


Medical students' psychological and behavioral responses to the COVID-19 pandemic: A descriptive phenomenological study

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Abstract

On February 19, 2020, the Iranian government officially confirmed the first deaths due to COVID-19 and within a week, all universities were closed. The purpose of this study is to explore Iranian medical students' psychological and behavioral responses to the COVID-19 pandemic. This descriptive phenomenological study was conducted on 52 medical students. Data were collected using a purposive sampling method by means of synchronous virtual focus group discussions which were conducted using the WhatsApp messaging application. Data were analyzed using the MAXQDA software version 2020. Data analysis resulted in the emergence of three categories consisting of psychological responses to the pandemic and the behavioral and psychological responses to the quarantine. Most of the extracted themes are related to students' psychological reactions to the pandemic. During the quarantine period, students suffered from uncertainty, experienced boredom, worried about delay in their graduation, and were concerned about losing employment opportunities. Medical students must be prepared for crisis situations like the present pandemic. We recommend that online courses and training programs be developed with the aim of offsetting the negative effects of university closure on students' education and skill training.

Keywords

qualitative research, students, psychological, stress, behavior, COVID-19

Discussion guide

1. What was your experience in the first days after the official announcement of the disease epidemic in Iran? (Concerns, mindset, and problems)

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2. What was your experience of home quarantine?
3. To what extent did you follow COVID-19 news and how did news affect your life?

Introduction

The new coronavirus was named COVID-19 by the World Health Organization on February 11, 2020 (World Health Organization, 2020) and the COVID-19 epidemic was formally declared a pandemic by the WHO on March 11th, 2020 (World Health Organization, 2019). Iran officially reported its first two COVID-19 deaths on February 19, 2020 (Raofi et al., 2020). Within a week, all universities were closed and in-person learning was suspended and replaced by online courses. This has had important implications for the quality of instruction in medical schools because many health-related subjects require in person training and practice. The spread of infection gave rise to an unprecedented and extraordinary situation in the country in the month February and led to the imposition of a mandatory quarantine in March 2020.

The outbreak of an infectious disease is not only a medical phenomenon involving a large number of people, but it also affects many aspects of human life. For example, epidemics usually lead to the interruption of daily life which is stressful and also prolonged quarantine which could cause a number significant psychosocial problems (Ansari & Ahmadi Yousefabad, 2020) including stress, anxiety, depression, insomnia, denial, anger, and fear (Torales et al., 2020). The results of a study in China showed that 53.8% of respondents thought that the psychological effects of the epidemic were in a moderate to severe range (Wang et al., 2020). During the time people spend in quarantine, they are deprived of face-to-face communication and normal social interaction and as a result, they experience higher stress levels (Xiang et al., 2020). Two studies conducted in Greece and China indicate that the effects of quarantine on the mental health of the community have been significant resulting in higher prevalence of suicidal ideation, anxiety, and depression (Kaparounaki et al., 2020; Zhou et al., 2020). Furthermore, the unpredictability of the course of the pandemic and the uncertainty about the severity of the risks has created a stressful situation (Bao et al., 2019). At the same time, the rapid increase in COVID-19 cases in many countries has given rise to an atmosphere of insecurity and anxiety about the future (Zhai & Du, 2020).

According to the findings of some studies, the rate of psychological disorders among students has increased in comparison with pre pandemic period. The results of a global study showed that before the onset of the pandemic, 20% of students experienced one or more psychological disorders (Zhai & Du, 2020). But the incidence of such disorders increased dramatically during the pandemic. The results of a meta-analysis on 27 studies showed that a much higher proportion of college students suffered from depression (39%) and anxiety (36%) during the COVID-19 pandemic (Li et al., 2021).

The current pandemic may have subsequent waves or may recur. This highlights the need for policies aiming at long-term prevention of the disease and the adoption of intervention programs to reduce the magnitude of the epidemic and its adverse effects (Yang et al., 2020). A common response for the control of the pandemic has been the closure of educational institutions (Sahu, 2020). This provided the opportunity to study medical students' lived experiences in the COVID-19 pandemic, both as a part of the wider population and as a specific group exhibiting higher levels of depression and anxiety than the general population as a result of severe psychological pressures in the environment where they train (Quek et al., 2019). Also, a major cause of concern for students was that the disruption of their education and training due to the pandemic would adversely affect their level of competence and their future career prospects (Mittal et al., 2021). Medical students must be trained and empowered to serve patients and therefore must be mentally and physically in a

satisfactory state to receive instruction and training. This would help them perceive themselves in future as competent professionals with a solid education. Studying their experiences and reactions to crisis situations like the current one could help in planning and implementing measures that strengthen their mental state and enhance their experience of medical training, something which will endure through their whole professional career.

Qualitative research is a suitable method for discovering individuals' actual and specific experiences (Corbin & Strauss, 2008). Phenomenology is essentially the study of lived experience or the world of life (Van Manen, 1990). The "world of life" is the world that is directly experienced without voluntary thinking and without resorting to classification or conceptualization, and usually includes things that are taken for granted or things that are common (Husserl, 1970). We employed the phenomenological method in the present qualitative study to understand students' psychological and behavioral responses to COVID-19 pandemic as direct and immediate lived experiences.

Materials

A descriptive phenomenological approach was used to understand the lived experiences of students in the COVID-19 pandemic. In this approach, the researcher investigates the living experiences of individuals to understand the meaning of phenomena from their perspective (Christensen et al., 2017).

Sampling technique and participants

In this study, data were collected using a purposive sampling method by means of synchronous virtual focus group discussion (SVFGs) in cyberspace with semi-structured questions. Focus group discussions (FGDs) have been used to obtain qualitative data to gain greater understanding of the phenomenon under the study (Bradbury-Jones et al., 2009). In the past two decades, virtual focus groups (VFGs) approach has gained in popularity as a method of qualitative research (Rezabek, 2000). In SVFGs, participants are asked to be online at a pre-determined time. The researchers ask questions and the participants can post their responses at once. Fox and colleagues found the SVFG approach to be effective for engaging young people in research (Fox et al., 2007). Woodyatt and colleagues compared VFGDs and in-person FGDs and found that the VFGDs resulted in larger word count but were shorter in time than the in-person FGDs (Woodyatt et al., 2016).

We used SVFGDs because it enabled us to follow COVID-19 preventive guidelines. The group discussion facilitator contacted representatives from different groups of students and asked them to invite interested students to participate in a discussion group on WhatsApp messaging application. The number of students in each session was between 3–4 and the length of each focus group was 90–120 minutes. Two facilitators, one of whom was an instructor in the field under discussion, attended each session. Students were invited from different semesters, disciplines, and genders. FGDs were conducted with nursing ($n = 22$), midwifery ($n = 12$), hygiene ($n = 6$), and paramedical ($n = 12$) students. Overall, 52 students participated in group discussions. Inclusion criteria were studying in Sabzevar University of Medical Sciences and willingness to participate in the study. The group discussion guide was prepared based on the topics related to field under study on reputable online sites and the researcher's experience of communications with students. We developed our FGD guide in advance and conducted one test discussion session to explore the clarity of the questions. The discussion guide was revised according to the results obtained from the first discussion. In the first discussion session, students talked about their worries and fears during the first days after the official announcement of the pandemic. This prompted us to add a specific question about students'

experiences during the first days of the epidemic to our FGDs guide. At the beginning of the FGDs, students were asked to describe their experiences in the early days of the announcement of the pandemic. FGDs were then followed by questions about experiences during the home quarantine and the impact of the COVID-19 news and media coverage.

All focus groups sessions were held during 1–15 May 2020. Sampling was performed continually until data saturation and to the point that no new code could be extracted. The sample size in this qualitative study was large enough to enable us to collect sufficient and diverse textual material to be able to perform the iterative categorization of the data. We chose a varied sample of students including both male and female students and students from different majors and semesters.

Data analysis

Colaizzi's seven-step content analysis method (Cope, 2014) was used to analyze the research data with the help of MAXQDA software version 2020. As the first step, the researchers tried to suspend their previous thoughts, feelings, or ideas (Bracketing) about phenomenon under study (Tufford & Newman, 2010) and read the transcripts of conversations repeatedly to gain an understanding of students' feelings and experiences. In the second step, important words and phrases in the transcripts were identified. In the third step, based on the significant words and phrases identified in the previous step, some concepts were extracted. An attempt was made to extract one concept from each phrase that expressed a basic constituent of the participant's thinking and its meaning. In the fourth step, the researchers carefully studied the resulting concepts and categorized them into classes based on their similarity. Thus, thematic categories of concepts were formed. In the fifth step, the resulting categories were combined to describe the phenomenon under study to form more general categories. In the sixth step, a comprehensive description of the phenomenon under study was presented. In the final stage, validation process was performed by asking students to express their viewpoints about the findings.

Credibility and reliability

To enhance the quality and validity of the study, both researchers spent a lot of time on the details of the discussions. After each researcher had studied and analyzed the discussions separately, they discussed the codes and themes. To examine the similarity of the extracted themes to those extracted by an outside observer, the codebook was presented to a person with a PhD in health in disaster and emergency who is an expert in qualitative research and phenomenology. In those instances where there was disagreement with her findings, we reviewed the data to find the reasons for the disagreement.

Ethical considerations

The Ethics Committee of Sabzevar University of Medical Sciences has approved this study (Number: IR. MEDSAB.REC.1399.049). All methods were performed in accordance with guidelines of the Sabzevar University which is in accordance with the Declaration of Helsinki. Students were informed that they had the option to change their name to a pseudonym. An informed consent form was sent to them via WhatsApp before group discussions started. Those who had sent their consent to participate received the link to the discussion group on WhatsApp. We also sent the students an audio–video file in which we explained the research objectives, gave them instructions

on how to respond to questions verbally or in writing, and stressed the necessity of deleting the conversations after the conclusion of the study.

Results

Fifty-two students participated in eight focused-group discussions. The mean age of the students is 20.85 ± 1.2 . 40 students are female. Twenty-three students were in their first to fourth semesters. Data analysis led to the emergence of three categories (Table 1).

Category 1: Psychological responses to the COVID-19 outbreak

In the first week after the official announcement of the COVID-19 epidemic in Iran, although being only a short period of time, students had to endure severe psychological stresses because in the first 2 days of that week, the universities were still open and the students were required to attend classes and training sessions in hospitals and so most of them had to stay in the dormitories. Due to their perception of exposure to high risk in hospitals and dormitories (6–8 person in a room), the students decided to talk with the heads of the faculties and ask for training sessions to be canceled. In the following days, when the city officials followed other cities and ordered the closure of the university, they went back to their home towns. Most of them told us that they had learned that the virus had reached Iran thorough social media but they had only begun to feel frightened when the news had been formally confirmed. Our analysis of the data led to the extraction seven themes. (For convenience, we used the following abbreviations for students gender, major, and semester: F: female,

Table 1. Categories and themes.

Category	Theme
Psychological responses to the COVID-19 outbreak	Anxiety and stress regarding the situation
	Fear of death
	Fear of being infected
	Concerns about the health of loved ones
	Concerns about being a carrier and transferring the virus to other family members
	Feeling of humiliation and disappointment
	Obsessive symptoms
Behavioral responses to the quarantine	Lifestyle changes
	Following the news
	Adherence to hygiene rules
	Planning the leisure time
Psychological responses to the quarantine	Concerns for the future
	Boredom/depression in quarantine
	Nostalgia for life before the epidemic
	Adapting to the new situation

M: male; H: hygiene, N: nursing, M: midwifery, P: paramedical; S: student; numbers 1–8 refer to semesters)

Stress and anxiety regarding the situation

Most students experienced severe stress after the official announcement of the pandemic. They had the perception that they were exposed to elevated risk of infection in hospitals, university buses and canteens, and in the dormitories.

FNS-8: “The atmosphere in the dormitory was very bad. All the students were scared and the level of anxiety was high because of the shared kitchens, bathrooms, and canteens.”

Some students said that they themselves did not experience stress at first but then they underwent severe stress when they witnessed other students’ anxiety and bewilderment in the dormitories and also in the transport terminal rushing back to their hometowns.

FMS-4: “I did not understand the difficulty of the condition at all until the university canceled the in-person classes, and when I was faced with a huge number of students wearing masks in the dormitory and then in the terminal, I suddenly became very stressed which lasted for several days.”

Another source of stress was the stress resulting from the possible presence of infected students in the dormitory. Students from Qom (where the first cases of Covid-19 were detected in Iran) were considered as suspect cases and their presence caused severe fear among students.

FMS-8: “On the day we were going back to our hometowns, we heard that one of the students who came from Qom had been taken ill and moved out of the dormitory. We wished that like Wuhan, Qom had been put under lockdown so that nobody could have got out of the city.”

Some students told us that a significant source of stress was the spread of rumors in the dormitory. Rumors about the number of infected students and other people being hospitalized were stressful for the students.

FMS-6: “When a situation like this arises, in places like dormitories, where a lot of people reside, rumors spread very quickly. We got the word from nursing students that three suspected individuals had been hospitalized and doctors were waiting for their COVID test results from the capital. This led to more fear and anxiety.”

Although students had asked for the closing of the university so that they could go back home, they were worried about being a carrier of the disease to their hometowns.

FPS-4: “The worst thing was that without testing the students and placing suspected ones under quarantine they allowed us to go back to our hometowns. I never forget that on the night before our departure, most students were crying and were concerned about being infected and carrying the virus to their families.”

One of the midwifery students was calm and confident and reacted without too much anxiety and panic to the situation. She believed that COVID-19 was not much different from other diseases. She said:

“I think anybody might contract mild or severe infections which are similar to COVID-19. So we should all take appropriate precautions.”

Fear of Death

Students’ greatest fear was fear of death due to infection by a deadly and insidious virus with rapid transmission. They described their fear of what was still an unknown and an incurable disease. Some felt the threat of death was real and close at hand.

FMS-8: “In early March, we feared that we would definitely get infected and die.”

MNS-7: “The biggest fear we had at that time was the fear of being epidemic and that the treatment will be too long and there is practically no cure.”

FHS-4: “I feared because the person who is infected does not present the symptoms for some time and has the ability to infect other people.”

FMS-6: “We were terrified of getting a disease that was not yet known.”

Fear of being infected

Fear of being infected showed itself as concerns about lack of personal protective equipment and not being able to observe social distancing in the dormitories and hospitals.

FNS-7: “We were worried about our health due to the lack of personal protective equipment including masks and gloves.”

FMS-8: “We were really worried in apprenticeship because we had to examine patients and our distance was short.”

MNS-6: “In the first days, we were not even provided with a simple mask. If we brought our own masks, the hospital authorities would not allow us to wear them to prevent fear and panic among the patients.”

The students were also worried about the lax attitude about hygiene among some of their colleagues. They also were concerned that their roommates would be carriers of the infection. Each room was shared by 6–8 students. In such small and crowded rooms, it was difficult to observe social distancing.

FMS-6: “We concerned that some students may not observe adequate hygiene. That only we observe protocols will not solve the problem.”

FMS-8: “We were worried that our friends would be carriers of the infection. It was difficult to observe hygiene in our small and crowded dormitory rooms.”

Concerns about the health of loved ones

Most students were worried about the health of their family members especially those with chronic diseases. Local students living in their parents’ homes were more concerned than those residing in dormitories.

FMS-8: “Personally, I have not still regained my calm. How can you be calm when you know that it maybe not you but your loved ones who are in danger?”

Concerns about being a carrier and transferring the virus to other family members

All the students stated that their main concern was inadvertently carrying the virus home to their families. Those who lived with their parents were afraid of getting the virus in the hospitals and transferring the disease to their elderly parents. Students who were going back to their hometowns after the closure of the universities were also concerned about carrying the infection to their families. They were happy because the school had been closed but they were also concerned at the same time because of the risks they might pose to their families.

FMS-8 “I was not so scared and worried about myself because I always try to observe the hygiene tips. I was more afraid of my family that if I became a carrier, my father would be more harmed because he had an underlying disease.”

Feeling of humiliation and disappointment

Some students expressed their disappointment with the fact that at the time of the official announcement of the epidemic in Iran, it became apparent that there was a lack of medical and protective supplies.

FN8: “I was not afraid of corona virus because there have been epidemics in the past and there will be more in future. I felt humiliated when we attended an internship session early on and basic protective equipment such as masks and gloves were not available. But we saw some hospital staff wearing N95 masks, so I guess there were some protective equipment actually available but the nurses did not give them to students.”

Obsessive symptoms

Most students said they were obsessed with hand hygiene, disinfecting surfaces, and disinfecting shop items.

FMS- 8: “Observing the hygiene protocols was very important for me in the dormitory. In the first days of the epidemic, I was obsessed with hand washing; thank God the university was closed and I went back home.”

Category 2. Behavioral responses to the quarantine

During the period between the closure of the university and the time of the discussions, the students were trying to adapt better to the conditions by changing life style, observing the hygiene rules, following the news, and planning the leisure time.

Life style changes

Some students stated that the pandemic had brought changes to their lives, not only of a short-term duration but also changes which would probably last into the long term.

FMS-8: "Our life style has changed and we are now experiencing a new style of living. I don't think we would go back to our previous way of life."

In terms of physical activity, there were two groups. Most students said they were less active now than before the epidemic but there were also some who still exercised but mostly at home.

FNS-6: "I am at home more, I'm less active, and I'm getting fat."

MNS-8: "I used to go out walking. Now I exercise more at home than before."

In terms of diet, most of them did not report significant changes except not eating out. Some stated they used vitamins and immune system enhancers.

MPS-6: "The diet did not change either, we just did not eat out at all and we will not eat out at all."

Most students indicated their sleep patterns had changed dramatically. However, like all students living in crowded dormitories they slept late and did not keep to regular sleep hours, their sleep patterns became even more irregular after the pandemic.

MNS-7: "Everything fell apart, especially sleep, which was no longer called night sleep because, after the call to prayer, we just slept."

There were some students who did not report any changes in their lives and there were even some who liked the changes in their lives.

MNS-4: "When there was no quarantine, we were happy and enjoyed ourselves."

FMS-8: "It was good that we were at home and spending time with the family. I had enough time for reading and preparing for the final exam."

FNS-8: "I cannot say that I did not like the free time after the school was closed. I used it to follow my interests in art."

Following the news

Some students stated that they followed the news from the national media and online sources. Most said that they did not trust the national media and got their news from social media platforms which they trusted. But some of them said that after a while they stopped following the news on these platforms, because they exaggerated the death toll and the infection rate and acted as a source of stress.

FNS-4: "There was so much stress and anxiety at the beginning of the epidemic that I stopped following social media and preferred not to hear anything about the epidemic until the number of deaths decreased."

Most students said that they did not trust the official statistics on the number of COVID-19 infections and deaths. They blamed the government for not informing the people about the presence of the disease in time. They believed that if like Wuhan, the government had locked down Qum and also banned flights from China to Iran, they could have prevented the outbreak in Iran.

MHS-6: "There are doubts on the trustworthiness of official statistics on the number of coronavirus deaths and infections and we have had different numbers from hospital staff."

FNS-8: "I think knowing the truth about the number of infected and dead people at least makes people feel that the government is honest with them. Lying creates a sense of insecurity in people."

Adherence to hygiene rules

In the early days of the epidemic, there was a lack of hygiene materials and this made following the hygiene rules difficult. In contrast when the quarantine was announced supplies were available and students paid more attention to hygiene rules with a more relaxed and less stressful attitude.

FMS-6: "Now it has become relatively normal for me, I try to observe hygiene protocols precisely, but I do not have stress and I believe that we have to deal with it and resume our work."

Planning the leisure time

Some students had plans for using their now abundant free time, some used the opportunity to do long-postponed tasks, some just had fun, and some boys told us that they started playing the stock market. Most said they were looking forward to reopening of the schools.

FNS-8: "I don't know exactly how the time passed by! It was like that I had no job to do; at the same time, I felt I did not have enough time. It was spent with sleep and watching repetitive TV movies, reading storybooks, spending time with family and in cyberspace."

Category 3. Psychological responses to quarantine

During the period between the closure of the university and the time of the discussions, the students' initial emotional turmoil had decreased and they were trying to adapt better to the conditions by keeping their calm. In fact, being at home and away from hospitals, dormitories, clinics, and classes provided a relaxed atmosphere which had only been interrupted by the bad news. During the quarantine period, students were worried about the quick spread of the disease, the risk of infection to their family, the second wave of the disease, and the continuation of the epidemic.

Concerns for future

The students' biggest concern was about the likely state of affairs that semester and their graduation. The schedules for the semester were compressed and so they were concerned if they could complete their practical training courses and acquire sufficient skills and experience and graduate without the need to study an extra semester.

MNS-7: "We have not yet completed a large part of our internship hours. We are all worried about when and how we will resume our studies and if we could train well and graduate this semester."

They were also concerned about their employment prospects after graduation. Although in recent years, finding a job has been one of students' main concerns, the epidemic complicated the matters more because if they could not complete the semester in time, they could not sit for the government annual recruitment exam.

FMS-8: "It is going to hold a recruitment exam. Several workforces are going to be employed. We do not know whether we can take part in the exam or not. If we do not take part in the exam this year, we will lose the chance of recruitment."

Boys were concerned about the mandatory military service. In that Iranian year, male students were called for the draft immediately after graduation.

MNS-8: "Now our mind is involved in graduation time because there is no one-year gap for going to military service and we will be sent directly. There is another danger there as well."

In addition to these concerns, the students were worried about the second wave of the disease and the continuation of the epidemic.

MHS-2: "But really, after the outbreak of second wave of the disease, we experienced increased levels of stress, particularly so because people were not observing the hygiene rules."

Boredom/depression in quarantine

At the time of the discussions which were conducted 70–85 days after the closure of the university, most students felt bored, some were depressed and some experienced hopelessness. They thought the quarantine was not effective because they stayed at home while other family members had to go out to work.

FNS-5: "Social life turned into something like the isolated life of cavemen. We are really getting depressed."

FNS-4: "We are really bored, but the boredom is mostly due to uncertainty."

FMS-6: "In the first 2 months, we hoped to stay home until it ended sooner. But little by little we became more frustrated and disappointed."

FNS-4: "I feel so bored that I say to myself let's go out and see what happens. What a useless quarantine. We stay at home and observe hygiene rules while other people walk in the streets or travel."

Nostalgia for life before the epidemic

All students missed the life they had before the COVID-19 outbreak and the things they enjoyed which they had taken for granted. They missed the classes and the internship sessions and even monitoring the vital signs of patients.

FMS-8: "It was hard to stay at home and missed our loved ones. I must say that I missed the same normal life that I complained about before."

Adapting to the new situation

Students stated that they accepted the new situation and tried to come to terms with it. Some even said they were satisfied with their new life; they just followed the hygiene rules and had a good time.

Acceptance of the new situation

Some students stated that when they found out more about the virus and the disease, they were less stressed. With reduced stress and more knowledge about the disease, they felt relieved and were able to start thinking about their future careers again.

FMS-8: "Coronavirus may not disappear completely and we who chose this field must prepare ourselves to provide services in such a critical condition because condition is not always safe, and tomorrow we have to serve in hospitals like midwives who provide services now."

Satisfaction with the current situation

Some students found some positive aspects to the pandemic. They were glad to see people following hygiene and safety guidelines.

FMS-8: "I don't think I hate coronavirus so much. It made people observe hygiene more than before. I came to terms with the new situation and even started to enjoy it."

One positive aspect of the pandemic for some students was the long school closure and the short semester which gave them ample free time at home.

FMS-6: "Before the pandemic, we had to go hospitals in the mornings and attended the classes in the afternoon. We were tired. We need these holidays."

Discussion

Our results indicate that after the official announcement of confirmed cases of COVID-19 in Iran, students especially those resident in the dormitories experienced severe stress. Although the university was closed only 4 days after the official announcement of the epidemic, this short 4 day period was highly stressful for the students who were staying in the dormitories and had to go to hospitals and health centers by university' buses.

With regard to students' psychological responses to the COVID-19 outbreak, we found that in the first days following the announcement of the epidemic, the main concerns of students participating in this study were: fear of getting infected, fear of death, fear of being a silent carrier of the virus and passing it to family members, and the lack of masks and other personal protective equipment. A key question which deserves attention is whether the reported strength of psychological impact of the epidemic on students was due to their higher knowledge of COVID-19. Our review of previous studies indicate that Chinese medical students generally had a higher knowledge of COVID-19 (Xiong et al., 2021), a more serious and pessimistic appraisal of its consequences (Xie et al., 2020), and fewer mental health symptoms than the non-medical students (Xiong et al., 2021; Xie et al., 2020).

We found that the risk of being a carrier and transferring the virus to the family was one of the most important concerns of students. Zhai and colleagues and Goothy and colleagues also found that in addition to the concerns about their own health, students were worried about the health of their families (Goothy et al., 2020; Suhail et al., 2021; Zhai & Du, 2020). Unlike Suhail's study on Indian youth, the participants in our study did not report physical or depressive symptoms (Suhail et al., 2021). The results of our study are in line with a Spanish qualitative study on nursing students during the COVID-19 pandemic. The Spanish students worried about the lack of personal protective

equipment and were also concerned about contracting COVID-19 and infecting their family members (Collado-Boira et al., 2020).

Our results indicate that the rapid spread of rumors in the dormitories and the lack of trust in official COVID-19 statistics were among the main factors intensifying fear and anxiety among students after the official announcement of the COVID-19 outbreak. Our results are in agreement with those reported by Samadipour and colleagues in Iran. They found that people did not trust the authorities and the official COVID-19 statistics (Samadipour & Ghardashi, 2020). In a crisis situation like the COVID-19 pandemic, misinformation can exacerbate concerns among the general public (Bao et al., 2019). So, it is imperative and of utmost importance that during epidemics, government and health officials provide accurate and timely information to the public (Rubin & Wessely, 2020).

Our findings with respect to students' behavioral response to the quarantine indicate that during this period, they observed quarantine and hygiene rules closely, planned their leisure time, and followed the news. There were also changes in their lifestyle including reduced physical activity, minor changes in diet, and significant changes in sleep patterns. Our findings are consistent with those of Zhang and colleagues (Zhang et al., 2020).

With respect to students' psychological reaction to quarantine, we found that although after the closure of the universities, students' stress levels decreased significantly, in the following months, the continued closure of schools led to increasing concerns among students about postponement of their graduation and losing employment opportunities. They also had concerns about the impact of university closures on their practical training courses. Findings of studies about previous epidemics indicate that quarantined individuals might experience feelings of boredom, loneliness, and anger (Xiang et al., 2020). Another study has also shown that students experienced considerable stress because of the rapid shift from in-person teaching to online education (Goothy et al., 2020). The pandemic led to the postponement of final exams and graduation. What is more, due to the global recession caused by the pandemic, students were not optimistic about their employment prospects after graduation (Sahu, 2020).

Students participating in our study found some positive aspects related to the pandemic such as better observance of hygiene by people. Several positive experiences were cited in a study on Indian youth (Suhail et al., 2021). Participants in the present study told us that although they still followed the hygiene rules thoroughly, their stress level had decreased over the time due to their increasing knowledge of the disease and also because they had got used to the current situation as the new normal. Similar results were reported in two qualitative studies on Indian youth (Suhail et al., 2021) and on UAE students during the COVID-19 pandemic (Saddik et al., 2020).

Strengths and Limitations

We conducted online focus group discussions. Online discussions have many advantages such as increasing the participants' courage to recount their experiences and being convenient for the facilitators and participants. Other strengths of this study include the large sample size and the diversity of its participants. The following limitations must be considered in generalizing the results: lack of visual contact and the impossibility of observing non-verbal responses and limiting participants to students having a smartphone and an active internet connection. It is also likely that students who had suffered personal loss or had been severely affected by the pandemic did not agree to participate in the study.

Implications for future research and practice

Our results highlight the challenges faced by medical students during the early stages of COVID-19 pandemic. We recommend that future studies investigate interventions which aim to improve psychological responses and coping strategies among university students during public health crises. Based on the results of this study, we recommend that future quantitative research be conducted to investigate the mental condition of students and the extent of anxiety disorders and depression among them. In addition, the likely shortcomings of online education and their implications for students' practical training and acquisition of skills should be investigated.

Medical students must be prepared for extraordinary situations like the COVID-19 pandemic. It is necessary to include topics in their curriculum which aim to enhance their skills and abilities in dealing with crisis situations. In particular, the curriculum for final year medical students should include practical training courses specifically designed for coping with extraordinary situations.

Conclusion

The outbreak of the COVID-19 imposed high levels of stress on students especially those residing in dormitories. Students were faced with a difficult and stressful situation during the first days after the formal announcement of COVID-19 epidemic in Iran. We extracted number themes from group discussions which reflect the feeling and experiences of the students. These themes include stress and anxiety, concerns about the health of loved ones, fear of being infected, and obsession with hygiene. During the quarantine period, students experienced boredom were concerned about a potentially long period of school closure and the postponement of their graduation, as a result of which they might lose valuable employment opportunities.

More attention should be paid to psychological state and mental health of medical students as the future professionals during extraordinary situations like the current pandemic. Interventions should be designed to minimize the adverse effects of the pandemic on the mental health of medical students and to prevent any lasting psychological problems in future. To alleviate medical students' concerns about the suspension of their practical training, alternative methods of practical instruction including online or simulated training should be developed. These measures will enhance their self-confidence and will help them to perceive themselves as competent and knowledgeable professionals in their future careers.

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Authors' contributions

All authors contributed to the study.

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Ethical approval

The Ethics Committee of Sabzevar University of Medical Sciences has approved this study (Number: IR.MEDSAB.REC.1399.049).

Informed consent

A verbal informed consent was obtained prior to the including students in the WhatsApp group. Disclosure of potential conflicts of interest. We declare there is no conflict of interest in publishing this letter. All authors read and approved the manuscript and consented to the publication of the manuscript.

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