Scale (GAD-7) Coping Behaviour Questionnaire (COPE)  | At the beginning of the lockdown, the mean anxiety score was high. In the first survey, females were more anxious. In the second survey, no difference in anxiety between genders.<br>Five coping behaviors following the first survey:<br>1. Resilience 2. Seeking information 3. Consultation 4. Mental disengagement,<br>5. Spiritual support and humor.<br>Three coping behaviors following the second survey 1. Resilience 2. Mental disengagement 3. Seeking information 4. Consultation. |
| Sheroun et al., (2020) India   | To assess the perceived stress and coping strategies of the BSc Nursing students of all batches regarding COVID 19 lockdown, and to determine the association between stress and coping with selected demographic variables. | Quantitative cross-sectional descriptive study. | Purposeful sampling, (n = 427) 1-4 <sup>th</sup> year study nursing students age = 21-25 years 11 = males, 416 = female.   | A self-administered online questionnaire consisting of 3 sections<br>1. Sociodemographic data<br>2. Modified Perceived Stress Scale. 3. Modified Brief Coping Strategies Scale. | 82.67% of students experienced moderate stress & 13.35% high stress. 76.58% of students had moderate coping strategies & 18.5% had high coping strategy scores.<br>The students staying with relatives had higher coping strategies than those staying alone or with family.  |

**Table 2.** Generated review themes and subthemes

| <i>Themes</i>  | <i>Subthemes</i>   |
|--|--|
| COVID-19-related challenges among university health students | a) Psychological impact<br>b) Educational impact   |
| Coping strategies  | a) Developing daily routine and distraction strategies<br>b) Social support<br>c) Negative coping strategies |
| University support   | a) Implementing COVID-19 measures, Providing updates on COVID-19 and educational advisor support.            |

the discussion between the two researchers (Table 2). Then, the researcher synthesized the significant elements and conclusions for each theme into an integrated summation.

### 3 Findings

Of the reviewed 19 studies, four studies were conducted in Saudi Arabia (SA), three in the United States (US), and two in Iran, and the remaining nine studies were conducted in nine different countries. The studies included overall 3,967 participants. All university students included in this review were studying in a health-related course at the undergraduate, graduate, or postgraduate level. However, one study conducted in Lebanon only had 25% of its participants studying in a health-related fi [11]. Seventeen reviewed studies included only undergraduate degrees in health-related courses such as nursing, medicine, midwifery, paramedic, psychology, and pharmacy, while two studies included undergraduate, graduate, and postgraduate students.

#### 3.1 Psychological Impact

Three qualitative study conducted in Iran, Croatia and Spain, the result revealed the majority of the nursing students expressed feelings of stress and fear of being contaminated with the virus and transferring it to their family members due to their close exposure to patients diagnosed with COVID-19 [13–15]. Similarly, Kerbage and colleagues (2021) reported that nursing students expressed concerns about being infected and their feelings of fear were rooted in the fact that the students had to attend face-to-face laboratory classes to accomplish the requirements to enter clinical placements [15]. Similarly in Lebanon, the students were concerned about the contamination after the quarantine period and returning to normal social activities [11]. Another qualitative study that aimed to understand the effects of the COVID-19 pandemic on third-year medical students in the US found that some students experienced fear of becoming infected with the COVID-19, which consequently increased their stress and anxiety, and impaired their concentration and learning. Many students were very concerned about potentially spreading and transmitting the virus to their families and friends [7]. The



majority of pharmacy students in Jordan experienced significant higher depression and anxiety during COVID-19 compared to before the pandemic [16].

### 3.2 Educational Impact

Due to the COVID-19 restrictions, the learning process shifted from face-to-face to online learning. This shifting affected both aspects of the learning process for university health students: theoretical and practical aspects. Students in the US demonstrated negative reactions to the pandemic because they were unsatisfied with the swift shift to online learning. The students felt frustration in trying to concentrate on their studies amidst home–life distractions [17]. Additionally, students reported that online learning was a burden, and they experienced a high level of stress about online learning and the students expressed that the traditional face-to-face classroom education is clearer and easier to comprehend [18].

Some Saudi Arabian medical students encountered challenges and barriers to the acquisition of knowledge through online classes, including methodological, technical, and behavioural challenges. Students expressed that there were quality assurance issues in the content delivery of lectures and implementation issues of online learning. Technical challenges included difficulties experienced due to slow internet connectivity and the poor utility of online tools and disconnection. In addition, students experienced behavioural challenges, which included negative perspectives toward changes and the adoption of new modes of learning. Some students reported that they missed the active interactive sessions with educators and they also expressed that the home was not a suitable environment for attending online lectures, and the online lectures kept them busy the whole day, taking away their social life [19]. Lack of motivation, impaired concentration, and impaired memory were the significant problems with studying from home during the pandemic experienced by students in Croatia [13].

Sharing similar findings, two qualitative studies, one conducted in Lebanon and another in Iran, revealed that students were not satisfied with virtual and online learning [11, 20]. The main factors of dissatisfaction with virtual learning among the Iranian students were firstly the poor quality of the uploaded educational materials. Secondly, there was a lack of student–student and student–teacher interactions due to the offline virtual teaching. Thirdly, students experienced access problems related to website issues, internet costs, and download issues. Fourthly, the students were unprepared to shift to online learning due to as lack of a personal computer or laptop at home [20]. Likewise, in Lebanon, Students indicated that dealing with technological difficulties was a real challenge and a major stressor and source of frustration with online learning during the COVID-19 quarantine. Students felt overwhelmed with course requirements and perceived their study workload to be heavier than before transitioning to online learning [11] and many students concerns about their ability to complete the academic year due to COVID-19 pandemic restrictions [21]. Some nursing students stated that online learning was not appropriate for teaching practical skills and competencies. They raised concerns about the academic integrity of online assessments and found purchasing electronic devices and internet services as a financial burden on families [22].

Nevertheless, two qualitative studies and one quantitative study highlighted some benefits of online learning perceived by students. In a study conducted in Saudi Arabia

(2020), all students agreed that online learning saved their time and helped them improve their learning because they could listen to recorded lectures as many times as they needed to better understand the content. Furthermore, they were satisfied with online courses due to the comfort of online education and felt safe and less anxious when they stayed at home with their family. About two-thirds of students agreed that online learning was more suitable for some disciplines than others, however, online learning was not seen as suitable for clinical subjects [19]. Some students found the flexibility of online learning the main advantage, providing them with an opportunity to study at their convenient time. Also, students mentioned that online learning gave them a chance to develop self-directed learning skills, which they believed improved their academic achievement by facilitating self-paced learning [22].

Regarding the practical aspect of the learning process, Farsi and colleagues (2021) reported that research students experienced delays in the fulfillment of their research projects and completing research theses; they found it is difficult to access patients for data collection and experienced increased workload due to working extra hours. Clinical training is an integral part of nursing education. Undergraduate nursing students encountered many challenges in their learning during clinical placements, where patients with COVID-19 remained undiagnosed. Lack of adequate protective personal equipment for students and lack of counselling services for distressed students were some of the challenges. Hospitals reduced their capacity of hospitals to accommodate students due to decrease in admission of non-COVID-19 patients. Students also expressed that they were disadvantaged in their clinical education due to a reduction in the number and diversity of patients in the hospitals. They also perceived lack of consistency in clinical education programs [12]. In the US, a study was conducted to understand the effects of the COVID-19 pandemic on third-year medical students. Most students highlighted the scarcity of face-to-face training as detrimental to their skill development, leaving some apprehensive about their future careers as physicians. Many medical students expressed dissatisfaction with online education as a substitute for clinical experience. The reduced clinical exposures and limited rotation opportunities impaired the development of clinical skills in the medical students and limited their exposure to various specialties, creating fear of long-term consequences for career advancement as physicians, even if the disruptions were short [7] and the quality of clinical training was reduced due to Covid-19 restrictions, limiting patient-provider interactions to fulfilling essential tasks and activities [23]. In the same vein, Li and colleagues who conducted their study in China and included both local and international health students found that most students, who were in their clinical years, had negative feelings about changes in their education and were dissatisfied with online learning [3].

### 3.3 Coping Strategies

The reviewed studies indicated that there are different strategies were used to cope with the pandemic situation, these strategies are presented in the following subthemes.

### **3.4 Developing a Daily Routine and Distraction Strategies**

Some nursing students highlighted the importance of developing a daily routine for study, work, and personal well-being as a coping strategy which helped them optimize their focus on study and stay positive. Having a daily routine also helped students in managing their stress during the pandemic lockdown [15]. Similarly, Spanish students emphasized the significance of developing daily routines as a means of stress management. This included following a healthy diet, being physically active, and planning rest periods [14] and using distraction strategies to relieve their stress such as watching movies and exercise [11] playing online games, and having online fun with families and some students sought relief by indulging in religious activities [18]. Other students tended to use self-help techniques such as yoga, mindfulness, meditation, and listening to music as relaxation techniques to maintain focus and calmness [15]. Mindfulness practice helped most students to cope better during the pandemic and keep them calm and more focused [24].

### **3.5 Social Support**

Support that student received from their family, colleagues, and university advisors helped them manage their distress and cope with the pandemic circumstances. The Lebanese university students found that sharing their concerns with university advisors and family and having their support helped reduce their stress during the lockdowns [11].

In Australia, students tried to stay connected with their families, friends, and teachers via online platforms, through which they socialized and shared their concerns [15]. In the same way, students in Spain talked about their work context, and engaging health and wellbeing activities which helped them to cope with the difficult the COVID-19 situation. Students were also able to use counselling services such as psychological helpline and they were engaged in recreational activities, such as reading, painting, listening to music, and watching television which helped them calm down and manage their stress. Praying helped some students to meditate and reduce their stress and anxiety [14]. While, for Indian students stayed with their families helped them cope better with the situation [25].

### **3.6 Negative Coping Strategies**

Some students, however, used negative coping strategies to reduce their stress and anxiety during the pandemic period. A study in some Lebanese students reported were engaged in risky behaviors to relieve their stress, such as smoking cigarettes and shisha, eating more and unhealthily, and limiting their physical activities [11]. In Israel also the result revealed that students used mental disengagement strategies such as drinking alcohol, using drugs, and eating more as the means to feel better and stay calm [26].

### **3.7 Support from Universities**

Three studies explored support services provided to students by universities during the COVID-19 pandemic [12, 13, 21]. Students expressed that the university had a crucial

role in reducing the spread of the disease by successfully implementing the COVID-19 preventive measures, such as providing hand sanitizers and protective equipment. They supported the university's decision on suspending regular teaching activities as a preventive measure. Additionally, students praised the professionalism, courage, and humanity of their teachers during the pandemic [13, 21].

Iranian nursing students, administrators, and educators believed that many factors facilitated student learning during the pandemic. These factors included opportunities to interact with other students and the head of school, encouragement of educators during in-person classrooms, educators' sense of responsibility towards students' health and their availability as well as academic advisors' support [12].

## 4 Discussion

This integrative review identified the COVID-19-related challenges experienced by university health students, the coping strategies that they implemented to deal with the pandemic situation, and support that they received from the university. The Findings of this literature review are summarized into three major themes: the COVID-19-related challenges among university health students, Coping strategies and University support.

The psychological impact of the COVID-19 including the feeling of fear, anxiety, and stress was commonly reported in the reviewed studies. Students were concerned about contracting the virus and transmitting it to their families. Nursing and medical students were more likely to experience fear and stress due to their higher risk of contracting the virus from hospitals, clinical placement, and labs. A similar psychological impact was explicated in a study conducted across seven countries (the US, the Netherlands, Ireland, South Korea, China, Malaysia, and Taiwan) to report the college students' concerns during the COVID-19 pandemic period. Similar to university students, college students experienced significant fears and anxiety of being infected and contagious. The negative emotions also stemmed from not seeing their families and friends during the lockdown periods [27]. Apparently, there is a need to provide support to the students in term of managing their mental health [28].

In relation to the educational impact of the pandemic, most students were not satisfied with the shifting of learning method from face-to-face to online. Students found it difficult to concentrate on their study amidst home life distractions. They missed the body language, eye contact, and active interactive sessions with their educators. Most students agreed that online learning was not appropriate for teaching clinical subjects and practical skills. This finding is aligned with the study conducted in India to analyse the impact of lockdown due to the COVID-19 pandemic on undergraduate ophthalmology teaching and learning. Most students disagreed to continue the online learning method after the pandemic and they preferred to return to their college for both theory and practical classes [29]. Some studies suggested that small group discussion and gaming activities may increase students interaction and engagement [30]. Peer interactions will improve learning process and enhance student experience [30]. Also, using online discussion to encourage students to engage in the content with conversation and reflection [31].

The results of the review revealed that students in resource limited countries, such as Iran experienced significant infrastructure issues, inadequate system design, problems in

internet access, slow internet speed, difficulties with downloading course materials, and unaffordability of the internet service cost [32]. Internet connectivity infrastructure is the government responsibility. This internet and connectivity issues must be prioritized in the future economic, digitalization and education policies [33].

In addition, most studies revealed that study requirements were significantly heavier with online learning and students felt more overwhelmed with their study load than before. This study load may occur because of the lack of inter-departmental communication. Recent research shown that establishing an environment where all department heads can communicate is one of the most important factors for the success of online learning. So, all departments co-ordinate with each other to organize the lectures timing and requirements [33]. On the other hand, some students perceived benefits from switching to the online learning mode. They found online learning more flexible, saving their time, helping them develop self-directed learning skills, and feeling safer and less anxious when they stayed at home with their families. Thus, students' feedback is important for improving the ongoing online teaching. The feedback can be collected via online questionnaire about different topics such as timing of lectures, tools used for teaching, challenges faced and how to overcome these challenges [33].

The COVID-19 pandemic brought a series of interruptions to the educational experience of research students, leading to a slowdown in the process of completing their research degree. Regarding the clinical training for nursing and medicine students, many studies revealed the quality of clinical training dropped during the pandemic, due to the reduction in the number and diversity of patients in hospitals, the reduction in the capacity of hospitals to accommodate students and students' limited exposure to various specialties affecting their future career path. Consequently, the quality of clinical training declined, adversely affecting the development of students' clinical skills and practice. Further, students felt a great deal of fear and anxiety due to their higher risk of being exposed to the coronavirus and lack of adequate personal protective equipment in the hospitals. All these aspects need to be addressed and possibly compensated after the ease of the restrictions and return to the universities, for instance students may be posted on intensive clinical rotation schedule to acquire respective skills related to clinical placement [33].

It is well documented in the literature that students developed and used a range of coping strategies which helped them cope with the pandemic situation. These included developing a daily routine, using distraction strategies, and gaining social support. As explained in the reviewed literature, many students expressed that they developed daily routines such as a following a healthy diet, exercising, and having rest time to overcome their stress. Some students used psychological interventions such as mindfulness practice, yoga, meditation, and listening to music as strategies to relax while others watched TV, played online games, and practiced religious activities. In addition, the literature review highlighted that connecting with their families and friends, via online platforms was very helpful in coping with the isolation and lockdowns. Social support from peers, friends and family is critical in overcoming stressful situations [34]. Yet, some students used negative coping strategies such as drinking alcohol, using drugs, smoking, and unhealthy eating to relieve their stress during the pandemic. This coping strategies is ineffective and associated with the increase level of anxiety [35].

Only few studies addressed that the support services that health students received from the university. Universities supported students with implementing the COVID-19 preventive measures to reduce the spread of the virus, for instance, moving face to face classes to online learning mode, implementing social distancing, making hand sanitizers available freely, and regularly updating students on the COVID-19 related changes. Students also appreciated the support, patience, flexibility, and positivity of their university teachers during the pandemic. Students may need academical, wellbeing and/or financial support. It is essential to consider what kind of support is needed for university students. So, the universities can trace and map the patterns of the suitable support across the students.

#### **4.1 Implications**

Health schools should take care of their students' psychological status and create a more flexible learning environment in crisis situation, like the COVID-19 pandemic. It is also suggested to integrate health students with the mental health curriculum to maintain their mental health and wellbeing. Engaging in mental health curriculum will support students to develop problem-solving skills and manage the life stressors. A Health awareness campaign could be initiated to help students develop effective coping strategies while avoiding indulging into unhealthy behaviors and negative coping strategies. Universities also could support their medical and nursing students by offering personal protective equipment in their placements.

Regarding the online learning challenge, the universities should emphasize the student-teacher interactions by training teachers on up-to-date online teaching methods and tools to meet student needs and satisfaction.

#### **4.2 Limitations**

This integrative review included only studies published in the English language, so the admitted studies did not equally cover all the geographical areas of the world, and this limits the generalizability of the findings. Another limitation is that there were not too many studies on this topic in the literature due to the publications on this topic only starting in January 2020.

#### **4.3 Conclusion**

This integrative review synthesized the literature on challenges and coping strategies among university health students during the COVID-19 pandemic period. Such knowledge is essential to support university health students and implement interventions that increase their coping and decrease their stress during unprecedented pandemic. This review will help educational institutes develop programs to better support students psychosocially, emotionally, and academically during unprecedented crises. A health awareness campaign could be initiated to tackle the coping strategies and health habits needed to overcome the existing challenges.

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