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Factors contributing to the mental wellbeing of Afghan migrants in Iran during the COVID-19 pandemic

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ABSTRACT

This study aims to explore the factors contributing mental health of Afghan migrants residing in Iran during the COVID-19 pandemic. With a deep understanding of the unique challenges encountered by migrants, especially during times of crisis, this research delves into the influential factors of experienced anxiety, social cohesion, and stress and their significant contribution to the development of depression among Afghan migrants. The study included a sample of 469 individuals from the Afghan migrant community, aged 15 to 80 years. Data collection took place from December to March 2022 in Iran. The study revealed that anxiety and the burden of the COVID-19 pandemic significantly influenced the occurrence of depression among Afghan migrants. Furthermore, the relationship between these factors and depression was mediated by the experience of stress. Conversely, higher levels of perceived social cohesion in the host country were linked to reduced stress and depression among the migrants. As Afghan migrants in Iran face a heightened risk of developing depression, the importance of social support and integration is underscored by the association between higher levels of perceived social cohesion in the host country and reduced levels of stress and depression. Recognizing the vulnerabilities of this population, it becomes evident that fostering social support networks and promoting integration can play a crucial role in mitigating the negative impact of migration-related stressors and enhancing mental wellbeing among this population.

Introduction

In recent years, there has been a significant increase in global migration, leading to a growing number of migrants who find themselves residing in foreign countries far away from their homeland. These individuals often encounter numerous challenges and obstacles that discourage them from considering a return to their home country. Migration is frequently motivated by a multitude of factors, including the persistent inequality between labour market supply and demand

(Chernyak and Chernyak, 2019), as well as the presence of armed conflicts and safety concerns, encompassing persecution and violence (Mandić, 2021). Additionally, unfavourable economic conditions prevailing in the migrants' countries of origin play a significant role in driving individuals to seek opportunities elsewhere (Ghatak, 2021).

Migration poses risks to both physical and mental health, which persist even after resettlement. Many migrants and refugees have endured distressing experiences in their home countries and throughout their migration trajectories (Giacco et al., 2018; Steel et al., 2017).

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Common mental disorders, including anxiety, post-traumatic stress, and depression, are prevalent among migrants (Awuah et al., 2022; Vukčević Marković et al., 2023; Nkimbeng et al., 2023; Lee et al., 2020). It seems that depression acts as a mediator in the relationship between migration stress, and sexual risk behaviours (Hou et al., 2019). Factors such as living in the host country for less than two years, insufficient family income, poor social support, and marital relationships were significantly associated with women migrants' postpartum depression (PPD) (Xiong and Deng, 2020). Being female, unmarried, and having low satisfaction with the decision to migrate might increase the risk of screening positive for depression (See e.g., Aluh et al., 2023).

The emergence of the COVID-19 pandemic posed additional challenges for residents' migrants and refugees worldwide (Khozaei et al., 2022a; Khozaei et al., 2022b; Khozaei and Carbon, 2022). The burden of COVID-19 was found to significantly affect immigrants' stress and depression (Khozaei et al., 2022a). Several studies revealed that migrants, particularly those engaged in low-paid occupations, experienced psychological stressors associated with poverty (Espinel et al., 2020), discrimination and inequity (Li and Rose, 2020), social exclusion (Li and Jiang, 2020), and various unfavourable daily experiences during the COVID-19 crisis (Hou et al., 2020). Studies suggest that perceived justice and freedom in the host country can reduce migrants' stress and depression, especially during the COVID-19 pandemic (Khozaei et al., 2022a). Previous studies suggest that social cohesion is associated with mental health in the migrant community (Cheung 2014; Qu et al., 2023) and can reduce migrants' depression (Qu et al., 2023). There is a need to understand how social cohesion may affect the migrants' mental health during the COVID-19 era. Given the substantial population of Afghan migrants in Iran, this study focuses on Iran as a case study.

Afghan migrants, a significant population of migrants and refugees, have long confronted various challenges and disadvantages. The displacement of Afghan migrants has seen a significant surge in the past 40 years and notably, countries such as Iran, have emerged as key destinations for Afghan migrants and refugees in recent years. These individuals have endured traumatic experiences, long-term hardships, and the loss of loved ones, prompting their desperate escape from Afghanistan. The study examines the relationship between stress, anxiety, depression, and the burden of COVID-19 on these migrants. It further examines whether social cohesion affects these migrants' mental health.

There are several rationales behind this research. First of all, the Afghan immigrant population residing in Iran largely consists of individuals engaged in temporary, low-paid jobs, making it difficult for many of them to afford mental health support. Hence, researching this minority group holds significant value in understanding the unique challenges Afghan migrants face in Iran. Second, it is essential to consider the possibility of future pandemics and their potential impact on migrant populations. Since the emergence of the COVID-19 pandemic, numerous studies have underscored the need to prepare for future pandemics. Understanding the mental health implications experienced by Afghan migrants during the current crisis can serve as a valuable resource for predicting and addressing mental health disorders that may arise in similar situations. By learning from past experiences, researchers can anticipate the potential mental health challenges that Afghan migrants and other migrant populations might encounter during future pandemics. Taking these proactive measures can enhance the resilience and wellbeing of Afghan migrants and similarly vulnerable populations when confronted with future-scale crises.

Theoretical framework

Existing research indicates that Afghan migrants in different countries encounter significant stressors, including poverty, housing instability, and employment challenges (Kavian et al., 2020) that can affect their mental health. Factors contributing mental health of migrants are complex, especially during critical situations such as the COVID-19

pandemic (Alemi et al., 2023; Kurt et al., 2023). There are two ways to look at mental health, positive and negative. Despite their interdependence, these variables can function independently (Keyes, 2007). Positive mental health (PMH) is defined as optimal mental functioning and a sense of wellbeing. It has been conceptualized with various dimensions, such as eudaemonic and hedonic wellbeing (Keyes 2007). Negative mental health, on the other hand, refers to detrimental health issues, psychopathology, or psychiatric diseases.

In the last few years, several studies have been conducted on PMH (Vaganian et al., 2022; Velten et al., 2022) and how promoting PMH can affect individuals' wellbeing. Studies demonstrate that promoting positive mental health can mitigate the negative impact of insomnia symptoms on addictive online behavior (Brailovskaia et al., 2023). It is also connected to happiness and life satisfaction (Bieda et al., 2019) and may predict mental illness recovery (Iasiello et al., 2019). On the other hand, various factors might affect people's mental health negatively. Studies suggest that factors such as poverty (Chiavegatto Filho et al., 2013) particularly in areas characterized by income inequality, stress, and depression (Schönfeld et al., 2016) can affect an individual's mental health negatively.

Given its significance, numerous research studies have investigated elements that contribute to the psychological wellbeing of migrants amidst unique crises, such as the COVID-19 pandemic. This included but was not limited to economic limitations and job loss (Choudhari, 2020), heightened augmented daily stressors (Spiritus-Beerden et al., 2021), increased stress and anxiety levels (Palit et al., 2022; Jumaa et al., 2023) as well as perceived discrimination (Kurt et al., 2021). Several research studies have investigated the influence of factors that serve as buffers for the mental wellbeing of migrants amidst the COVID-19 pandemic which illuminate diverse protective mechanisms that play a role in alleviating the psychological hardships encountered by these individuals. For example, studies reveal that feeling of belonging and social connectedness can reduce the impact of perceived discrimination on mental health (Brance et al., 2022).

Afghan migrants residing in Iran, similar to migrants across different regions, confronted a distinct array of difficulties amid the COVID-19 pandemic. Considering the economic challenges, and lack of permanent employment of the majority of these migrants in Iran stemming from pre-existing vulnerabilities coupled with the added stressors imposed by the pandemic the study hypothesized that the Burden of COVID-19 and anxiety might affect the migrants' stress and depression. Drawing from earlier research indicating stress as a potential precursor to depression (Sun et al., 2020), it was also postulated that heightened stress among migrants could elevate their susceptibility to experiencing depression amid the COVID-19 pandemic.

Numerous studies have highlighted the essential connection between justice and social cohesion. The works of Schiefer and van der Noll (2017), Laurence (2011), and Correa-Velez et al. (2017) revealed that perceived discrimination and inequality profoundly affected social solidarity among minority groups in the Netherlands, the UK, and refugee populations in Australia. These studies found that experiences of injustice and exclusion not only weakened community bonds but also hindered the smooth adaptation of these groups into society. They emphasized the crucial role of fairness and equity in facilitating the integration of marginalized communities. Overall, these findings underline the critical importance of justice in fostering social cohesion, particularly for marginalized groups, highlighting the necessity of inclusive policies and practices that ensure the respect and integration of minority populations. Fonseca et al. (2019) further emphasized the pivotal role of justice as the foundation for upholding social cohesion, stressing the significance of equitable treatment in creating an environment that is inclusive and supportive for Afghan migrants.

Research underscores a strong correlation between social cohesion, freedom and sense of belonging. It was found that restricted individual autonomy and liberties lead to the isolation of vulnerable groups from the larger society (Bilgili et al., 2017; Alanya et al., 2017). In contrast,

the presence of unrestricted participation fosters stronger communal bonds and identity in various contexts (Staver, 2013; Rapp and Freitag, 2015). These findings emphasize the crucial role of liberty in nurturing unified and inclusive societies that embrace diversity. Consequently, our understanding of social cohesion incorporates the notions of belonging and freedom, rooted in empirical evidence. Empowerment and independence are pivotal for building meaningful connections, particularly for marginalized populations.

Research conducted in the past indicates that social cohesion has the potential to benefit individuals' mental wellbeing (An et al., 2023). Social cohesion epitomizes the interconnected unity within societal groups and holds a significant connection to the ideals of justice freedom and a sense of belonging (Manca, 2014). In addition, it is suggested that individuals who believe they have been treated fairly and have a sense of freedom within their communities may experience better mental health outcomes (Scholten et al., 2017). A growing body of literature has demonstrated a positive relationship between mental health and a belief in the existence of justice within societies. Perceptions of justice are often associated with social and macroeconomic factors (Fischer, 2016) and have been linked to various health benefits (Sert et al., 2014). Taking into account the perceived feelings of belonging, justice, and freedom within the context of social cohesion in the host nation as compared to their home country, the study further conjectured that enhanced social cohesion could enhance the mental wellbeing of these individuals by reducing stress and depression. Fig. 1 presents the conceptual model of research. Based on the aforementioned concepts, the research hypotheses are presented below:

- H1: The burden of COVID-19 is indirectly linked to depression through the mediating role of stress.
- H2: Anxiety indirectly affects depression through the mediating role of stress.
- H3: Social cohesion indirectly influences depression through the mediating role of stress.
- H4: The relationship between stress and depression is moderated by positive mental health.

Research methodology

In this study, we aimed to investigate the factors influencing mental health among Afghan migrants in Iran. Specifically, we sought to explore the relationship between stress, depression, the burden of COVID-19, and perceived social cohesion. There is a lack of

comprehensive data regarding the mental health status of Afghan migrants residing in the southern region of Iran.

Participants

According to the statistical centre of Iran's report in 2015, the majority of Afghan migrants reside in the provinces of Kerman, Tehran, Khorasan, and Isfahan. For our study, participants were recruited from the city of Kerman, Iran, among Afghan migrants. The target population consisted of individuals aged 15 and above who originated from Afghanistan or were born in Iran but did not possess citizenship or equal rights as local Iranians. Kerman is home to over 40,000 Afghan migrants. Using the Cochran formula to determine the appropriate sample size based on desired precision and confidence level, a minimum of 380 participants was required. To bolster the robustness of the findings, a decision was made to administer more questionnaires, surpassing the initially calculated sample size. This choice was driven by the need to account for potential non-response and incomplete surveys, which are commonly encountered in survey-based research. Through the utilization of a larger sample size, the aim was to attenuate the potential bias introduced by missing data and non-response, consequently elevating the reliability and validity of our results.

Measurement scale

The questionnaire distributed in this study encompassed various items and constructs to assess different aspects. The initial section of the questionnaire aimed to gather demographic information from the respondents, including their gender, age, marital status and duration of stay. To measure stress and depression, we utilized the Depression, Anxiety, and Stress Scale (DASS-21), a well-established scale frequently employed in assessing mental health. The DASS-21 has consistently demonstrated robust construct and structural validity across diverse nations (see, e.g., Bibi et al., 2020). Participants were asked to respond to 21 questions relating to their stress and depression and anxiety experiences over the past seven days. The responses could be given on scale from 1 (*didn't apply to me at all*) to 4 (*applied to me very much or most of the time*).

The burden of COVID-19 was measured using 10 items adapted from the research conducted by Brailovskaia and Margraf (2021). The responses aimed to assess individuals' understanding and encounter of the societal and personal ramifications of the pandemic on their lives. The items encompassed a spectrum of emotions, viewpoints, and

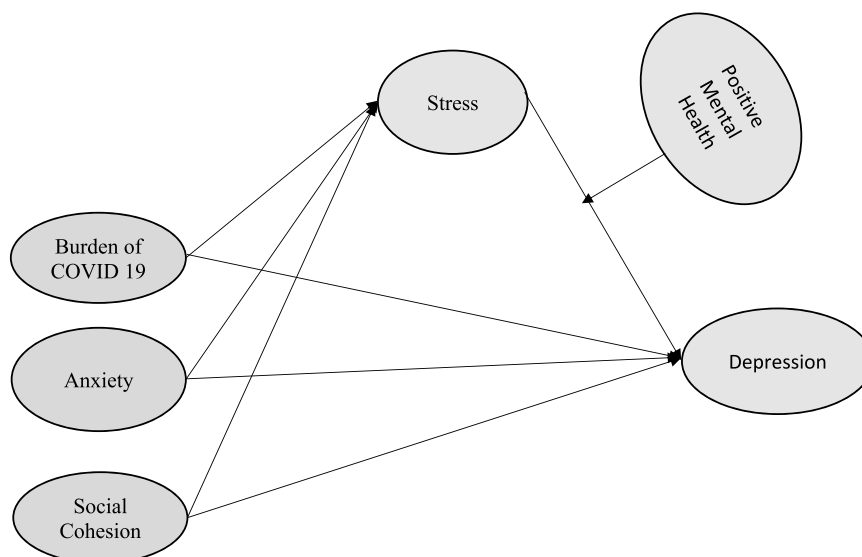


Fig. 1. Research conceptual model.

perspectives linked to the pandemic circumstances. The responses could be given from, *I do not agree* to *7 I totally agree*.

For measuring positive mental health PMH scale was used (Lukat et al., 2016). 9 items measured collectively encompassed aspects of an individual’s positive psychological wellbeing and mental health. The questions seeked to gauge the individual’s overall positive outlook, contentment, and ability to cope with various life situations. The responses could be given from 1 (*do not agree*) to 4 (*totally agree*). To measure social cohesion three items from (Scholten et al., 2017, 2018). The items aimed to gauge individuals’ sense of fitting into their social environment, their assessment of equitable treatment, and their perceived degree of liberty within their native country in comparison to their home country. The responses could be given from 0 (*not at all*) to 100 (*very much on each statement*). Table 1 provides an overview of the measurement constructs and specific items used in the questionnaire.

Procedure

A multi-stage sampling strategy was used to recruit the sample. In stage 1, the researchers targeted Kerman, Iran, as the capital of one of the provinces with the largest number of Afghan migrants. In stage 2, three districts with a high proportion of Afghan migrants were chosen. In stage 3, the neighborhoods with the largest population of these migrants were identified. During the field visit and on-site data collection, aided by local Afghan residents in each neighborhood, the researchers engaged with Afghan migrant families, requesting their participation in our survey. To select participants, we employed a convenience sampling technique within the chosen neighborhoods, reaching out to individuals through connections with local residents. Notably, 65 families opted to decline involvement in the study. Please note that we deliberately utilized a convenience sampling technique for the following reasons: Convenience sampling is particularly useful when working with participants with a challenging background, such as refugees, for several reasons. Firstly, it involves selecting participants who are readily available and willing to participate, which can be less intrusive and stressful for individuals who may have experienced trauma or are in vulnerable situations. This approach also provides easier access to these populations, who may be difficult to reach through traditional sampling methods. Building trust is crucial with these groups, and convenience sampling often occurs in environments where participants feel safe and supported, like community centers or support groups. This facilitates better engagement and honest responses. Moreover, convenience sampling allows researchers to adhere to strict ethical guidelines, respecting the privacy and confidentiality of participants and reducing the risk of re-traumatization or exposure to harm. It also enables greater cultural sensitivity, as researchers can employ “interpreters” or “cultural mediators” familiar to the participants, ensuring better communication and understanding. While convenience sampling has practical and ethical advantages, we are also aware of potential limitations in the representativeness and generalizability of findings.

Face-to-face encounters were used for recruitment. Before the commencement of data collection, all participants were furnished with a consent form. This form explicitly outlined the research’s objectives and emphasized the confidentiality measures in place to protect their information. During the continuing COVID-19 epidemic in Iran, data was collected over four months to record differences in experiences and perceptions of mental health. Researchers kept in touch with participants frequently, addressing any issues or queries that emerged during the data-gathering procedure.

Between December and March 2022, we collected the data for the present study in Iran. The data collection process was conducted by two research assistants, one Iranian and one Afghan-trained—this elaborate procedure was used to optimally assist the participants regarding language and empathy. Before participating, all respondents were provided with a consent form explaining the research objectives and assured that their responses would be kept confidential. The questionnaire included

Table 1
Measurement constructs and items.

| Construct | Items | Questions | Measurement |
|--------------------|-------|--|---|
| Burden of COVID-19 | BUC1 | The current social situation burdens me | 1 = <i>I do not agree</i> 7 = <i>I totally agree</i> |
| | BUC2 | I feel restricted in my everyday life | |
| | BUC3 | I am afraid of the current situation | |
| | BUC4 | I feel socially isolated | |
| | BUC5 | I’m making the best of the situation | |
| | BUC6 | I look forward to what will happen | |
| | BUC7 | I now know better what is important to me | |
| | BUC8 | My relationships with family and friends have become stronger and better | |
| | BUC9 | My current situation has some advantages | |
| | BUC10 | I am worried about my future life | |
| Depression | DEP1 | | 1 = <i>did not apply to me at all</i> 4 = <i>applied to me very much, or most of the time</i> |
| | DEP1 | I was unable to become enthusiastic about anything | |
| | DEP2 | I was aware of the dryness of my mouth | |
| | DEP3 | I couldn’t seem to experience any positive feelings at all | |
| | DEP4 | I felt that I was rather touchy | |
| | DEP5 | I found it difficult to work up the initiative to do things | |
| | DEP6 | I tended to over-react to situations | |
| Stress | DEP7 | I felt that life was meaningless | 1 = <i>did not apply to me at all</i> 4 = <i>applied to me very much, or most of the time</i> |
| | STR 1 | I felt I was close to panic | |
| | STR2 | I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion) | |
| | STR3 | I felt I wasn’t worth much as a person | |
| | STR4 | I found it hard to wind down | |
| | STR5 | I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat) | |
| | STR6 | I felt scared without any good reason | |
| Social Cohesion | STR7 | I experienced trembling (e.g., in the hands) | 0 = <i>not at all socially belonging</i> 100 = <i>very socially belonging</i> 0 = <i>not fair at all</i> 100 = <i>very fair</i> |
| | | When you compare yourself with other people in (your home country), how belonging do you feel to this society? | |
| | | When you compare yourself with other people in (your home country), how **fairly** treated do you feel? | |
| | | When you compare yourself with other people in (your home country), how **free** do you feel? | |
| | | When you compare yourself with other people in (your home country), how **free** do you feel? | |
| | | When you compare yourself with other people in (your home country), how **free** do you feel? | |
| | | When you compare yourself with other people in (your home country), how **free** do you feel? | |
| Anxiety | | I was aware of the dryness of my mouth. | 0 = <i>did not apply to me at all</i> 3 = <i>applied to me</i> |

(continued on next page)

Table 1 (continued)

| Construct | Items | Questions | Measurement |
|------------------------|------------------------------------|---|-------------------------------------|
| Positive Mental Health | | | very much, or most of the time |
| | | I experienced trembling (e.g., in the hands). | |
| | | I felt that I was using a lot of nervous energy. | |
| | | I felt that I was worrying too much about different things. | |
| | | I found myself getting agitated. | |
| | | I found it difficult to relax. | |
| | | I felt scared without any good reason. | |
| | | I am often carefree and in good spirits. | 1 = do not agree, 4 = totally agree |
| | | I enjoy my life. | |
| | | All in all, I am satisfied with my life. | |
| | | In general, I am confident. | |
| | | I manage well to fulfil my needs. | |
| | | I am in good physical and emotional condition. | |
| | | I feel that I am actually well equipped to deal with life and its difficulties. | |
| | Much of what I do brings me joy. | | |
| | I am a calm, balanced human being. | | |

inquiries about participants' demographic background, perceived stress, depression experienced within the past seven days, and the burden of COVID-19. Upon completion of the survey, participants received a token of appreciation as a gesture of gratitude.

To analyse the research model and test the hypotheses, Partial Least Squares (PLS) analysis was conducted using the SmartPLS 3.3 software (Ringle et al., 2015). Given the exploratory nature of the study and the presence of hierarchical variables, PLS was deemed appropriate for the analysis. To determine the significance of the path coefficients among the latent variables, a nonparametric bootstrapping technique with 5000 iterations was employed. Furthermore, the reliability and validity of the measurement model, as well as the structural model, were assessed to ensure the robustness of the findings. Construct reliabilities and validities were evaluated using measures such as rho_A, Composite Reliability (CR), CA, and Average Variance Extracted (AVE). The assessment of the structural model involved testing and reporting coefficients of determination (R²), effect size (f²), variance inflation factor (VIF), and predictive relevance (Q²).

Ethics

Before the commencement of data collection, all participants were given a consent form. This form explicitly outlined the research's objectives and emphasized the confidentiality measures in place to protect their information. To check the ethics of the study, especially the involvement of minors (we tested participants aged 15 and above), we asked the first author's current institution for approval. We obtained clearance for ethical approval and data collection from the University Research Ethics & Biosafety Committee, the responsible local ethics committee of the first author's institution (protocol-nr #DU-AY-23-24-QUES-012).

Results

Data was collected from five districts with the highest population of Afghan migrants, and participants were proficient in the Farsi language. Out of the 497 questionnaires administered and collected, 28 were

excluded due to incomplete responses, resulting in a total of 469 questionnaires suitable for analysis. Table 2 presents the demographic information of the respondents who took part in the study. The average age of participants was 30.6 years (SD= 14.30). Of the participants, 191 were male and 278 were female. In terms of age groups, 362 participants were aged between 15 and 35 years, 62 were between 36 and 55 years old, and 45 were above 45 years old. Among the participants, 169 indicated to be single and 300 reported to be married.

Measurement model assessment

The proposed measurement model was assessed and employed a two-stage approach as suggested by Anderson and Gerbing (1988). First, we assessed the measurement model for each latent variable undertaken in the study. For the study, we conceptualized the measurement model as a reflective measurement model, which allows us to assess the reliability, the convergent and discriminant validity. The reliability of the measurement model was assessed by employing Cronbach's alpha coefficient, and the Composite Reliability (CR) with the cut-off value of 0.70 is acceptable. Initially, the overall model was assessed, and constructs with AVE lower than 0.50 were identified.

Items with the lowest loadings were discarded. Table 3 indicates that the value of CR and Cronbach's alpha exceeded the cut-off value of 0.70, suggesting internal consistency reliability. As evaluated by the value of average variance extracted (AVE) for all of the constructs, the convergent validity exceeded the cut-off value of 0.50. Besides the outer loading value of all items of each construct: Burden of COVID-19 (BUC), Anxiety (Anxie) Depression (Depr), Social Cohesion (Soci), positive mental health (PMH) and stress (STR) is higher than 0.70. Table 3 presents the established reliability and convergent validity of research constructs.

Structural model assessment and multigroup analysis

Direct effects

The result of the study showed a significant positive effect of the Burden of COVID-19 on Stress ($\beta = 0.036, p = 0.001$), suggesting that migrants who experienced a higher burden of COVID-19 tend to have increased levels of stress. Besides anxiety had a strong positive effect on stress levels ($\beta = 0.900, p = 0.042$). The results highlight the effect of social Cohesion on Stress ($\beta = 0.071, p = 0.037$). The negative path coefficient suggests that higher levels of social cohesion are associated with lower levels of stress. The result also highlighted the effect of Stress on Depression ($\beta = 0.521, p < 0.001$). This indicates that higher stress levels are positively associated with increased levels of depression. The effect of the Burden of COVID-19 on Depression ($\beta = 0.089, p < 0.001$). This suggests that individuals facing a greater burden of COVID-19 are more likely to experience higher levels of depression. The results highlight the effect of Anxiety on Depression ($\beta = 0.317, p = 0.018$). This indicates that individuals with higher levels of anxiety are more likely to experience increased levels of depression. The results indicate a

Table 2
Respondents' demographic characteristics.

| Demographic factors | Categories | N | Percentage |
|---------------------|----------------------------|-----|------------|
| Gender | Male | 191 | 40.7 % |
| | Female | 278 | 59.3 % |
| Age | 15–35 years | 362 | 77.1 % |
| | 36–55 Years | 62 | 13.2 % |
| | above 56 years | 45 | 9.6 % |
| | single | 169 | 36.0 % |
| Marriage status | married | 300 | 64.0 % |
| | Duration of living in Iran | | |
| | up to 10 years | 62 | 13.7 % |
| | 11–20 years | 190 | 19.8 % |
| | 21–30 years | 127 | 50.0 % |
| | 31–40 years | 60 | 13.2 % |
| | above 40 years | 15 | 3.3 % |

Table 3
Reliability and convergent validity for research constructs.

| Construct | Item | Loading | rho_A | CR | CA | AVE |
|------------------------|---------|---------|-------|-------|-------|-------|
| Burden of COVID-19 | BUC1 | 0.869 | 0.862 | 0.895 | 0.845 | 0.682 |
| | BUC2 | 0.768 | | | | |
| | BUC4 | 0.811 | | | | |
| Anxiety | BUC9 | 0.851 | 0.908 | 0.913 | 0.887 | 0.606 |
| | Anxie1 | 0.515 | | | | |
| | Anxie2 | 0.812 | | | | |
| | Anxie3 | 0.856 | | | | |
| | Anxie4 | 0.798 | | | | |
| | Anxie5 | 0.829 | | | | |
| | Anxie6 | 0.697 | | | | |
| Depression | Anxie7 | 0.881 | 0.946 | 0.956 | 0.946 | 0.755 |
| | Depr1 | 0.880 | | | | |
| | Depr2 | 0.864 | | | | |
| | Depr3 | 0.852 | | | | |
| | Depr4 | 0.862 | | | | |
| | Depr5 | 0.901 | | | | |
| | Depr6 | 0.863 | | | | |
| Social Cohesion | Depr7 | 0.858 | 0.726 | 0.762 | 0.596 | 0.530 |
| | Soci1 | 0.474 | | | | |
| | Soci2 | 0.776 | | | | |
| Stress | Soci3 | 0.874 | 0.943 | 0.952 | 0.941 | 0.741 |
| | Stress1 | 0.917 | | | | |
| | Stress2 | 0.829 | | | | |
| Positive Mental Health | Stress3 | 0.824 | 0.876 | 0.862 | 0.796 | 0.830 |
| | Stress4 | 0.835 | | | | |
| | Stress5 | 0.832 | | | | |
| | Stress6 | 0.873 | | | | |
| | Stress7 | 0.911 | | | | |
| | PMH1 | 0.915 | | | | |
| | PMH2 | 0.846 | | | | |
| | PMH3 | 0.912 | | | | |
| PMH4 | 0.853 | | | | | |
| PMH5 | 0.916 | | | | | |
| PMH6 | 0.906 | | | | | |
| PMH7 | 0.874 | | | | | |
| PMH8 | 0.740 | | | | | |

CR = composite reliability; AVE = average variance extracted; VIF = variance inflation factor.

marginally significant effect of Social Cohesion on Depression ($\beta = 0.088, p = 0.067$). The negative path coefficient suggests that higher levels of social cohesion are associated with lower levels of depression. However, the p-value of 0.067 is marginally significant ($p < 0.1$), indicating that more data or further investigation may be needed to establish the strength of this relationship more conclusively.

Based on the R^2 values, anxiety, burden of COVID-19 and social cohesion approximately explained 91 % of the variance of depression and 84 % of the variance of the stress. The effect size (f^2) estimates how much an IV affects DV. As suggested by Chin (1998), the values of 0.02, 0.15, and 0.35 represent the level of effect size as small, moderate, and substantial, respectively. The effect of the burden of COVID-19 on stress ($f^2 = 0.142$), and stress on depression ($f^2 = 0.420$) is considered moderate, indicating a moderate impact of the COVID-19 burden on stress levels. The effect of anxiety on stress ($f^2 = 1.353$) is considered substantial, suggesting a significant influence of anxiety on stress levels. The effect of social cohesion on stress ($f^2 = 0.045$), the burden of COVID-19 on depression ($f^2 = 0.042$), and anxiety on depression ($f^2 = 0.180$), The effect of social cohesion on depression ($f^2 = 0.041$) is considered small, indicating a relatively minor impact of social cohesion on stress.

Multicollinearity among the variables was evaluated, considering the variance inflation factor (VIF) value. It is suggested that VIF that exceeds 10 indicates a potential issue with multicollinearity (Hair et al., 2010). As shown in Table 4, VIF for all of the variables was below the threshold of 10. The predictive relevance of the model (Q^2) was examined with the help of the blindfolding procedure. The Q^2 values for depression (0.823) and stress (0.765) suggested that the model has sufficient predictive relevance.

Table 4
Direct effects.

| Direct/indirect effect | Path Coefficient β | t-value | p-value | VIF | f^2 | Supported |
|---------------------------------|--------------------------|---------|---------|-------|-------|-----------|
| The Burden of COVID-19 Stress | 0.036 | 3.234 | <0.001 | 1.999 | 0.142 | Yes |
| Anxiety → Stress | 0.900 | 2.834 | 0.042 | 2.925 | 1.353 | Yes |
| Social Cohesion → Stress | 0.071 | 1.754 | 0.037 | 2.223 | 0.045 | Yes |
| Stress → Depression | 0.521 | 4.417 | <0.001 | 4.925 | 0.420 | Yes |
| Burden of COVID-19 → Depression | 0.089 | 3.722 | <0.001 | 2.282 | 0.042 | Yes |
| Anxiety → Depression | 0.317 | 2.113 | 0.018 | 4.881 | 0.180 | Yes |
| Social Cohesion → Depression | 0.088 | 1.634 | 0.067 | 2.324 | 0.041 | Yes |

Indirect effect

In this study, we examined the mediating effect of stress on the relationship between the burden of COVID-19, anxiety social cohesion, and depression. For examining the possible mediating effect of stress, we applied the *nts* approach (indirect effect). The indirect effect was assessed with the help of a bootstrapping procedure for examining the possible significance of the path coefficients (Chin et al., 2008). Table 5 shows the results of the path analysis used to test the hypothesis of indirect effects. The t-values were computed using a bootstrapping procedure (Hayes, 2009) with 5000 samples. Hypothesis 1 investigated the mediating role of stress in the relationship between the burden of COVID-19 and depression. The findings confirmed this mediating effect ($\beta = 0.098, t = 6.105, p < 0.001$). Hypothesis 2 examined the mediating effect of stress between anxiety and depression ($\beta = 0.367, t = 9.624, p < 0.001$). Hypothesis 3 was also supported as stress mediated the relationship between social cohesion and depression ($\beta = 0.059, t = 3.586, p < 0.01$). Hypothesis 4 hypothesized the moderating effect of positive mental health on the effect of stress on depression. This hypothesis was also supported ($\beta = 0.148, t = 1.586, p < 0.001$). Fig. 2 presents the research model.

Discussion

This study aims to explore the intricate relationship between migration and depression experienced by Afghan migrants residing in Iran during the COVID-19 pandemic. With a deep understanding of the unique challenges encountered by migrants, especially during times of crisis, this research delves into the influential factors of experienced anxiety, social cohesion, and stress, and their significant contribution to the development of depression among Afghan migrants.

First, the findings revealed a significant positive effect of the burden of COVID-19 on stress, indicating that migrants who experienced a higher burden of COVID-19 tended to have increased levels of stress. This result aligns with previous research highlighting the psychological impact of the pandemic on individuals' wellbeing (Luo et al., 2020). It suggests that the challenges and uncertainties associated with COVID-19 contribute to elevated stress levels among immigrants.

Furthermore, anxiety exhibited a strong positive effect on stress levels, emphasizing the influence of anxiety on individuals' psychological wellbeing. This finding supports the existing literature (Amini et al., 2022) linking anxiety to higher levels of stress and reflects the psychological strain experienced by individuals with elevated anxiety levels.

Table 5
Structural (inner) model assessment.

| Hypothesis | Indirect Effect | Path Coefficient | Confidence interval (95 %) Bias Corrected | t-value | p-value | Supported |
|------------|---|------------------|---|---------|---------|-----------|
| H1 | BUC -> Stress -> Depression | 0.098 | 0.124 | 6.105 | 0.002 | Yes |
| H2 | Anxiety-> Stress -> Depression | 0.367 | 0.432 | 9.624 | <0.001 | Yes |
| H3 | Social Cohesion-> Stress -> Depression | 0.059 | 0.034 | 3.586 | <0.001 | Yes |
| H4 | Stress->Positive mental health-> depression | 0.148 | 0.234 | 1.586 | <0.001 | Yes |

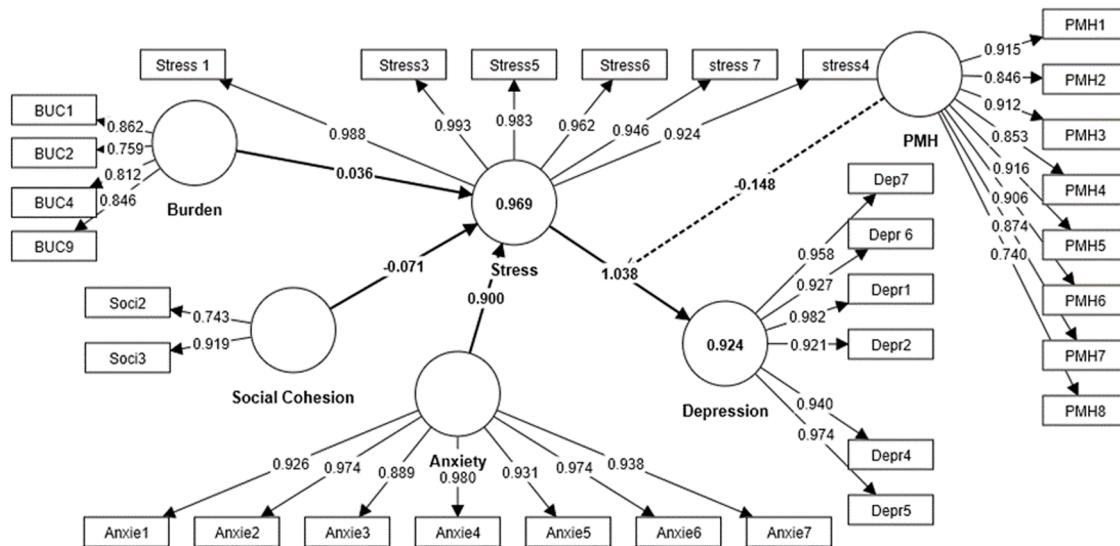


Fig. 2. structural equation model (SEM) diagram.

Social cohesion (Silveira et al., 2022) emerged as a significant factor affecting stress levels. The negative path coefficient suggests that higher levels of social cohesion are associated with lower levels of stress. This finding underscores the importance of social support and community connections in mitigating stress among immigrants. It implies that fostering social cohesion and community engagement may serve as protective factors for individuals facing stressors, such as the burden of COVID-19 and anxiety. It further suggests that an increased level of freedom promotes better mental health.

Consistent with previous research (Werner et al., 2020), the results indicate that stress is positively associated with depression. Individuals experiencing higher levels of stress are more likely to report increased levels of depression. This finding highlights the detrimental impact of stress on mental health outcomes and emphasizes the need to address stress management and coping strategies to mitigate depression symptoms.

The burden of COVID-19 also exhibited a significant positive effect on depression, suggesting that individuals facing a greater burden of COVID-19 (McQuaid et al., 2021) are more likely to experience higher levels of depression. This finding aligns with the notion that the pandemic’s consequences, such as health risks, economic instability, and social disruptions, can contribute to adverse mental health outcomes, including depression.

Similarly, anxiety was found to have a significant positive effect on depression, indicating that individuals with higher anxiety levels are more susceptible to experiencing increased levels of depression (Jia et al., 2023). This result supports the well-established link between anxiety and depression and underscores the need to address both anxiety and depression symptoms in interventions and support systems.

The effect of social cohesion on depression showed a negative path coefficient, suggesting that higher levels of social cohesion are associated with lower levels of depression. Although the p-value of 0.067 is marginally significant ($p < 0.1$), indicating the need for further investigation (Biddle et al., 2020), this finding suggests that social cohesion

may serve as a protective factor against depression. Strengthening social support networks, fostering community connections, and promoting a sense of belonging may contribute to improved mental wellbeing and lower levels of depression.

The R2 values indicated that anxiety, the burden of COVID-19, and social cohesion collectively explained a substantial amount of the variance in depression and stress (Marshall et al., 2022). This suggests that these factors play significant roles in influencing mental health outcomes in the studied population.

Furthermore, the effect size (f^2) values provided insights into the magnitude of the relationships. The f^2 values indicated that the burden of COVID-19 on stress, stress on depression, and anxiety on stress had moderate to substantial effect sizes. This implies that these factors have noteworthy impacts on mental health outcomes. On the other hand, the f^2 values for social cohesion on stress, burden of COVID-19 on depression, anxiety on depression, and social cohesion on depression were smaller, suggesting relatively minor impacts of these factors.

Conclusion

COVID-19 brought about a momentous event in the past few decades, leaving an indelible mark on our era. The alterations it introduced to the everyday rhythms of global life caught many off guard, resulting in a challenging process of adjustment. Both migrants and local residents experienced unique mental health challenges during this time. However, the findings from our study emphasize the pivotal role the host country can play in enhancing their psychological wellbeing. Specifically, focusing on social cohesion emerges as a potent measure to alleviate the stress and depression that migrants often grapple with, ultimately contributing to an overall enhancement in their mental health.

The study’s findings have crucial implications for policy and practice in improving Afghan migrants’ mental health and general wellbeing. Policymakers should prioritize the development of tailored treatments to alleviate the COVID-19 burden, anxiety, and stress in this group.

Culturally appropriate mental health treatments, greater access to healthcare, and financial stability should all be priorities. Furthermore, community-based initiatives promoting social cohesiveness, safe spaces for interaction, and a sense of belonging might act as protective factors against depression and lead to better mental health outcomes.

While this study provides important insights into the complex interaction between migration, mental health, and the burden of COVID-19 among Afghan migrants, further research is needed in this area. Future research should delve deeper into the experiences and mental health needs of Afghan migrants, taking into account aspects such as economic challenges. Longitudinal studies can give a thorough knowledge of migration and the pandemic's long-term consequences on mental health outcomes. Such a study can help to influence the development of evidence-based therapies and policies that address the mental health difficulties that Afghan migrants experience.

Besides our use of a convenience sampling, we focused on a specific neighborhoods in Kerman, which may not fully represent the diverse Afghan migrant population, given the lack of randomization and access to isolated members. Hence, the generalizability of our findings to the broader Afghan migrant community in Kerman and Iran is of course limited. Future studies should employ systematic, randomized sampling methods to ensure a more comprehensive understanding of this population, but in a given situation of a crisis, such methodological sophistication is often not fully implementable.

CRedit authorship contribution statement

Fatemeh Khozaei: Conceptualization, Data curation, Formal analysis, Methodology, Project administration, Resources, Software, Validation, Visualization, Writing – original draft, Writing – review & editing. **Qamar Ul Islam:** Writing – review & editing. **T Ramayah:** Writing – review & editing. **Nadia Ayub:** Writing – review & editing. **Claus-Christian Carbon:** Supervision, Writing – review & editing, Conceptualization, Funding acquisition, Visualization, Writing – original draft.

Declaration of competing interest

No conflict of interest exists.

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

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