

Emotional Distress and Depressive Feelings among Arab Immigrants in the United States

By

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DISSERTATION

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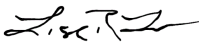
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## DEDICATION

In intense gratitude and deep appreciation, I would like to thank my God, who granted me life and the many opportunities among which I navigated my educational path and my entire life. I dedicate this dissertation to my beloved family, the keystone of my aptitude, resilience, and success. To my husband, Mostafa, your unwavering support has been the anchor of my educational quest. Your inspiration, great sacrifices, and shared dreams have driven my determination to achieve new adventures. This academic achievement is as much yours as it is mine. To my precious daughters, Rodina, and Nourhan, you are the catalyst for my pursuit of knowledge. Your boundless energy, innocent laughter, and absolute love have instilled pleasure in every step of this challenging pilgrimage. I extend my heartfelt thanks to my dear parents, whose enormous sacrifice and educational commitment paved the way for my academic achievement. Your enlightenment and reassurance have been a light that has helped me choose the best course to follow and has shaped the person I am today. Finally, I wanted to send special thanks to my brother Ahmed. You are the light in the dark hole and my backbone for staying motivated and inspired throughout my life journey. Without your empathetic guidance, I wouldn't have reached this academic success in my trek. This dissertation is a testament to my entire family's collaborative efforts, sacrifices, and love. Thank you from the core of my heart for being the wind beneath my wings so that I could grow and develop as I have.

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# **Emotional Distress and Depressive Feelings among Arab Immigrants in the United States**

Shaimaa M Elrefaay

## **ABSTRACT**

The proliferating influx of Arab immigrants into the United States unveils several transitional challenges and stressors that can create and exacerbate mental health issues, including depression and emotional distress. Despite the noteworthy impact of Arab mental well-being on the host country, research on addressing emotional distress and accompanying feelings of depression within Arab populations remains notably scant within the realm of mental health studies. Therefore, the aims of this dissertation were to: 1) evaluate psychosocial and demographic factors associated with depression, anxiety, post-traumatic stress disorders (PTSD), or psychological distress (PD) among Arab individuals in the U.S. ; 2) explore the levels of and risk factors associated with depressive feelings and emotional distress for Arab immigrants; and 3) evaluate the potential mediation roles of social cohesion and family life impairment on the association between depressive feelings and emotional distress. To accomplish the aims, we conducted a systematic review of the literature on seventeen distinct studies and examined data from the California Health Interview Survey (CHIS) survey (2013–2022). Female gender, old age, refugee status, and perceived discrimination were key factors identified through the systematic review as being associated with mental health problems among Arab individuals in the United States. Analysis of the CHIS data for Aim 2 indicated that 23.54% of Arab immigrants reported feelings of depression all or most of the time while 4.43% experienced emotional distress. We found no significant difference in the prevalence rates of depressive feelings or emotional distress between first-generation Arab immigrants and second-generation

Arab Americans. Our analysis of 9-year CHIS data supported findings of the systematic review that being female and of older age were risk factors for depressive feelings and emotional distress. In addition, the analysis further revealed that being less well-educated, being unemployed, or having lived in the U.S. for more than 15 years was associated with an increased risk for feelings of depression and emotional distress. Lastly, we uncovered statistically significant partial mediations for both social cohesion and family life impairment in the association between depressive feelings in the past 12 months and emotional distress in the past 30 days. Overall, the findings of this dissertation present compelling evidence of the necessity of implementing policy changes and enhancing service delivery methods targeting high-risk groups of Arab immigrants, with the ultimate goal of enhancing the psychological well-being of individuals of Arab descent.

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## **List of Abbreviations**

PD = Psychological Distress

U.S =United States

PTSD = Post-traumatic Stress Disorder

GSEM = Generalized Structural Equation Model

MSM = Minority Stress Model

GM = Gender Minority

# **CHAPTER ONE**

## **Dissertation Overview**

In this dissertation, I examined the multifaceted aspects of emotional distress and depression among Arab individuals residing in the U.S. I systematized my dissertation's content into five separate chapters: the introductory chapter, in which I explain the central research problem, its significance, and define the goals; and the structure for the entire dissertation. In the second chapter, I described how I conducted a systematic analysis, synthesizing the existing research on contributing factors to mental health problems (depression, anxiety, PTSD, and PD) among Arab individuals living in the U.S. In chapter 3, we investigated the occurrence and risk factors associated with both feelings of depression and emotional distress among Arab descendants using data from CHIS. In the fourth chapter, we focused on the exploration of how social cohesiveness and family life impairment play a mediating role in connecting depressive feelings in the previous 12 months with recent emotional distress, again based on CHIS data. I complete this dissertation in its fifth chapter, summarizing all key findings, discussing all the limitations imposed on the results by the study design or data source, as well as our attempts to address them. I also offer future researchers avenues to explore, underscoring the implications suggested by the dissertation findings for an improved understanding of mental health among Arab individuals in the U.S.

### **Introduction to the Problem**

The U.S. has the sixth largest (worldwide) share of Arab immigrants, with a resident population of between 2 million and 3.7 million (Albqoor et al., 2021). Between 22.4% and 50% of Arab Americans experience depression (Dallo et al., 2018; Pampati et al., 2018). In one survey of Arab American respondents from 35 states, 50% of those responding reported feeling

more depression and stress compared to a community sample of non-Hispanic whites (Amer & Hovy, 2012). Researchers further highlight the level of psychological distress among Middle Eastern or Arab groups, with a recent report indicating a rate of 5.99% in nationally representative Arab cohorts compared to non-Hispanic Whites from 2001 to 2015 in the U.S. (Albqoor et al., 2021). An increase in the number of displaced persons or immigrants, who will likely suffer from emotional distress or depression, may substantially add to the pressure on mental health services in the U.S. (Javanbakht, 2022; Pampti et al., 2018; Suleiman et al., 2021). Despite a higher prevalence of depression, Arab minorities are also 23% less likely to be screened for depression than non-Hispanic Whites, which may cause their depression to worsen. In addition to the potential for worsening of the population's mental health status due to this lack of screening, the lack of screening is likely producing an underestimated view of the severity of this public health problem (Dallo et al., 2018). Emotional distress or depression may significantly restrict an individual's ability to integrate socially or to be productive at their place of employment (Wilson & Thayer, 2018). The economic burden of depressive illness is comparable to the cost of heart disease. Depression imposes a financial burden on our healthcare system, directly costing \$216 billion annually and indirectly costing \$147 billion in lost work productivity (Benjamin et al., 2018). Thus, there is a need to ascertain the prevalence of , and the association between, emotional distress and depression among an increasing and vulnerable minority group.

Arab minorities experience multiple stressors along with contextual challenges due to their resettlement in a non-Arab host country, including prejudice, acculturation issues, and social challenges (Albqoor et al., 2021; Aroian, Uddin, & Blbas, 2017); However, few researchers have investigated the prevalence of, and effects associated with these stressors on

Arab immigrants' mental health. Emotional distress is a set of painful feelings or sentiments that a person feels when they feel overwhelmed, and which may have a significant impact on everyday life activities (Belay et al., 2021; Pampati et al., 2018). Research indicates a correlation between depression and emotional distress in Arab immigrant groups, highlighting the interconnectedness of both mental health problems (Aroian, Uddin, & Blbas, 2017; Suleiman et al., 2021; Su, 2022). Yet, there remains a gap in the understanding of the predictive impact of a preceding depression in intensifying emotional distress among Arab immigrant populations.

Social cohesion, representing the interconnectedness and solidarity with the surrounding community, has been reported to act as an influential factor in the outcome of the mental health and well-being of Arab minorities (Alhasanat & Judith Fry-McComish, 2015; Su, 2022). Impairment in family life portrayed by a collapse in intra-family communication, difficulties in engaging in household activities, and upholding harmonious interactions within the family structure (Hammer-Helmich et al., 2018). The strength of social bonds has been observed to play a significant role in shaping the well-being of immigrant populations, with the potential of reducing individuals' levels of depression (Benjamin et al., 2018; Kronick, 2018). Literature has increasingly indicated the dynamic importance of family life support and societal cohesiveness in improving psychological well-being and mitigating the emotional impact of distress among Arab immigrants (Su, 2022; Nashwan, 2014). Nonetheless, whether social cohesion or family life impairment influences the link between depression and emotional distress among Arab immigrants remains unknown.

### **Historical Context of Arab Ancestry in the U.S.**

Historically, the term "Arab American" was often used interchangeably with the label "Middle Eastern," which created an intricate landscape for defining this population. The word



*Arab* explicitly refers to individuals who originated from Arabic roots or whose territories of origin encompass the Arabian Peninsula, the Middle East, and Northern Africa (see **Figure 1.1**) (Balidemaj & Small, 2018; Wrobel et al., 2009). Arab resettlements in the U.S. trace back historically to the pre-independence period of 1776, with a major influx during the 19th century (Balidemaj & Small, 2019). Despite sharing a common ancestry, Arabs in the U.S. demonstrate diversity in religion, culture, and tradition (Wrobel et al., 2009). Approximately 3.7 million Arabs constitute one of the fastest-growing immigrant populations in the U.S. (Albqoor et al., 2021; Handbook of Arab American Psychology, 2016). The Arab community more than doubled in number between 2000 and 2019, going from 596,000 to 1.2 million people (Brittingham & Cruz, 2005; Zeigler & Camarota, 2014). Arab immigrants, originating from 22 countries, have arrived in the U.S. in three major waves (excluding those before 1776), commencing in the 19th century and extending to the present (Kaldas & Mattawa, 2020). Each wave has had its own distinctive characteristics, with Christian Arabs comprising the first wave, Palestinian refugees immigrating during the second, and people fleeing political unrest in places like Iraq and Lebanon constituting the third wave (Albqoor et al., 2021).

Arab populations consist of numerous generations, with the first and second generations being the most extensively studied. First-generation Arab Americans are defined as those who emigrate from the Middle East and may be the initial generation in their family to possess American citizenship (Samari, 2016; Suliman et al., 2021). The term “second generation,” or Arab Americans, has two definitions. It refers to those who are either the U.S.-born offspring of the first generation, or alternatively, this generation can be defined as those small children under the age of 10 who traveled to the U.S. with their parents and grew up here. The third and later generations represent descendants born to American-born Arab parents (Elfar, 2016). Arab

immigrants are geographically present in all states, with the vast majority (94%) dwelling in metropolitan areas of the States of Michigan, New York, or California, which draws attention to their significant presence and impact on the cultural landscape of such regions (Abdulrahim & Baker, 2009; Elfar, 2016). This historical and demographic context sets a robust underpinning for illuminating the complexities and unique challenges Arab immigrants encounter in the U.S.

## **Background and Significance**

### **Societal Burden of Depression and Emotional Distress in Arab Immigrants**

Depression is considerably prevalent in the Arab population, with (as we stated previously) rates between 22.4% and 50% (Javanbakht et al., 2019; M'zah et al., 2019; Suleiman et al., 2021). According to Papamti et al. (2018), who polled Arab Americans from 35 U.S. states, about half of their Arab American respondents reported higher levels of depression and stress than non-Hispanic whites. As previously stated, Arab individuals are 23% less likely to undergo depression screening than non-Hispanic Whites, potentially exacerbating their pre-existing depression and contributing to an underappreciated public health issue (Dallo et al., 2016; Wilson, M., & Thayer, 2018). The emotional distress level among Arabs is reported to vary, with a rate of between 4.37% and 50% reported by different research groups (Albqoor et al., 2021; Amin & Driver, 2019; M'zah, Cardozo & Evans, 2019; Tylor et al., 2014). Such expatriate individuals' arrival within a short period of time necessitates an appropriate reaction to ensure their entitlement to basic health care is satisfied (Dallo et al., 2016; Gicaco et al., 2017).

Emotional distress is often included in the repercussions of other mental health issues and is associated with an intense feeling of emotional anguish, which impedes an individual's ability to thrive personally or professionally and also impedes their integration into the proximate community (Albqoor et al., 2021). Depression frequently causes other serious morbidities,

including devastating impairments in individuals in all aspects of life, socialization, work, and family disruptions; depression may increase the rate of suicide within a community (Amin & Driver, 2019; Pampati et al., 2018). Arab culture has long stigmatized depression and emotional distress. Individuals suffering from depression usually seek assistance from within their immediate social network (Jaber et al., 2015). A sufferer's family will seek outside expert aid only if the individual's attempts at self-remedy fail (Abuelezam & El-Sayed, 2021; Pampati et al., 2018). The societal stigma and disgrace heaped on mental illnesses among Arabs contribute to the reluctance to seek professional help (Fekih-Romdhane). According to the World Health Organization (WHO), depression is the second most- common cause of universal disability and is projected to be the major culprit in disease burden by 2030 (Institute of Health Metrics and Evaluation, 2022). As we stated previously, increasing numbers of displaced individuals or immigrants, likely prone to emotional distress or depression, may significantly exacerbate the demand for U.S. mental health services (Javanbakht et al., 2019; Pampati et al., 2018). Also, as stated previously, depression results in lost workdays, thus affecting both personal economic well-being and national economies' performances (Abuelezam, N. N., & El-Sayed, 2021; Jaber et al., 2015). Depression imposes a financial burden on the U.S. healthcare system, costing \$216 billion annually and resulting in \$147 billion in lost work productivity (Sherr, 2021). Thus, there is a need to ascertain the prevalence of and better understand the association between emotional distress and depression among an increasingly large but still vulnerable minority group.

### **Depression, Emotional Distress, and Risk Factors**

Emotional distress is a set of grievous feelings or sentiments that a person feels when they are overwhelmed, and which may have a significant impact on everyday life activities (Kronick, 2017). Emotional distress, often coupled with feelings of alienation, marginalization,

stigma, and identity uncertainty, may precipitate depression among Arab immigrants (Lazar-Neto et al., 2017; Pampati et al., 2018). Reports from the literature indicate a strong direct correlation between emotional distress and depression rates among the Arab population (Assari & Lankarani, 2017; Aroian, Uddin, & Blbas, 2017; Su, 2022). There is evidence that immigration stressors are longer lasting for some immigrants, and when this is the case, their depression may persist beyond the early resettlement period or worsen over time (Aroian, Uddin, & Blbas, 2017; Su, 2022), although the role of earlier depression in intensifying emotional distress among Arab immigrant populations remains unstudied.

Recent research has shown that several sociodemographic factors appear to have an impact on depression and psychological discomfort among Arab immigrants. Gender, age, and marital status are significant indicators of increased susceptibility to depression and overall psychological discomfort. Females, older adults, and unmarried people may be more prone to these conditions (Abuelezam & El-Sayed, 2021; Wrobel, Farag, & Haymes, 2009). In addition, refugees and those who have been in the United States for long durations have exhibited a higher prevalence of depression. Research has documented that various characteristics, such as gender, duration of residency in the United States, or being a first-generation immigrant, augment psychiatric symptoms (Javanbakht et al., 2019; Samri, 2016). Reduced resilience and restricted participation in community organizations may contribute to the increased psychological distress among Arab immigrants (Lemaster et al., 2018). Furthermore, the literature suggests that first-generation immigrants exhibit distinct mental health concerns in comparison to subsequent generations. Samri (2016) notes that first-generation immigrants experience higher levels of distress compared to second-generation immigrants. However, there is a notable dearth of

research on the risk factors associated with socio-demographic characteristics among Arab immigrants. This highlights the need for more investigation in this particular area.

### **Social Cohesion and Family life Impairment and Emotional Distress Risk**

Mental health research provides a perspective from which to assess the influence of family dynamics within the broader social context for individuals experiencing depression or other mental health problems. Social cohesion indicators encompass both the social structural dimensions, such as social networks and community participation, and the relational aspects, including trust and social support (Rapee et al., 2020; Seff et al., 2021;). An impediment in the individual's family life encompasses different types of problems with family dynamics, such as a collapse in intrafamily communications, difficulties engaging in household events, or preserving harmonizing connections within the family structure (Hammer-Helmich et al., 2018). Researchers have established that perceived cohesion with family, friends, society, and school staff members correlated (positively) with assistance-seeking and adaptive coping among Arab students with mental problems (Benjamin et al., 2018; Giacco et al., 2018; Kronick, 2018). Su (2022) found a positive relationship between embracing American culture, feeling a sense of belonging, and Arab minorities' overall mental well-being. Researchers have shown that Arab immigrants with strong social bonds and a sense of belonging in their community were less likely to experience emotional distress (Kornick et al., 2018; Patel et al., 2022). Both cultural continuity and social connectedness are protective factors for mental well-being (Kronick, 2018; Patel et al., 2022).

### **Conceptual Framework**

I utilized Ilan Meyer's (2003) Minority Stress Model (MSM) as the guiding model for my dissertation work. Meyer first conceptualized their model to describe the interaction between

stress and mental health outcomes for sexual minority individuals. Since then, the MSM has been applied to many different minority populations, including cross-cultural ethnicity, health outcomes and stressors (Battle et al., 2017; Perrin et al., 2021), suicide (Haas et al., 2010), and disability (Lund et al., 2018; Perrin et al., 2020). The MSM was constructed from several other socio-psychological theories that describe the social-environmental conflicts faced by minority group members (Tan et al., 2020; Perrin et al., 2020). The MSM's formulation is based on the concept that minority identities and individual value systems conflict with those of socially dominant groups; this conflict may harm the minority members' interactions with their social surroundings (Meyer, 2003). According to the model's precepts, minority stressors, including discrimination, humiliation, and chauvinism, predispose an individual to a stressful existence, as does a hostile social environment, which in turn produces mental health problems (Meyer, 2003). Meyer used the MSM to propose that minority stress is distinct from, and exists in addition to, the general stress experienced by all people, as well as to explain why minority individuals may require greater adaptation than comparable non-minority individuals (Herek, 2009; Meyer, 2003; Pachankis, 2007). Meyer also noted that minority stress is chronic as well as socially grounded; he also proposed that minority stress is frequently connected to relatively stable underlying socio-cultural structures resulting from the social processes and institutions of dominant groups (Meyer, 2003). The MSM also highlights elements of the individual (e.g., their identity and its associated qualities) along with group-level resources (e.g., social support) that act to buffer stressors' impacts (Hoy-Ellis et al., 2021).

Meyer described the MSM as having three primary concepts: external or environmental circumstances, anticipatory external events, and internalized homophobia (**Figure 2.1**; Hendricks & Testa, 2012; Meyer, 2003). Each of these concepts forms the basis of MSM and, according to

Meyer, produces detrimental psychological health effects. Meyer also emphasizes the possibility of favorable reactions in or to these processes, such as the growth of resilience and healthy coping mechanisms.

*External or environmental circumstances-* External circumstances are incidents that exacerbate social stress in marginalized individuals, whether socioeconomically, ethnically, gender, or sexually (Meyer, 2003). Social structures can influence environmental variables or external occurrences, and the combination of these factors can lead to stress. These variables include general stressors, including failure at a task, the loss of a job, or the loss of a family member; they may also include stressors unique to minority groups, such as prejudice in employment. A gender minority (GM) individual encounters specific hurdles and circumstances that amplify difficult experiences; this additive stress comprises one component of minority stress.

*Anticipatory external events-*The second primary element of the MSM is *anticipatory events*. This component entails the minority individual anticipating potentially stressful environmental occurrences, producing a hypervigilant state that amplifies stressful experiences (Hendricks & Testa, 2012; Meyer, 2003). Hypervigilant individuals may develop a generalized dread and mistrust of the dominant culture due to their stress. Individuals who are marginalized group members may acquire hypervigilance in defending themselves against prejudice (Meyer, 2003; Tan et al., 2020).

*Internalized homophobia-*The MSM's last component is the occurrence of internalized homophobia (Meyer, 2003). According to Meyer (2003), internalized homophobia is a self-directed negative feeling acquired and maintained by a GM individual due to years of socialization under the terms of a hostile society (Meyer, 2003). This version of homophobia

may manifest either as anticipation of rejection, concealment of their GM status, a negative attitude towards others who share the individual's GM identity, self-stigmatization, self-devaluation, or destructive self-labeling (Holman et al., 2018; Meyer, 2003).

We employed the guidance of the MSM's framework to enable us to incorporate both environmental stressors and social stressors and to assess available coping resources so that we might gain valuable insights into the interplay between depression and emotional distress among Arab minorities. The MSM may also benefit us in elucidating any social difficulties experienced by or distinctively different experiences encountered by the Arab minority in the U.S., which likely constitute the contextual results of pre-immigration expectations. Although our primary focus was the assessment of emotional distress, depression, family life impairment, and social cohesion, it's crucial for us to acknowledge that the MSM's theoretical underpinnings enabled us to gain a broader understanding of how these variables interact within the context of minority stress. By assessing the role of social cohesion as a potential buffer against emotional distress and depression, we sought to provide deeper insights into the nuanced ways in which minority stress and social support dynamics interact, thus contributing to a more comprehensive understanding of mental health outcomes among Arab immigrants in the United States.

Incorporating Meyer's (2003) minority stress concepts in our proposed model enabled us to differentiate the excessive strain under which individuals of stigmatized social categories live due to their social or ethnic minority status (Meyer, 2003). Meyer's refined collection of strain factors could be checked to see if any of them act to influence the relationship between Arab immigrants' depression and emotional distress outcomes. Environmental variables, such as those observables in a workplace, could similarly be checked to determine whether an Arab immigrant self-identified as a racial minority (or was so identified by others more pejoratively). The



concept of internalized homophobia can be extended to Arab immigrants. For example, unfavorable social views and prejudices towards immigrants, coupled with the negative stereotype of being of Arab origins, can lead to negative self-perceptions among Arab immigrants. The internalized homophobia is evident via feelings of humiliation, self-doubt, and a perception of being inferior due to their immigrant and ethnic status. Arab immigrants may experience a sense of obligation to minimize their cultural identity, language, or religious customs in order to evade prejudice and conform to societal norms. This can lead to a decline in cultural identity, persistent stress, and negative mental health consequences. The MSM also alludes to social coping elements, family disruptions, and community engagement as a means of changing the framework to address minority mental health outcomes. The consideration of socioeconomic stressors is important, as these stressors, which include marital status (including divorce), education level, unemployment, or financial difficulties, all of which are likely related to an individual's minority status, may be categorized as belonging to Meyer's general stressors group and can have a significant impact on an individual's mental health. The literature indicates that minority status (ethnic minority), experienced as prejudice, contributes significantly to self (in the form of an individual's own ethnic or racial identity)-directed negative attitudes as well as to fears of being judged in social forums (Berry et al., 2018; Chan & H. Huang, 2021; Valentin-Cortes et al., 2020). Such societal messages may damage the individual's sense of self as well as exacerbate their extant symptoms of social anxiety, emotional distress, or depression (Bruce, Harper & Bauermeister, 2015). In testing of the final aim, I examined the potentially mediating effects of family life impairment and social cohesiveness to assess how strong these effects were in terms of their effect on the links between depression and emotional distress.

### **Specific Aims of the Study**

Arab immigrants and their psychological health have been nearly invisible to researchers, despite their population's increasing numbers in the U.S. Although a significant body of research has been conducted to examine how barriers encountered in their host country by Arab immigrants (including socioeconomic stress and social and interpersonal difficulties, and those challenges inherent in the immigration process) contribute to poorer mental health, the effects of exposure to depression on the Arab population's subsequent risk of emotional distress have received less attention. Another significant gap in the literature concerns the lack of evidence regarding predictors of depression or emotional distress among Arab individuals in the U.S. Similarly, little is known about the potential mediators in the relationship between general feelings of depression over the past year and emotional distress in the current month among Arab immigrants. My overall goal for this dissertation research was to gain an improved understanding of depression and emotional distress among Arab immigrants living in the U.S.

**Aim One: Conduct a systematic review to synthesize the available information on risk factors for mental health outcomes among Arab individuals in the U.S.**

1. Evaluate psychosocial and demographic factors associated with depression, anxiety, PTSD, or PD among Arab individuals in the U.S.

**Aim Two: Explore the level of and the risk factors associated with self-reported depressive feelings and emotional distress for Arab immigrants in the U.S:**

1. Determine the pooled prevalence between 2013 and 2021 of depressive feelings as well as emotional distress among Arab immigrants in the U.S.
2. Analyze the differences in the prevalence rates (if any exist) over three waves of CHIS data collection (2013–2015, 2016–2018, and 2019–2021).

3. Compare any changes found in the depressive feelings or emotional distress prevalence rates between first-generation Arab immigrants and second-generation Arab Americans.
4. Investigate whether any socio-demographic risk factors (e.g., age, gender, marital status, education level, years living in the U.S., English proficiency, or poverty level) are associated with depressive feelings or emotional distress in the U.S. Arab-descended population.

**Aim Three: Evaluate potential mediation roles of social cohesion and family life impairment on the association between depressive feelings and emotional distress.**

1. Determine if Arab immigrants' worst-case depression from the previous 12 months will predict the intensity of their emotional distress in the last 30 days.
2. Evaluate the potential mediating effect of social cohesion and family life impairment on the association between depressive feelings and emotional distress

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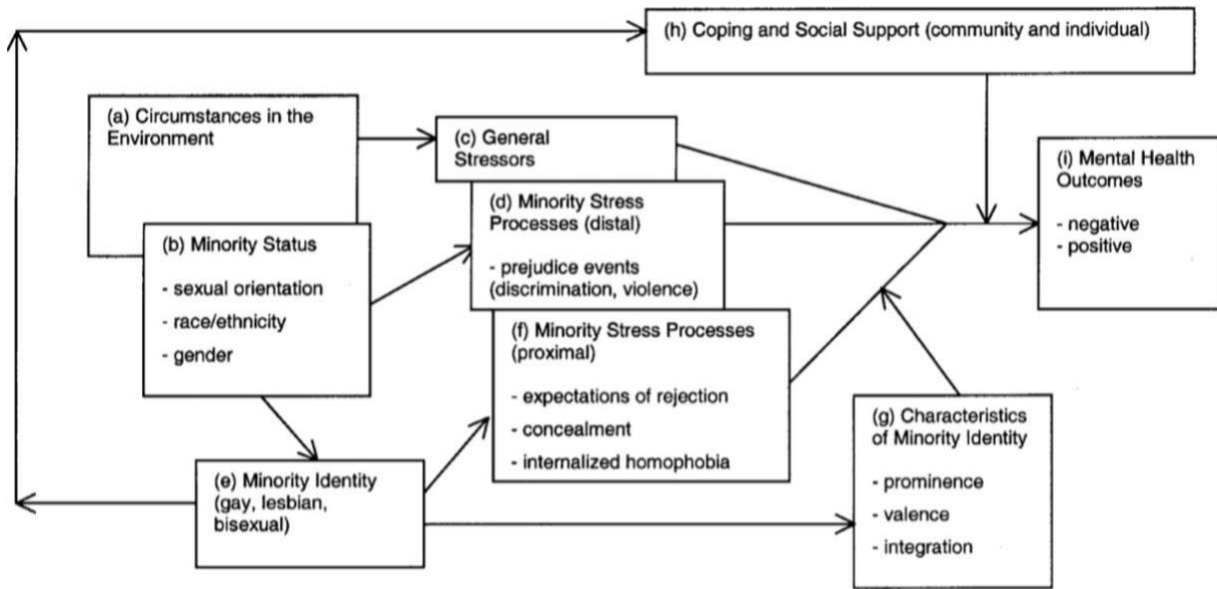
## APPENDIX A

### Figures



**Figure 1.1:** Map of the Arab World

Adopted from: [https://www.researchgate.net/figure/Map-of-the-Arab-World\\_fig1\\_305584980](https://www.researchgate.net/figure/Map-of-the-Arab-World_fig1_305584980)



**Figure 2.1:** Meyer's Minority Stress Model

## CHAPTER TWO

### Systematic Review of Mental Health Symptoms among Arab Individuals in the United States

#### Abstract

**Problem Statement:** An increasing number of Arab immigrants and refugees live in the United States (U.S.). Given their larger risk for mental health problems compared to non-Hispanic Whites, an understanding of factors contributing to this risk is essential. In this review, we identified and synthesized key psychosocial and demographic factors associated with depression, anxiety, PTSD, and PD among Arab individuals in the U.S.

**Methods:** In accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA-P) guidelines, we conducted an organized search of published English literature using the databases PubMed, Embase, CINHALL, PsycINFO, or Web of Science. Our inclusion criteria involved observational studies (e.g., cross-sectional, case-control, or cohort) published between January 2000 and March 2023, conducted to investigate factors associated with mental health problems among Arab immigrants or refugees (adults or children) living in the U.S. Two reviewers individually extracted the article data and evaluated the methodological quality of identified studies using a pre-established checklist. We employed a structured narrative synthesis, following Cochrane guidelines, to analyze the source study reports' text and table data.

**Results:** We included 19 studies with a total of 8,480 participants. We identified key determinants of mental health symptoms among Arab individuals in the U.S., including demographic characteristics (being female and older) and immigration-related factors (being a refugee and perceived discrimination).

Conclusion and Implications: Risk factors identified through this review provide focal points for mental health assessment, prevention, and culturally appropriate intervention as well as for further research. We emphasize the importance of developing mental health programs that cater to the unique requirements of Arab women and elderly Arab individuals, offering culturally sensitive care approaches for those experiencing discrimination, refugees experiencing trauma, and employment assistance for those who are unemployed.

## **Introduction**

The Arab-descended population in the U.S. is rapidly growing (Amin & Driver, 2019). From 1990 to 2000, Arab individuals had a 75 percent growth in population (Elshahat & Moffat, 2021). According to the Arab American Institute, the U.S. had nearly 4 million Arab residents in 2016, comprising individuals of different originating nationalities. These individuals could be categorized as first generation (born overseas), second generation (U.S.-born descendants of the first-generation immigrants, also known as Arab Americans), or third generation and later (U.S.-born to native-born parents, both generations also known as Arab Americans) (Samari, 2016). Arab immigrants are defined as individuals who have either personally moved from regions encompassing the Arabian Peninsula, the Middle East, and Northern Africa (Albqoor et al., 2020; Wrobel, Farag, & Haymes, 2009) or descend from those who did.

Arab first-generation immigrants grapple with numerous immigration-related stressors, such as cultural barriers, prejudice, social difficulties, economic instabilities, and linguistic hurdles (Pampati et al., 2018). Scholars have suggested that the challenging living circumstances and economic constrictions faced by this minority population in the U.S. constitute substantial contributors to the exacerbation of anxiety and depression (Abuelezam et al., 2021; Pampati et al., 2018; Patel et al., 2022; Suleiman & Whitfield, 2021). The available evidence indicates that

Arab immigrants experience more detachment, social marginalization, stress, depression, anxiety, and PTSD compared to other immigrant groups (non-Hispanic Whites; Albqoor et al., 2020; Dallo, Kindratt & Snell, 2013) and Iranian Americans (Abuelazem et al., 2021) of the host country (Schlaudt et al., 2020). An increase in the number of displaced people or in the number of immigrants with mental health symptoms may pose considerable added pressure on mental health services in the U.S. (Giaccio, Laxman, & Priebe, 2018).

Depression and anxiety are key contributors to disability-adjusted life years in the U.S. and are predicted to become the second-most devastating ailments worldwide by 2030 (Lindert et al., 2009). Psychiatric conditions, such as depression, anxiety, and PTSD, not only constrict an individual's capacity to concentrate but also obstruct their ability to contribute efficiently to societal and professional activities (Wilson & Thayer, 2018). Despite the apparent need, Arab individuals are as much as 23% less likely to undergo depression assessments, in contrast to non-Hispanic whites; this lack of assessment imparts an increased risk for untreated mental health problems (Dallo et al., 2016; Wilson & Thayer, 2018). Untreated mental illness in the U.S. results in a momentous economic impact of \$300 billion per year due to lost productivity (Hunt et al., 2015). Thus, it is crucial to comprehend the determinants of mental health symptoms among the increasing Arab community in the U.S. (Pampati et al., 2018).

Several systematic reviews have been published on mental health outcomes of immigrants; however, they have focused on immigrant groups of diverse ethnicities within the U.S. or in other Western or low-income countries. We found only two systematic reviews focused exclusively on Arab immigrants. For example, Albqoor et al. (2019) delved into the health status of Arab immigrants in the U.S., albeit focusing solely on self-rated health rather than specific mental health symptoms. Similarly, Elshahat & Moffat (2021) conducted a



systematic review on the mental health of Arab immigrants, encompassing qualitative and quantitative studies. However, Elshahat & Moffat (2021) expanded their scope beyond the United States, incorporating Arabs residing in North America, including Canada. Furthermore, they examined both pre- and post-immigration factors impacting mental health, offering a broad understanding of the multifaceted barriers and facilitators encountered by Arab immigrants in their host countries. To the best of our knowledge, there is no systematic review that is focused solely on the factors contributing to mental health problems among Arab individuals living in the U.S. Thus, our aim in this review was to evaluate the psychosocial and demographic factors associated with depression, anxiety, PTSD, and more general psychological distress among Arab individuals in the U.S.

## **Methods**

We designed this study using the PRISMA-P guidelines, which encompass a 17-item checklist to appraise methodically the available peer-reviewed literature (Moher, Shamseer & Clarke, 2015). We also employed the list in reporting our review results.

## **Eligibility Criteria**

We applied the population, exposure, control or comparison, outcome, and type of research design elements to draft our inclusion criteria (Higgins & Green, 2011; **Table 1.2**). Our population of interest consisted of Arab residents in the United States, whether immigrants or refugees, with no age restrictions. Our exposure was defined as the presence of one or more of the risk factors associated with mental health problems identified in previous research. The latter set of items, in turn, served as our outcomes, including each mental health problem we listed in the statement of our aim at the end of the previous section. We restricted our research study design types to cross-sectional, case-control, or longitudinal studies. We required reports we

considered eligible for inclusion to be accessible in full text, peer-reviewed, English-written, and published from January 2000 to March 2023. We excluded studies that solely presented data on the prevalence of mental health conditions, without any reference to contributing factors. We also excluded studies that exclusively focused on mental illnesses other than depression, anxiety, PTSD, or general psychological distress, such as schizophrenia or bipolar disorder, or reports whose authors had focused on more specific types of anxiety or depression (such as panic disorder or post-partum depression).

**Table 1.2:** PICOT Table of Study Inclusion and Exclusion Criteria

|                   | <b>Inclusion Criteria</b>   | <b>Exclusion Criteria</b>  |
|-------------------|---|--|
| <b>Population</b> | -Adult or child Arab immigrants or asylum seekers or refugees; U.S.-born Arabs living in the U.S.   | -Any population not including Arabs or their descendants.  |
| <b>Exposure</b>   | - Risk factors, including demographic, psychological, immigration stressors, family, environmental, economic, or psychological distress (risk factors must occur before or concurrently with these mental health problems). | - Investigations concerning only pre-immigration risk or pre-immigration traumatic factors were not included unless post-immigration factors were also assessed. |

|                               | <b>Inclusion Criteria</b>   | <b>Exclusion Criteria</b>   |
|-------------------------------|---|---|
| <b>Outcome</b>                | - Mental health issues (depression, anxiety, PTSD, or psychological distress).                        | -Other mental health problems (e.g., bipolar disorders, psychotic illnesses) or specialized versions of depression or anxiety (e.g., panic disorder, post-partum depression). |
| <b>Type of Study Design</b>   | -Cross-sectional, longitudinal (cohort), or case-control.   | -Randomized controlled trials, case reports, case series, or any type of qualitative design.  |
| <b>Report Characteristics</b> | -Peer-reviewed, full-text article, written in English, published between January 2000 and March 2023. | -Any non-peer-reviewed articles, conference papers, systematic reviews, papers reporting only their study protocol, or dissertations.   |

### **Information Sources**

With assistance from the research librarian, we searched five databases: PubMed, PsychINFO, EMBASE, CINHALL, and Web of Science. During these searches, we developed an in-depth search strategy involving both the terms and text words of the medical subject heading (MeSH) detailed in each data repository.

### **Search Strategy**

We outlined our search strategy using two key concepts: (1) to obtain target populations of Arab people, involving immigrants, refugees and other Arab individuals living in the U.S., and (2) to obtain information on the mental health problems of interest . Our first concept’s terms included the following MeSH terms: “Arabs,” “immigrants,” “transient or migrants”, “emigrants

and immigrants” together with keywords such as “refugees”, “asylum seekers” or “Arab American”. Search terms for our second concept included “depression,” “depressive disorder,” “anxiety,” “anxiety disorders”, “mental health,” “stress disorders, post-traumatic,” “psychological trauma,” “psychological stress” as MeSH terms (see Appendix 1 for examples of the search strategies we employed for PubMed, Psych INFO, EMBASE and CINHAL). Both of our search concepts were combined using the Boolean operator ‘and’. We did not include terms for specific risk factors (e.g., “predisposing factors,” “risk factors,” “immigration stressors”) to avoid biasing our search toward such specific terms and because we assumed that we would select any articles with those key words via our search for specific MeSH terms. We also did not apply any specification to our search for the study design type, e.g., cross-sectional, or longitudinal, to avoid inadvertently omitting potentially relevant studies.

### **Data Management**

We used the following applications to efficiently manage the articles that provided the data for our systematic review: Covidence, Endnote (V.x9), and Microsoft Excel 2017. We have furnished a PRISMA flow chart (Figure 1) to illustrate our process of eliminating less-than-useful articles as well as determining which of the remainder met our eligibility criteria. In the diagram, we present a detailed rationale for excluding specific research articles (see exclusion study tables in Appendix II). The software packages enabled us to organize and screen our search results, remove duplicate articles, store the remainder, and extract textual information from each article. Our team previously devised screening questions to refine the search results according to our eligibility criteria. One reviewer (SE) initially imported all the papers found in our database searches into Endnote to remove any duplicates, then transferred the data to Covidence for additional duplicate removal, if any.

## **Data Collection Process**

We utilized Covidence's voting system to determine the inclusion of an article, selecting "yes," "no," or "may be" based on whether it met our criteria. If a disagreement between SE and CH K authors occurred, we had Covidence flag the article for further discussion between all reviewers; our third reviewer, SW, functioned as a third-party arbitrator to resolve any divergence between the first two reviewers through an open discussion and by achieving consensus between the three involved authors. Before conducting our data extraction process, our team had developed a data extraction sheet. The first reviewer (SE) was primarily responsible for extracting the data from the eligible studies, while the second reviewer (CH K) verified all the extracted data to minimize any duplicate-induced imprecisions. We excluded reports that were inaccessible in either abstract or full text. We did not contact the authors of an excluded article to obtain the information we determined was missing from their paper, as we had a satisfactory number of qualified articles. Before commencing our formal screening process, two of us conducted a pilot screening exercise to train ourselves in how to determine whether an article was, SE, and CH K, eligible to improve our screening process and to assess the data extraction sheet's efficacy in our efforts to minimize biases. We conducted the process of selecting eligible articles as follows: Our first two reviewers (SE and CH K) initially evaluated the titles together with the abstracts, utilizing the piloted data extraction sheet, of the articles remaining after we had removed the duplicates to determine their eligibility based on our inclusion criteria. We then acquired the complete texts of the articles we determined to be eligible. Following that, the first two reviewers independently assessed the entire content of these articles. The two reviewers resolved any discrepancies through discussion until they agreed. The primary author (SE) next created two lists: 1) publications meeting the data extraction criteria

outlined previously, and 2) articles not meeting our eligibility criteria, along with explanations for their exclusion.

### ***Data Items***

The data we acquired consisted of elements from four primary categories: 1) **Study characteristics** encompass identifying elements of a study, such as the primary author, publication year, and source of financing; this information also encompassed details on the type of study design (cross-sectional, case-control, cohort), the geographic setting in which the study took place (rural or urban), the technique used for sampling participants (random or non-random), the size of the sample population, the duration of the data collection period, the rate at which participants responded, and whether the data collection was conducted prospectively or retrospectively; 2) **Participant characteristics**: inclusion criteria, recruitment setting (clinic, community), recruitment method (advertisement, phone contact), age of the participants (mean, range), gender (proportion for male and female), education, marital status, country of origin, employment status (employed, unemployed), reason for immigration to the U.S. (immigrants, refugees), duration of residency; 3) **Outcome characteristics**: outcome measured (depression, anxiety, PTSD, or psychological distress), the duration of the reported mental health symptoms, as well as the methodology used to document the symptoms (validated or non-validated self-report measure, clinical interview), whether assessment conducted using a specialized instrument. We also obtained the cited statistical data (percentages, mean with standard deviation, odds ratio [OR], or risk ratio [R]), along with the time point during which the outcome was measured; and 4) **risk factors**: factors associated with depression, anxiety, PTSD, or psychological distress; type of stressors (e.g., economic, trauma-related, socio-cultural); risk

factor assessment tool; risk factor category (depression-related, anxiety-related, PTSD-related, or psychological distress-related; Pedersen, Zajkowska & Kieling, 2019).

### **Outcomes and Prioritization**

Given the significant morbidity associated with depression and the clinical attention it has received (e.g., Javanbakht et al., 2019; Patel, 2017), our primary outcome of interest was depression. However, concern regarding anxiety, PTSD and general psychological distress has also been raised, and these are often concomitant with depression (e.g., Slewa-Younan et al., 2015; Turrini et al., 2017). Mental health symptoms of depression, anxiety, PTSD, or psychological distress were defined either through clinical diagnoses, structured clinical interviews, self-report measures, or medical records. Factors that could contribute to mental health symptoms comprise exposures or predisposing risk factors including socio-demographic factors (age, gender, education, duration of residence in the U.S.), contextual factors (economic, family, environmental, social, and cultural), and factors related to stressful or traumatic life events.

### **Risk of Bias in Individual Studies**

Two reviewers (SE and CH K) thoroughly evaluated the risk of bias in our reviewed articles, as well as their research quality, using a checklist developed by Hölzel et al. (2011), which complied with the Critical Appraisal Skills Program (CASP) of the British National Health Service and other research standards (Egger et al., 2003; Hölzel et al., 2011; National Health Service, 2006). The checklist has been extensively utilized to assess both the internal and external validity of observational studies (Bigna et al., 2018; Hölzel et al., 2011). Hölzel et al.'s checklist contains criteria used to assess selection bias, measurement bias, attrition bias, and loss bias. The checklist also enables a determination of the external validity of randomized selection

and the representativeness of the sample. The questions on the checklist related to the criteria have answers of “yes,” “no,” or “unclear,” as only cohort studies could satisfy the criteria for attrition bias or loss bias. Instead of considering only the sum score, reviewers conducted a comprehensive evaluation of the methodological quality following the method of Hölzel et al. (2011). We employed four of the criteria relevant to cross-sectional studies and case-control studies to assess the overall methodological quality of an article as “high quality” if it met three or all of the four criteria. Research that only met two of the four criteria were considered “medium quality,” while we determined that studies meeting fewer than two criteria (i.e., one or none) were of “low quality.” The cohort studies were rated as follows: those that fulfilled four or more quality criteria (out of six) were classified as “high quality”; those that satisfied three criteria were categorized as “medium quality,” whereas studies that met fewer than three criteria were rated as “low quality.”

### **Data Synthesis**

We conducted a structured narrative synthesis by analyzing the details provided in the source study reports' text and tables to summarize and elucidate study characteristics and findings in line with Cochrane recommendations (Higgins & Greens, 2011). We detailed, organized, and described the features of the reviewed studies, such as the participants, risk factors, and study quality (bias risk). We categorized the studies by study design, year of publication, and sample size. We categorized our analysis of the patient population (including average age, age range, gender, and country of origin) based on their immigration status (immigrants versus refugees). We compiled outcome characteristics, classifying them as either the primary outcome (depression) or as secondary outcomes (anxiety, PTSD, psychological distress), along with the name of the assessment instrument used for the symptoms. We compiled



data on the severity or prevalence of mental health symptoms, presenting the prevalence as a percentage or as a mean with its standard deviation (SD). We also categorized our results by subgroups such as male, female, immigrants, refugees, and the country of origin (the last if the article cited this information). We classified the risk factors of the mental health problems using the same approach as we had employed for categorizing or ranking our outcomes (refer to the previous "Outcomes and Exposures" section). We identified and distinguished risk factors correlated with each of the outcomes (depression, anxiety, PTSD, and PD). We also differentiated factors found to be associated with depression or anxiety prospectively, as these should provide more robust evidence for causality than those associated with depression either retrospectively or cross-sectionally (Higgins, 2002). Lastly, we described the quality of our reviewed studies in a table stratified by the overall methodological quality (low, moderate, or high quality).

## **Results**

We found a total of 2,290 abstracts from our database searches, including PubMed (482 abstracts), ProQuest (438), Embase (493), Web of Science (457), and CINAHL (420). Our PRISMA diagram (**Figure 1.2**) contains our summary of the process we followed in selecting the review-eligible articles and the reasons we excluded the majority of them. Once we had eliminated the duplicate entries, 1358 distinct, potentially relevant articles remained. After we reviewed each article's title, we identified 91 relevant citations suitable for abstract evaluation. After we completed our review of each potentially eligible article's abstract, we deemed 55 papers suitable for full-text analysis. Finally, after we tested each article against our screening criteria, we had 19 distinct studies.

### **Characteristics of Reviewed Studies and Study Participants**

The 19 unique studies we analyzed, which had been conducted between 2002 and 2023, recruited 8,480 participants (**Table 2.2**). The size of the sample population reported in each article varied from 25 to 1,389 individuals. Of the 19 studies we analyzed, 16 (84%) were cross-sectional, 2 (10%) were longitudinal, and 1 (6%) was a pilot study. Seventeen studies recruited their sample population through a community-based approach (they recruited specifically from different Arab community organizations, researchers' social networks or word of mouth, or Arab refugees' centers). One study by Javanbakht et al. (2019) involved participants from primary care clinics in the Detroit area, while another study by Jamali et al. (2010) gathered information from medical chart reviews. As for participant's age groups, Wrobel et al. (2009) exclusively examined the elderly Arab population aged 60–92 years, while the other 18 included Arab adults (18 years and older) of mixed age groups. Sixteen studies reported data on Arab populations of both genders; two studies were focused solely on Arab women; and only one study did not specify the gender composition of its sample population.

Our review includes studies of Arab populations with varying immigration statuses, including U.S.-born Arabs. Four studies (Alkaid Albqoor et al., 2020; Amin & Driver, 2019; Ikizler and Szymanski, 2017; Suleiman and Whitfield, 2021) examined Arab immigrants of different generation, while four studies (Arntez et al., 2020; Jamil et al., 2010; Javanbakht et al., 2019; Lemaster et al., 2018) focused on Arab refugees, and one by Patel et al. (2022) did not specify their participants' immigration status. Three studies employed Arab American populations (i.e., US-born or citizen) (Abuelezam and El-Sayed, 2021; Abu-Ras and Abou badr, 2009; Samri, 2016, and the remaining seven studies recruited populations of mixed immigration status (i.e., US-born Arab, immigrants, refugees, asylum seekers, tourist, or holders of special immigration visas). Around half of the studies, we examined (11 in total) included participants

from various Arab countries such as Syria, Lebanon, Iraq, Palestine, and Yemen. Two studies focused entirely on Iraqi Arabs (Jamil et al., 2010; Lemaster et al., 2018); one study looked at Syrian Arabs (Javanbakht et al., 2019); one study included populations of Syrian or Iraqi descent (Arntez et al., 2020); and four studies did not specify the Arabic origin of the study populations (Abuelezam and El-Sayed, 2021; Alkaid Albqoor et al., 2020; Pampati et al., 2018; Samri, 2016).

### **Clinical Outcomes and Measurements**

We documented data on 4 outcomes, including depression, anxiety, PTSD, and psychological distress. A slight majority of our reviewed studies ( $n = 12$ ) examined their participants' *risk* of depression; only six of them (Abuelezam and El-Sayed, 2021; Arion, Uddin, and Bilbas, 2017; Aroian, Uddin, and Pham, 2015; Jamil et al., 2010; Suleiman and Whitfield, 2021; Wrobel, Farag, and Haymes, 2009) focused solely on depression as an outcome, and of these, Jamil et al. (2010) specifically studied major depression. The most commonly employed depression instrument (by 6 studies: Abu-Ras & Aboubadr, 2009; Arion, Uddin, & Pham, 2015; Arion, Uddin, & Bilbas, 2017; Pampati et al., 2018; Kader et al., 2020; Suleiman & Whitfield, 2021) was the Center for Epidemiological Studies Depression Scale (CES-D, either the 10-item version or the 20-item version). Two studies indicated that a depression diagnosis was confirmed through professional clinical assessment rather than self-report (Abuelezem & El-Sayed, 2021; Jamil et al., 2010). Two studies (Arnetz et al., 2020; Lemaster et al., 2018) referenced the hospital anxiety and depression scale (HADS, 14 items) originally developed by Zigmond and Snaith (1983). One study mentioned the utilization of the Hopkins Symptom Checklist (HSC-25, 25 items; Javanbakht et al., 2019), while another study discussed using the Geriatric Depression Scale (Wrobel et al., 2009).

Psychological distress was the second most commonly reported outcome, examined in six of our 19 reviewed studies (Alkaid Albqoor et al., 2020; Amin & Driver, 2019; Arnetz et al., 2013; Assari and Lankarni, 2017; Ikizler and Szymanski, 2017; Samri, 2016). The majority of these studies (n = 5; Albqoor et al., 2020; Amin & Driver, 2019; Assari & Lankarni, 2017; Ikizler & Szymanski, 2017; Samri, 2016) employed the Kessler Psychological Distress Scale, either version 6 or version 10, to evaluate psychological distress, whereas only Arnetz et al. (2013) used the General Health Questionnaire.

While anxiety was not the main focus of any research, four studies did include anxiety as one of the mental health problems they examined. Studies incorporated different scales to measure anxiety symptoms. Kader et al. (2020) and Pampati et al. (2018) used the Generalized Anxiety Disorder Scale; Javanbakht et al. (2019) utilized the HSC-25 measure; Arnetz et al. (2020) employed the Beck Anxiety Inventory; and Lemaster et al. (2018) applied the Hospital Depression and Anxiety Scale. PTSD was reported by 4 studies (Abu-Ras and Abou Badr, 2009; Arnetz et al., 2013; Arnetz et al., 2020; Lemaster et al., 2018) along with other mental health symptoms, all of which employed the Post-Traumatic Diagnostic Scale (20 items) for assessing PTSD symptoms. Finally, Patel et al. (2022) assessed their participants' general mental health symptoms (i.e., feeling depressed, anxious, nervous, or worried) with the Patient Health Questionnaire (4 items).

### **Risk Factors for Mental Health Symptoms**

Nineteen studies described the risk factors for mental health symptoms among their Arab participants. We provide the risk factors grouped within the specific mental health outcome examined (**Table 3.2**).

#### ***Depression Risk Factors***

Risk factors specific to depression, which we could categorize into one of our pre-determined categories (i.e., either basic demography, social status, cultural context, or the environment), were described by 10 studies (Table 6). Four studies conducted among Arab Americans (Abuelezam & El-Sayed, 2021; Wrobel, Farag, & Haymes, 2009) as well as Arab refugees (Jamli, 2010; Javanbakht et al., 2019) indicated that being female carried at least a moderate risk for depression. Jamil (2010) suggested that females suffered from a major risk of depression. Older age was also reported to be associated with a larger risk for depression by four studies (Abuelezam & El-Sayed, 2021; Abu-Ras & Abou Badr, 2009; Aroian, Uddin, & Pham, 2015), including a larger risk for major depression (Jamil, 2010). Specifically, Abuelezam & El-Sayed (2021) indicated that Arab Americans older than 40 years had an odds ratio of 5.25, 95% CI (1.96, 14.05), suggesting they had at least a fivefold greater odd of developing depression. Abuelezam & El-Sayed (2021) also reported that being single resulted in an odds ratio of 2.2, 95% CI (0.8, 5.9), indicating that single participants had approximately two times greater odds of having depression. Immigration status, the duration of time spent in the U.S., and education status were also found to be risk factors for depression. For example, Wrobel, Farag, and Haymes (2009) reported greater depression among refugees than existed among their participants, who were either U.S. citizens or permanent residents. Aroian, Uddin, and Pham (2015) indicated that the more years an individual spent in the U.S., the more likely they were to have depression. Less education accompanied a larger likelihood of depression among Arab Americans, according to Abu-Ras and Abou Badr (2009).

Aroian, Uddin, and Pham (2015) found that individuals of Lebanese or Iraqi descent, or families with an unemployed husband not looking for work, suffered a greater likelihood of depression ( $\beta = 0.8, p < 0.0001$ ;  $\beta = 0.11, p < 0.0001$ , and  $\beta = 0.13, p < 0.0001$ , respectively).

Arab Americans who reported poor to fair general health (73.3%) were more likely to have depression than were those who rated their general health as good (40% of the sample population; Javanbakht et al., 2019). Of the six study reports mentioning contextual risk factors for depression, two (both longitudinal studies) indicated that their Arab immigrant participants had encountered demands related to immigration as well as day-to-day hassles and that different Arab populations had less resilience than others, all of which significantly predicted the occurrence of depression ( $b = 4.11, p < 0.001$ ) and  $b = .10, p < 0.05$ , respectively; Arion, Uddin, & Blbas, 2017; Lemaster et al., 2018). Other reports indicated that perceived discrimination, perceived stress, acculturation stress, and belief in life changes after the events of 9/11 constituted depression risk factors (Abu-Ras & Abou Badr, 2009; Aroian, Uddin & Pham, 2015; Kader et al., 2020; Suleiman & Whitfield, 2021).

### ***Risk Factors of Psychological Distress***

We were able to classify the psychological distress risk factors as either sociocultural or demographic. Three studies reported female gender, an individual's immigration generation, and their immigration status as sociodemographic risk factors for greater psychological distress (Albqoor et al., 2020; Amin & Driver, 2019; Arnetz et al., 2013). Explicitly, Amin and Driver (2009) reported that being female with a 10-year duration in the U.S. conferred a greater psychological distress risk. First-generation Arab Americans had an increased risk of psychological distress, with an OR of 1.57,  $p < 0.05$ , compared to 1.5-generation individuals. Being a refugee rather than other categories of Arab ethnicity was associated with more psychological distress symptoms ( $B = 5.09, p < .05$ ). In addition, the odds of psychological distress were 6.13 times greater for Middle Eastern immigrants who contacted a mental healthcare provider during the previous year (Albqoor et al., 2020). Regarding contextual factors,

Samri (2016) observed that less participation in community organizations and greater social ties to their country of origin came with greater psychological distress risk for Arabs (OR = 1.85,  $p < 0.01$ ) and (OR = 1.29,  $p < 0.01$ ), respectively. According to Arnetz et al. (2013), exposure to violence combined with less resilience acted in combination as statistically significant risk factors for psychological distress among Arab refugees and immigrants (B = 0.57,  $p < 0.01$  and B = -0.10,  $p < 0.01$ , respectively). Finally, Arabs with only low-level family connections who encountered ethnic discrimination were more at risk for psychological distress symptoms (B = 0.62,  $p < 0.01$ ; Assari & Lankarni, 2017; B = 0.42,  $p < 0.001$ ; Ikizler & Szymanski, 2017).

### ***Anxiety Risk Factors***

Four risk factors were identified for anxiety in the studies: female gender, being a refugee, achieving less education, and encountering perceived discrimination. Arnetz et al. (2020) and Javanbakht et al. (2019) indicated that Arab women bore a greater risk of anxiety than did Arab men. Refugee status came with an increased risk of anxiety, whether the individual was a general refugee ( $\beta = 1.31$ , 95% CI [0.11, 2.50]) or, more particularly, one from Syria ( $\beta = 0.35$ , 95% CI [0.11, 2.50]). According to both Pampati et al. (2018) and Kader et al. (2020), for their Arab participants, achieving less of an education (b = 0.42, 95% CI (0.70, 0.14) or encountering perceived discrimination (b = 0.48, 95% CI (0.19, 0.77) constituted significant predictors of anxiety symptoms.

### ***PTSD Risk Factors***

PTSD risk factors were reported in three studies (Abu-Ras and Abou badr, 2009; Javanbakht et al., 2019; Lemaster et al., 2018). Abu-Ras & Abou badr (2009) showed that Arab Americans with children, or Arab Americans of advanced age and lower education were at greater risk of PTSD symptoms ( $F(28, 360) = 2.04$ ,  $p < 0.01$ ; Wilks Lambda = 0.75). Arab

people who rated their health as fair or poor were also more likely than those who rated their health better to have possible PTSD (48.7 vs. 27.0%,  $p < 0.01$ ) (Javanbakht et al., 2019). In their longitudinal study, Lemaster et al. (2018) highlighted that history of PTSD or depressive symptoms at baseline and the number of chronic diseases at baseline significantly predicted PTSD symptoms after 1 year ( $B = .23$ ,  $B = .37$ ,  $B = .31$ , respectively, with all at  $p < 0.01$ ).

Patel et al. (2022) examined the factors associated with general symptoms of poor mental health (i.e., depression, anxiety, nervousness, and worry). They found that social risk factors (transportation barriers preventing access to health care, food uncertainty, financial stresses, unemployment, unstable housing, inadequate patient-centered care, lack of insurance, or reporting no usual source of care) significantly increased an Arab individual's risk of mental health symptoms ( $B = 0.34$ ,  $p < 0.01$ ).

### **Methodological Quality of the Studies**

About 37% ( $n = 7$ ) of all our reviewed studies were classified as of "high" quality, at least in terms of their methodology (**Table 4.2**). Of these, only Assari and Lankarni (2017), as well as Patel et al. (2022), satisfied all four of the criteria for cross-sectional studies. Four studies (Abuelezam and El-Sayed, 2021); Alkaid Albqoor et al., 2020); Amin and Driver, 2020); and Samri, 2016) met three of the same criteria. Lemaster et al. (2018) satisfied five of the six criteria we applied to longitudinal studies; Arion, Uddin, and Blbas (2017) fulfilled three of the same longitudinal study criteria. Slightly more than half of the studies (53%,  $n = 10$ ) were assessed as "medium quality," but 2 (10%) studies achieved only a "low quality" rating from our reviewers. No study violated all the criteria we used to assess methodological quality, and at least one criterion was fulfilled by all the studies.



## **Discussion**

The population of displaced and immigrant Arabs in the U.S. has notably expanded, leading to heightened sociocultural challenges related to their resettlement, both for them and for those who work with or socialize with them. Consequently, their susceptibility to mental health problems may have increased via their encounters with such challenges (Elshahat & Moffat, 2021; Schlaudt et al., 2020). Despite this vulnerability, a synthesis of existing knowledge was lacking about the risk factors for mental health problems within this group. Through this systematic review, we addressed this knowledge gap by integrating results of published studies regarding the factors linked to depression, anxiety, PTSD, and general psychological distress among Arabs residing in the U.S.

The data indicate that several risk factors may tilt the U.S. Arab populations toward mental health problems. Four risk factors appeared particularly important, emerging across varied studies as key risks: female gender, older age, perceived discrimination, and immigration status. Female gender constituted the factor we noted as identified in eight of the studies (the greatest number identifying a common risk factor). Arab women were at greater risk than Arab men for depression, anxiety, and general psychological distress. Globally, research indicates that women (across races or cultures) are more likely than men to suffer from mental health problems throughout their lives, especially depression or anxiety (e.g., Boyd et al., 2015; Kiely et al., 2019). In addition to hormonal and other biological differences between sexes, the effects of social deprivation, mistreatment, gender inequality, and the strong preference for male children in some Arabic cultures may contribute to female Arabs' increase in risk for mental health problems (Douki et al., 2007; Sharara et al., 2018).

A second key risk factor reported by five of our reviewed studies comprised immigration status and immigration generation, contributing to participants' risks for depression, anxiety, and general psychological distress. Immigration status included Arab immigrants' ethnic group or country of origin. Immigration from Lebanon or Iraq was found to be a significant risk factor for depression. Slewa-Youman et al. (2015) and Obeid et al. (2015) noted that this increased risk seen in Iraqi or Lebanese refugees likely relates to their exposure to torture, conflict, war, trauma, and mass displacement. The immigration generation was also a risk (especially for psychological distress), with the first-generation immigrants who transitioned to the U.S. before or during their early teens at greater risk than other first-generation Arab immigrants (Samri, 2016). Second-generation migrants also showed an increased risk for mental illness, more than their first-generation relations (Siebere et al., 2012).

Older age was a third key risk factor, identified in five of our reviewed studies. Four of these reported that advancing age had a significant association with greater depression. Research conducted in other populations has often suggested that young adults and adolescents, rather than their elders, are most vulnerable to mental health problems (Jurewicz, 2015; Kiely, Brady, & Byles, 2019). However, Porter and Haslam (2005), in their meta-analysis, concluded that younger refugees are more resilient and less prone to mental illness. Older Arab immigrants may have greater problems than their younger Arab counterparts with increased isolation (no one around them likely even speaks their language), limited independence, anxiety over difficulties in learning the new language or failing to learn that new language, and demoralization (Wrobel et al., 2009). Elderly immigrants, for the reasons just cited, may also have more restricted levels of contact with their new host culture, producing additional and unnecessary acculturation challenges (Wrobel et al., 2009).

The fourth most frequently reported risk factor in our reviewed studies was perceived discrimination, with four studies identifying its importance in the development of depression, anxiety, or general psychological distress. In different sample populations of U.S. immigrants, ethnic prejudice (which manifests as discrimination) has been frequently connected with depression and anxiety (Bardol et al., 2020; Cano et al., 2015; Meca et al., 2020). Schmitt et al. (2014), in their meta-analysis, concluded that perceived discrimination had negative consequences for the individual's psychological well-being. According to the tenets of the *Minority Stress Model*, perceived discrimination produces intense negative emotions or psychological distress, which in turn influence biological processes that negatively affect both mental and physical health (Ra et al., 2019).

We also observed that three sociodemographic factors increased risk, including being single, having an unemployed husband, and achieving less education. Al Saeed et al. (2022), as well as Eshak and Abd-El Rahman (2022), reported that being unmarried, being unemployed, or attaining less of an education are mental health risk factors for Arab individuals. Poorer physical health was also identified in two studies (Javanbakht et al., 2019; Lemaster et al., 2018) as a risk for either depression or PTSD. Sia et al. (2019) and Jia et al. (2022) noted that individuals with chronic diseases, such as high blood pressure or diabetes, frequently also have only a meager emotional resilience, which hinders their ability to adapt more resiliently to their new migrated environment. Less resilience diminishes the individual's capacity to manage and recover from life challenges; such a state has also been associated with less hope in migrants (Gambaro et al., 2020). Lastly, in our review, we highlighted risks from perceived stress, acculturation stress, daily hassles, and less participation in the new (host) community. These stressors have been

previously implicated in Arab Americans developing poor mental health (Kader et al., 2020; Spruill et al., 2019; Suleiman et al., 2021).

### **Limitations**

Our review has some limitations. First, in narrowing our search to English-language studies, we may have missed relevant articles in other languages, which could affect generalizability of our findings. Furthermore, the predominance of cross-sectional designs restricts our ability to establish causality and to evaluate any longitudinal trends. Another limitation is the exclusive reliance on published articles. Studies lacking any significant results may not have been published, biasing our full understanding of the field. However, as far as we know, ours is the first systematic review to synthesize risk factors for mental health problems among Arab populations in the U.S. Other strengths are use of the PRISMA-P guidelines and a thorough search strategy to obtain a significant number of pertinent articles.

### **Implications**

Our findings have clinical implications for mental health professionals regarding vulnerable Arab communities. First, the various risk factors identified through this review can provide focal points for mental health assessment, prevention, and culturally appropriate intervention. Mental health clinicians can be sensitized to the potential increases in vulnerability of certain Arab subpopulations, including females, older adults, refugees, and those with less education. An example of simultaneously addressing more than one of these risk factors might involve the provision of gender-sensitive and age-appropriate mental health services and support groups, which in turn may provide a safe space for Arab immigrants to discuss their concerns and access appropriate resources. Trauma-informed interventions can be directed at forced emigrants and refugees, given their larger risk for mental health issues (Suleiman and Whitfield,

2021). Understanding the influence of perceived discrimination, acculturation stress, and social support on the mental health of immigrants and refugees, especially Arabs, might assist in formulating treatments to target these stressors as well as foster resilience within the community. Risk factor interconnectedness and how these risks impact diverse mental health outcomes emphasize the significance of implementing a comprehensive and personalized approach to treatment, including support services.

Future research is needed to expand more nuanced knowledge about the ways in which the various risk factors impact mental health. Longitudinal study designs are crucially important for investigating the chronological mental health trajectories of Arab individuals to learn more about the contributing factors on a long-term basis. Intervention study designs, essential for assessing the efficacy of culturally customized mental health interventions, may also be used, at least in part, to test their effects on the risk factors we identified. Additional prospective studies should be undertaken to better understand risks unique to different generations and generational cohorts. It is similarly important for academics, community groups, and mental health practitioners to collaborate on the development and implementation of culturally sensitive therapies specifically designed for Arab immigrant communities. We suggest a similarly important examination be undertaken of the impact of structural issues, such as healthcare accessibility, immigration regulations, and socioeconomic disparities, on the mental health outcomes of Arab immigrants. Such research may provide significant insights for advocacy initiatives and also help facilitate systemic reforms to enhance the well-being of Arabs and other immigrants. We also recommend that research be conducted in the low-to-middle-income Arab immigrant host countries to compare the risk of mental health issues found in our review with those prevalent in those countries. Ultimately, our review and additional research may encourage

others to increase their awareness of as well as their ability to treat mental health problems in their immigrant patients.

## **Conclusion**

In our systematic review, we identified several key factors that significantly impacted the mental health of Arab individuals living in the U.S. These factors include being female, being older, experiencing perceived discrimination, and facing immigration-related challenges, particularly for refugees and immigrants who arrived in the U.S. during or prior to their early adolescence. Risk factors identified through this review can provide focal points for mental health assessment, prevention, and culturally appropriate intervention as well as for further research. The ultimate goal is to mitigate the substantial prevalence of mental health problems currently experienced by Arab communities in the U.S.

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## Appendix B Tables and Figures

**Table 2.2: Study and Participants Characteristics**

| Author, Year                  | Study Design     | Sample Size   | Sample Recruitment Source   | Immigration Status         | Ethnic Group  | Age (years)           | Gender              | Mental Health Symptoms                           | Outcome Measurement   |
|-------------------------------|------------------|---|---|----------------------------|---|-----------------------|---------------------|--|---|
| Patel et al. (2022)           | Cross-sectional. | 283   | Community commercial, health care or religious settings in Michigan.  | NR                         | Mixed ethnicity (mostly Iraqi [36.9%] and Lebanese [33%])   | Range: 18 and older.  | M:36%<br>F:64%      | Feeling depressed, anxious, nervous, or worried. | PHQ4.   |
| Abuelezam and El-Sayed (2021) | Cross-sectional. | 354 Arab American and 3517 non-Arab/non-Hispanic whites.        | Arab Community Center for Economic and Social Services (ACCESS) from the standalone 2013 Michigan Arab Behavioral Risk Factor Survey (MI ABRFS) | Arab American.             | NR  | Range: 18-40+         | M:53.4%<br>F:46.6%  | Depression.                                      | Reported health professional depression diagnosis.  |
| Suleiman and Whitfield (2021) | Cross-sectional. | 142   | Community (Arab Community Center for Economic and Social Services (ACCESS) facility in Dearborn, Michigan. ACCESS.                              | 75% Immigrants.            | Mixed Arab ethnicity (Iraqi (35%), Lebanese (13%), Syrian (13%), Yemenite (13%), U.S.-born (15%)) | Range: 18+            | M:30%<br>W:70%      | Depression.                                      | CESD.   |
| Alkaid Alboor et al. (2020)   | Cross-sectional. | 1,246 Middle Eastern immigrants, 232,392 U.S.-born and Hispanic | The NHIS data.  | Middle Eastern immigrants. | NR  | NR                    | M:52.8%<br>F:47.21% | Serious psychological distress.                  | K-6 scale.  |
| Arnetz et al. (2020)          | Cross-sectional. | 64  | Refugees' resettlement agency in Michigan.  | Refugees.                  | Syrian or Iraqi.  | Mean age 37.63 (11.8) | M:51.6%<br>F:48.4%  | Depression, Anxiety or PTSD.                     | 7- item depression subscale of the Hospital Anxiety and Depression Scale, Beck Anxiety Inventory for anxiety and PTSD Checklist–Civilian version. |

| Author, Year              | Study Design     | Sample Size                              | Sample Recruitment Source  | Immigration Status   | Ethnic Group         | Age (years)  | Gender                | Mental Health Symptoms       | Outcome Measurement   |
|---------------------------|------------------|--|--|--|----------------------|--|-----------------------|------------------------------|---|
| Kader et al. (2020)       | Cross-sectional. | 279                                      | Arab Community Center for Economic and Social Services (ACCESS) in Dearborn, Michigan.   | Immigrants (56%), refugees (24%), U.S.-born (20%)                | Mixed ethnic groups. | Range: 18-85   | M: 39%<br>F:61%       | Depression or Anxiety.       | CESD for depression<br>GAD for anxiety.   |
| Amin & Driver (2019)      | Cross-sectional. | 893                                      | Data from National Center for Health Statistics, the Centers for Disease Control and Prevention, administered by the U.S. Census Bureau. | Middle Eastern Immigrants  | Mixed ethnicity.     | Range: 18+   | M: 54.98%<br>F:45.02% | Psychological distress.      | Kessler (K6) scale.   |
| Javanbakhht et al. (2019) | Cross-sectional. | 157                                      | Two primary care clinics in the Detroit area of Michigan   | Refugees   | Syrian               | Range: 18-65<br>Mean age: 3608 (1141)  | M: 529%<br>F:471%     | Anxiety and depression       | HSC-25  |
| Pampati et al. (2018)     | Cross-sectional. | 275                                      | The Arab Community Center for Economic and Social Services (ACCESS) in Dearborn, Michigan.   | Immigrants (55.6%) refugees (24.4%), and U.S.- born Arabs (20%). | NR                   | Range: 18-85<br>Mean age 38.7 (1.7)  | M: 38.2%<br>F:61.8%   | Depression or anxiety.       | CES-D-SF for depression,<br>GAD-4 scale for anxiety.  |
| Lemaster et al. (2018)    | Longitudinal.    | 298 at baseline, and 291 at 1-year visit | Community-based sample of newly arrived Iraqi refugees at seven local resettlement agencies.   | Refugees   | Iraqi                | Range: 18+<br>Mean age at baseline, 33.4 (11.3)<br>Mean age at follow-up 34.3 (11.4) | NR                    | Depressive symptoms or PTSD. | Hospital Anxiety and Depression Scale for depression;<br>the Civilian version of the PCL-C for PTSD symptoms. |

| Author, Year                    | Study Design     | Sample Size | Sample Recruitment Source  | Immigration Status   | Ethnic Group   | Age (years)                               | Gender               | Mental Health Symptoms  | Outcome Measurement                         |
|---------------------------------|------------------|-------------|--|--|--|---|----------------------|-------------------------|---|
| Assari and Lankarani (2017)     | Cross-sectional. | 1,389       | The 2003 Detroit Arab American Study (DAAS) survey.  | Predominantly immigrants (72.4%), U.S.-born (27.6%)  | Arab or Chaldean ancestry Mixed Arab ethnicity (Egyptian, Iraqi, Jordanian, Palestinian, Lebanese, Libyan, Saudi Arabia, Syrian, and Yemenite) | Range: 18+<br>Mean age 43.63 (16.48)      | M: 53.6%<br>W: 46.4% | Psychological distress. | Kessler Psychological Distress Scale (K10). |
| Arion, Uddin, and Bilbas (2017) | Longitudinal.    | 388         | Network sampling by 12 Arab immigrant research assistants in the local Metropolitan area of Detroit. | Refugees (44.5%), immigrants (47.2%), student or tourist visa (8.2%).  | Mixed Arab ethnicities - Iraqi (44.3%), Lebanese (36.5%), Yemenite (11.2%).  | Range: 18+<br>Mean age 42.97 (5.92).      | Female only          | Depression.             | CESD.                                       |
| Ikizler and Szymanski (2017)    | Cross-sectional. | 315         | Recruitment via MEAA-related listservs, student groups, community centers, and organizations.        | Second-generation (48%), first generation (38%), third generation (7%), fourth generation (3%), and temporarily living in U.S. (3%). | Mixed Arab ethnicity (Syrian (23%), Lebanese (21%), Palestinian (18%).)  | Range: 18 to 82<br>Mean age 34.95 (16.21) | M: 40%<br>F: 60%     | Psychological distress. | Kessler Psychological Distress Scale (K10)  |

| Author, Year                  | Study Design     | Sample Size  | Sample Recruitment Source  | Immigration Status   | Ethnic Group  | Age (years)                          | Gender               | Mental Health Symptoms        | Outcome Measurement                                  |
|-------------------------------|------------------|--|--|--|---|--------------------------------------|----------------------|-------------------------------|--|
| Samri (2016)                  | Cross-sectional. | 896  | Detroit Arab American Study (DAAS).  | Arab American of different generation, first generation (60.3%), 1.5 generation (10.5%), second generation (22.4%), and third generation (6.8%). | NR  | Range: 18-88<br>Mean age 43.5 (.56). | M: 47.1%<br>F: 52.9% | Psychological distress.       | Kessler-10 scale for psychological distress.         |
| Aroian, Uddin and Pham (2015) | Cross-sectional  | 538  | Researcher community network.  | Arab immigrants (44.7%)<br>refugees (44.5%)  | Mixed ethnicity - Iraq (43.7%),<br>Lebanese (33.8%).                              | Range: 18+<br>Mean age 40.24 (6.47)  | Female only.         | Depression.                   | CESD.  |
| Arnetz et al. (2013)          | Cross-sectional. | 128 (Iraqi refugees (n = 75), non-Iraqi immigrant (n = 53)). | Local community, religious or governmental organizations in the metro Detroit tri-county area. | Refugees (58.6%),<br>immigrants (41.4%)  | Mixed Arab ethnicity (Iraqi and non-Iraqi Lebanese, Jordanian, Egyptian, Yemeni). | 18 and older Mean 40.6 (12.3)        | M:41%<br>F: 59%      | Psychological distress, PTSD. | Modified version of GHQ, PTSD Checklist.             |
| Jamil et al. (2010)           | Pilot            | 285 (Iraqi refugees (n=191), non-refugees (n=94))            | Psychiatric medical chart review   | Refugees, non-refugees   | Iraqi   | Range: 18+                           | M: 465%<br>F:355%    | Major depression              | Clinical assessment by psychiatrist in medical chart |

| Author, Year                    | Study Design     | Sample Size | Sample Recruitment Source   | Immigration Status  | Ethnic Group  | Age (years)                               | Gender             | Mental Health Symptoms | Outcome Measurement   |
|---------------------------------|------------------|-------------|---|---|---|---|--------------------|------------------------|-----------------------|
| Abu-Ras and Abou badr (2009)    | Cross-sectional. | 350         | Community-based, health care, and religious organizations in California, Michigan, New York, New Jersey, and Washington, D.C. | Arab American.  | Mixed Arab ethnicities (22 countries), including Egyptian, Bahraini, Syrian, Tunisian, Algerian). | Range: 18 to 77<br>Mean age 34.4 (11.71). | M: 45%<br>F: 55%   | Depression, PTSD.      | CESD; IES-R for PTSD. |
| Wrobel, Farag and Haymes (2009) | Cross-sectional. | 200         | Community-based and religious groups in Dearborn, Michigan.   | Arab Americans (46%), refugees (8%), permanent residents (36%), visa (2%) | Mixed Arabs (largest proportion from Lebanon (42%), Iraq (33%), Yemen (11%), Palestine (10.1%).   | Range: 60-92<br>Mean age 69.11 (6.40)     | M:46.5%<br>F:53.5% | Depression.            | GDS.                  |

**Legend:** NR (Not reported), F(Female), M(Male), NHIS (National Health Interview Survey). Depression measures: CES-D (Center for Epidemiological Studies Depression Scale), CESD-SF (Center for Epidemic ologic Studies Depression Short Form), GDS (Geriatric Depression Scale), PHQ4 (Patient Health Questionnaire-4), HSC-25 (Hopkins Symptom Checklist 25 items). Anxiety measures: SCARED (The Screen for Child Anxiety Related Disorders), GAD-4(Generalized Anxiety Disorders), DASS (Depression Anxiety Stress Scales), BAI (Beck Anxiety Inventory) Psychological distress & post-traumatic stress disorder (PTSD) measures: Post traumatic Diagnostic Scale (PDS), IES-R (Impact of Event Scale - Revised), GHQ (General Health Questionnaire), PCL-C (Post-Traumatic Stress Disorders Checklist – Civilian version).

**Table 3.2: Risk Factors for Mental Health Symptoms**

| Mental Health Symptoms           | Risk Factor   | Findings   | References  |
|----------------------------------|---|--|---|
| Depression / Major depression    | Sex: being female   | <ul style="list-style-type: none"> <li>OR= 4.5, 95% CI: 1.6–12.7).</li> <li>MD OR= 2.4 (CI: 0.31–1.3).</li> <li>t (185) = 3.06, <math>p &lt; 0.0</math></li> <li>(women PR: 58.5 vs. 38.3%, <math>p = .03</math>).</li> </ul>  | Abuelezam and El-Sayed (2021). Jamli (2010).<br>Wrobel, Farag and Haymes (2009).<br>Javanbakht et al. (2019).   |
|                                  | Age: >4 years Old age   | <ul style="list-style-type: none"> <li>OR= 5.25, 95% CI (1.96,14.05).</li> <li>MD OR= 3.6 (CI: 0.28–1.3).</li> <li>B = 005, <math>p &lt; 0.05</math></li> <li>R =.84 (<math>p &lt; 0.01</math>), (Hotellings = 0.328, <math>F(28, 360) = 2.04, p &lt; .01</math>; Wilks Lambda = 0.75).</li> </ul> | Abuelezam&El-Sayed (2021).<br>Jamali (2010).<br>Aroian, Uddin and Pham (2015).<br>Abu-Ras and Abou badr (2009). |
|                                  | Marital status: being unmarried   | <ul style="list-style-type: none"> <li>OR= 2.2, 95% CI (0.8–5.9).</li> </ul>   | Abuelezam and El-Sayed (2021).  |
|                                  | Immigration status: refugees have higher depression than for either U.S. citizens or permanent residents.                                       | <ul style="list-style-type: none"> <li>M(SD) 22.9 (5.02) vs 15.42 (7.62) vs16.21 (7.4), <math>p &lt; 0.007</math>.</li> </ul>  | Wrobel, Farag and Haymes (2009).  |
|                                  | Duration of time spend in US: more years living in US.  | <ul style="list-style-type: none"> <li>B = 008 (<math>p &lt; .001</math>).</li> </ul>  | Aroian, Uddin and Pham (2015).  |
|                                  | Education: lower education  | <ul style="list-style-type: none"> <li>R=.84, (<math>p &lt; 0.01</math>).</li> </ul>   | Abu-Ra's and Abou badr(2009).   |
|                                  | Ethnicity: Being from Lebanon<br>Being from Iraq  | <ul style="list-style-type: none"> <li>B=08 (<math>p &lt; .001</math>).</li> <li>B=.11 (<math>p &lt; .001</math>).</li> </ul>  | Aroian, Uddin and Pham (2015).  |
|                                  | Unemployed husband, not looking for work  | <ul style="list-style-type: none"> <li>B=.13(<math>p &lt; .001</math>).</li> </ul>   | Aroian, Uddin and Pham (2015).  |
|                                  | Self-reported medical condition: people who reported poor or fair were more likely than those who rated their health better to have depression. | <ul style="list-style-type: none"> <li>(73.3 % vs. 40.0%, <math>p = .002</math>)</li> </ul>  | Javanbakht et al. (2019).   |
|                                  | Immigration demands and daily hassles   | <ul style="list-style-type: none"> <li>B = 0.42 (<math>p &lt; 0.011</math>).</li> <li>B = 4.11 (<math>p &lt; 0.001</math>).</li> </ul>   | Aroian, Uddin and Pham (2015).<br>Arion, Uddin, and Bibas (2017).   |
|                                  | Perceived Discrimination  | <ul style="list-style-type: none"> <li>B =.93, 95% CI (0.53, 1.34, <math>p &lt; 0.01</math>).</li> </ul>   | Kader et al. (2020).  |
|                                  | Perceived stress  | <ul style="list-style-type: none"> <li>OR= 1.21, 95% CI (1.10, 1.33), <math>p &lt; 0.01</math>).</li> </ul>  | Suleiman and Whitfield (2021).  |
|                                  | Acculturation stress  | <ul style="list-style-type: none"> <li>OR = 1.02, 95% CI (1.00, 1.05), <math>p &lt; 0.05</math>).</li> </ul>   | Suleiman and Whitfield (2021).  |
|                                  | Lower resilience  | <ul style="list-style-type: none"> <li>b=.1 (<math>p &lt; 0.05</math>).</li> </ul>   | Lemaster et al. (2018).   |
| Belief in life change after 9/11 | <ul style="list-style-type: none"> <li>R=.84, <math>p &lt; 0.001</math>.</li> </ul>   | Abu-Ras and Abou badr (2009).  |   |
| Psychological Distress           | Sex: being female<br>Female with 10+duration in US.   | <ul style="list-style-type: none"> <li>OR =3.18 <math>p = .003</math>, 95% CI (1.50, 6.77)</li> <li>B = 4.29 (<math>p &lt; 0.01</math>)</li> <li>OR =1.80, <math>p &lt; 0.01</math>).</li> </ul>   | Alkaid Albqoor et al. (2020).<br>Arnetz et al. (2013).<br>Amin and Driver (2019).                               |
|                                  | Immigration generation: first generation compared to 1.5 generation.  | <ul style="list-style-type: none"> <li>OR =1.57 (<math>p &lt; 0.05</math>).</li> </ul>   | Samri (2016)  |
|                                  | Immigration status: refugees  | <ul style="list-style-type: none"> <li>B = 5.09 (<math>p &lt; .05</math>).</li> </ul>  | Arnetz et al. (2013).   |
|                                  | Having contacted a mental healthcare provider during the last year  | <ul style="list-style-type: none"> <li>OR=6.13, <math>p &lt; .001</math>, 95% CI (2.50,15.05)</li> </ul>   | Albqoor et al. (2020).  |

| Mental Health Symptoms | Risk Factor  | Findings  | References  |
|------------------------|--|---|---|
| Psychological Distress | Lower community organization participation   | • OR = 1.85 ( $p < 0.01$ )  | Samri (2016).   |
|                        | Cross border attitude: social ties to origin country   | • OR = 1.29 ( $p < 0.01$ )  | Samri (2016).   |
|                        | Exposure to violence   | • $b = .57, p < .01$ .  | Arnetz et al. (2013).                                     |
|                        | Lower resilience   | • $b = .10 (p < 0.01)$ .  | Arnetz et al. (2013).                                     |
|                        | Discrimination: Ethnic discrimination among Arab with low level family connection.   | • $B = 0.62, 95\% \text{ CI } (0.22, 1.03), p = .003$<br>• $B = .42, t = 3.94, p = .000, 95\% \text{ CI } (.207, .625)$ . | Assari and Lankarni (2017). Ikizler and Szymanski (2017). |
| Anxiety                | Sex: female  | • $B = 0.27 (p < 0.05)$ .<br>• Women 52.7% versus 29.7%, ( $p = 0.01$ ).  | Arnetz et al. (2020). Javanbakht et al. (2019).           |
|                        | Refugees Syrian refugees   | • $b = 1.31, 95\% \text{ CI } (0.11, 2.50)$<br>• $0.35, p < 0.01$   | Pampati et al. (2018). Arnetz et al. (2020).              |
|                        | Lower education  | • $b = 0.42, 95\% \text{ CI } (0.70, 0.14)$ .   | Pampati et al. (2018).                                    |
|                        | Perceived discrimination   | • $B = 0.48, 95\% \text{ CI } (0.19, 0.77), p < 0.01$   | Kader et al. (2020).                                      |
| PTSD                   | Old age: Lower education and Have children   | • $R = .95 (p < 0.01)$ , Hotellings = 0.328, $F(28, 360) = 2.04, p < .01$ ; Wilks Lambda = 0.75.                          | Abu-Ras and Abou badr (2009).                             |
|                        | Self-reported medical condition: people who rated their health as fair or poor were more likely than those who rated their health better to have possible PTSD   | • 48.7 vs. 27.0%, $p = .014$ .  | Javanbakht et al. (2019).                                 |
|                        | History of PTSD at baseline predicted PTSD at 1-year<br>Depressive symptoms at baseline predicted PTSD 1-year  | • $B = .23 (p < 0.01)$ .<br>• $b = .37 (p < 0.01)$ .  | Lemaster et al. (2018).                                   |
|                        | Number of chronic diseases at baseline   | • $b = .31 (p < 0.01)$ .  | Lemaster et al. (2018).                                   |
| Mental Health Symptoms | Social risk factors (score of eight factors: transportation barriers with health care, food insecurity, financial strains, unemployment, unstable housing, inadequate patient-cent red care, lack of insurance and reporting no usual source of care). | • $0.34 (0.14), p < 0.01$   | Patel et al. (2022).                                      |

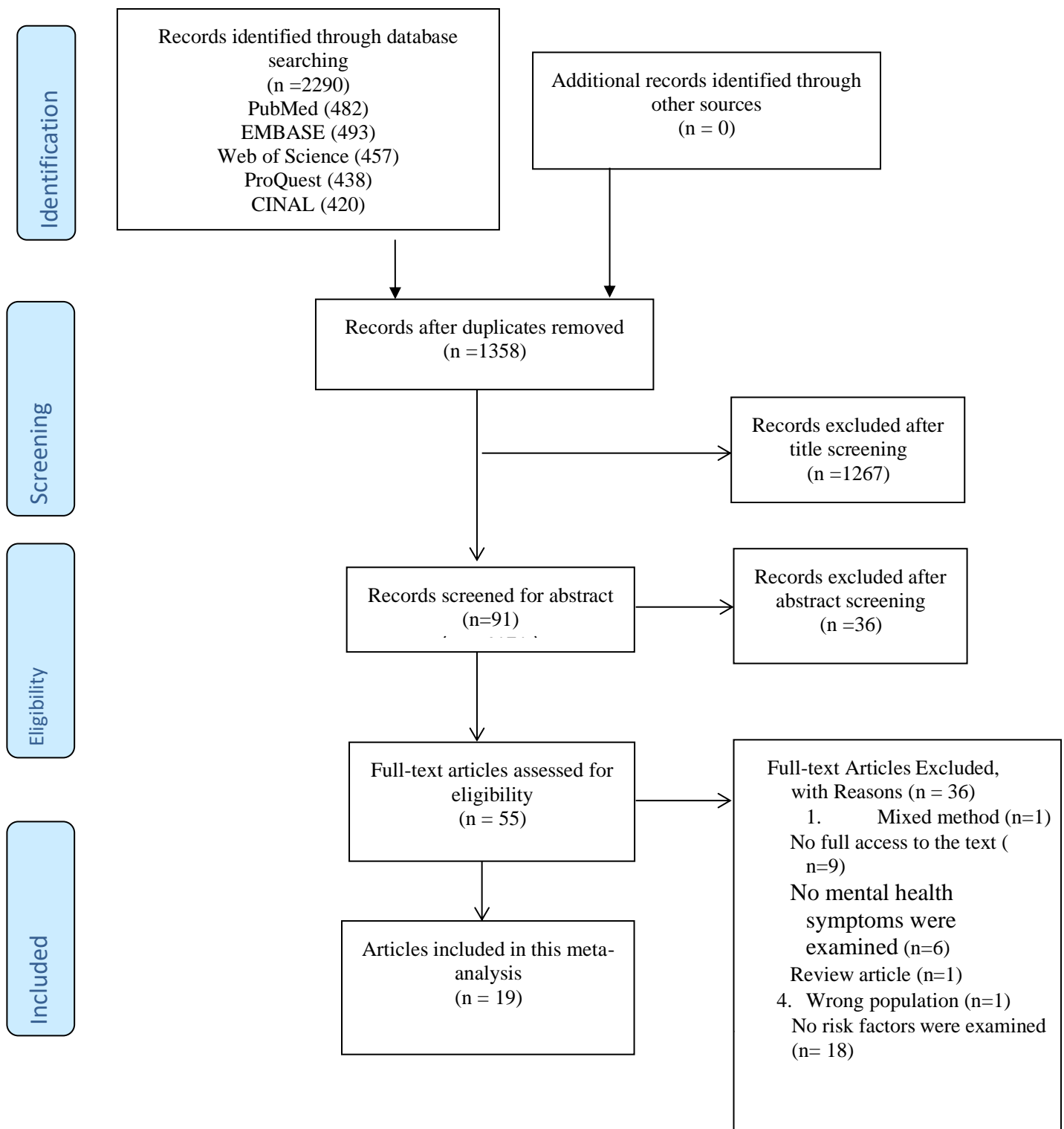
Legend: OR (odd ratio), MD (Major Depression), PTSD. (Post-Traumatic Stress Disorder), PR(Prevalence), Vs(versus), R(correlation).



**Table 4.2: Methodological Quality of the Included Studies**

| Author (year).              | 1. Selection Bias: Comparable Study Groups or Statistical Adjustment. | 2. Measurement Bias: Valid and Reliable Measurement of the Exposure. | 3. Attrition Bias (for Cohort Study): Similar Drop-out Rates in Both Case. | 4. Loss Bias (Cohort Study): no Systematic Differences between Completers and Drop-outs. | 5. External Validity: Consecutive or Randomized Selection. | 6. External Validity: Representative Sample. | Overall Evaluation of Methodological Quality. |
|-----------------------------|---|--|--|--|--|--|---|
| Patel et al., 2022          | +   | +  |  |  | +  | +  | High  |
| Abuelezam & El-Sayed, 2021  | 0   | +  |  |  | +  | +  | High  |
| Suleiman & Whitfield, 2021  | +   | +  |  |  | -  | -  | Medium  |
| Alkaid Albqoor et al., 2020 | +   | +  |  |  | -  | +  | High  |
| Arnetz et al., 2020         | 0   | +  |  |  | -  | -  | Low   |
| Javanbakht et al., 2019     | +   | +  |  |  | -  | -  | Medium  |
| Kader et al., 2020          | +   | +  |  |  | -  | 0  | Medium  |
| Amin & driver, 2019         | +   | +  |  |  | 0  | +  | High  |
| Pampati et al., 2018        | +   | +  |  |  | -  | 0  | Medium  |
| Lemaster et al., 2018       | +   | +  | +  | 0  | +  | +  | High  |
| Assari & Lankarni, 2017     | +   | +  |  |  | +  | +  | High  |
| Arion, Uddin, & Blbas, 2017 | 0   | +  | +  | 0  | 0  | +  | Medium  |
| Ikizler & Szymanski, 2017   | +   | +  |  |  | -  | -  | Medium  |
| Samri, 2016                 | +   | +  |  |  | 0  | +  | High  |
| Aroian, Uddin & Pham, 2015  | 0   | +  |  |  | 0  | +  | Medium  |
| Arnetz et al., 2013         | +   | +  |  |  | -  | -  | Medium  |
| Jamil, 2010                 | +   | +  |  |  | -  | -  | Medium  |
| Wrobel, Farag & Haymes 2009 | +   | +  |  |  | -  | 0  | Medium  |
| Abu-Ras & Abou badr, 2009   | 0   | +  |  |  | -  | -  | Low   |

Abbreviations: + criterion met, - criterion not met, 0 missing or unclear criteria



**Figure 1.2:** PRISMA Diagram

**Supplemental Table 1.2: Search Strategies**

| <b>Database: Psych INFO, Psych Articles, Sociological Abstract</b> |  |                |
|--|--|----------------|
| <b>Date: 4/5/2022</b>  |  |                |
| <b>Set #</b>   | <b>Search Terms/ Keyword</b>   | <b>Results</b> |
| 1  | ((("arabs"[MeSH Terms] OR "arab" [tiab] OR "arabs" [tiab] OR Arabic [tiab]) AND ("emigrants and immigrants"[MeSH Terms] OR "immigrants" [tiab] OR "migrants" [tiab] OR "emigration and immigration"[MeSH Terms] OR "emigration" [tiab] OR "immigration" [tiab] OR "immigrate" [tiab] OR "transients and migrants"[MeSH Terms] OR "refugees"[MeSH Terms] OR refugees [tiab] OR refugee [tiab] OR asylum [tiab] OR ("asylum"[tiab] AND "seekers"[tiab]) OR "asylum seekers"[tiab] ) ) OR "Arab Americans" [tiab] OR "Arab American" [tiab]   | 1714           |
| 2  | "depressive disorder"[MeSH Terms] OR "depression"[MeSH Terms] OR "depression" [tiab] OR "depressions" [tiab] OR "depressive disorder"[tiab] OR "depressive disorders" [tiab] OR "anxiety"[MeSH Terms] OR "anxiety" [tiab] OR "anxieties"[tiab] OR Anxiety Disorders [mh] OR "mental health"[MeSH Terms] OR "mental health"[tiab] OR "mental disorders"[MeSH Terms] OR "mental disorders" [tiab] OR "mental disorder" [tiab] OR "Stress Disorders, Post-Traumatic"[Mesh] OR PTSD OR "post traumatic disorder" [tiab] OR "post traumatic disorders" [tiab] OR Psychological trauma [mh] OR trauma [tiab] OR Psychological Stress [mh] OR stress [tiab] | 2,668,332      |
| 3<br>Combined  | #1 AND #2  | 482            |

| <b>Database: Embase</b> |   |                |
|-------------------------|---|----------------|
| <b>Date: 4/5/2022</b>   |   |                |
| <b>Set #</b>            | <b>Search Terms/ Keyword</b>  | <b>Results</b> |
| 1                       | ('arab'/exp OR arab OR Arabic OR arabs) AND ('immigrants'/exp OR immigrant OR immigrants OR 'emigrant'/exp OR emigrant OR emigrants OR 'asylum seekers'/exp OR 'asylum seekers' OR 'asylum seekers' OR 's]asylum) OR 'arab american' OR 'arab americans'  | 1462           |
| 2                       | 'depression'/exp OR depression OR depressive OR 'anxiety disorder'/exp OR 'anxiety'/exp OR anxiety OR anxieties OR 'mental health'/exp OR 'mental health' OR 'mental disease'/exp OR 'mental disease' OR 'mental disorder'/exp OR 'mental disorder' OR 'mental disorders'/exp OR 'mental disorders' OR 'posttraumatic stress disorder'/exp OR 'posttraumatic stress disorder' OR 'ptsd'/exp OR ptsd OR 'mental stress'/exp OR 'mental stress' OR 'stress'/exp OR stress OR 'trauma'/exp OR trauma | 6,349,798      |
| 3<br>Combined           | #1 AND #2   | 493            |

| <b>Database: Web of Science</b> |  |           |
|---------------------------------|--|-----------|
| <b>Date: 4/5/2021</b>           |  |           |
| Set #                           | Search Terms/ Keyword  | Results   |
| 1                               | ("arabs"[MeSH Terms] OR arab OR arabs OR Arabic) AND ("emigrants and immigrants"[MeSH Terms] OR immigrants OR emigrants OR "emigration and immigration"[MeSH Terms] OR "emigration" OR "immigration" OR "immigrate" OR "transients and migrants"[MeSH Terms] OR "refugees"[MeSH Terms] OR refugees OR refugee OR asylum OR "asylum seekers") ) OR "Arab Americans" OR "Arab American"  | 2738      |
| 2                               | "depressive disorder"[MeSH Terms] OR "depression"[MeSH Terms] OR "depression" OR "depressions" OR "depressive disorder" OR "depressive disorders" OR "anxiety"[MeSH Terms] OR "anxiety" OR "anxieties" OR Anxiety Disorders [mh] OR "mental health"[MeSH Terms] OR "mental health" OR "mental disorders"[MeSH Terms] OR "mental disorders" OR "mental disorder" OR "Stress Disorders, Post-Traumatic"[Mesh] OR PTSD OR "post traumatic disorder" OR "post traumatic disorders" OR Psychological trauma [mh] OR trauma OR Psychological Stress [mh] OR stress | 3,201,420 |
| 3<br>Combined                   | #1 AND #2  | 457       |

| <b>Database: PROQUEST PsycArticles, PsycInfo, PsycTests, GenderWatch, PAIS Index, PTSDpubs, Sociological Abstracts, Social Services Abstracts</b> |  |         |
|---|--|---------|
| <b>Date: 4/5/2022</b>   |  |         |
| Set #   | Search Terms/ Keyword  | Results |
| 1   | ab((( (Arabs OR Arab OR Arabic) AND (immigrants OR immigrant OR emigrants OR emigration OR immigration OR immigrate OR refugees OR refugee OR asylum OR "asylum seekers") ) OR "Arab Americans" OR "Arab American") AND (depression OR "depressive disorder" OR "depressive disorders" OR anxiety OR anxieties OR "anxiety disorders" OR "anxiety disorder" OR "mental health" OR "mental disorder" OR "mental disorders" OR "post-traumatic stress disorder" OR PTSD OR trauma OR stress) )   | 502     |
| 2   | ti((((Arabs OR Arab OR Arabic) AND (immigrants OR immigrant OR emigrants OR emigration OR immigration OR immigrate OR refugees OR refugee OR asylum OR "asylum seekers")) OR "Arab Americans" OR "Arab American") AND (depression OR "depressive disorder" OR "depressive disorders" OR anxiety OR anxieties OR "anxiety disorders" OR "anxiety disorder" OR "mental health" OR "mental disorder" OR "mental disorders" OR "post-traumatic stress disorder" OR PTSD OR trauma OR stress)) OR ab((((Arabs OR Arab OR Arabic) AND (immigrants OR immigrant OR emigrants OR emigration OR immigration OR immigrate OR refugees OR refugee OR asylum OR "asylum seekers")) OR "Arab Americans" OR "Arab American") AND (depression OR "depressive disorder" OR "depressive disorders" OR anxiety OR anxieties OR "anxiety disorders" OR "anxiety disorder" OR "mental health" OR "mental disorder" OR "mental disorders" OR "post-traumatic stress disorder" OR PTSD OR trauma OR stress)) | 505     |
| 3<br>Combined   | Limited to "Peer Reviewed"<br>#1 AND #2  | 432     |

| <b>Database: CINAHL</b> |  |         |
|-------------------------|--|---------|
| <b>Date: 4/5/2022</b>   |  |         |
| Set #                   | Search Terms/ Keyword  | Results |
| 1                       | ((((MH "Arabs") OR Arab OR Arabic OR Arabs) AND (MH "Refugees" OR MH "Immigrants+" OR refugees OR refugees OR immigrants OR immigrants OR immigration OR emigrants OR emigrant OR emigration OR asylum) ) OR "Arab American" OR "Arab Americans"   | 1,918   |
| 2                       | (MH "Depression") OR depression OR depressive OR (MH "Anxiety+" OR Anxiety OR Anxieties OR (MH "Anxiety Disorders" OR (MH "mental Disorders") OR "mental disorder" OR "mental disorders" OR (MH "adjustment Disorders") OR (MH "Mental Health") OR "mental health" OR (MH "Stress Disorders, Post-Traumatic") OR PTSD OR (MH "Stress, Psychological") OR trauma OR stress) | 478,684 |
| 4<br>Combined           | Limited by Academic Journals<br>#1 AND #2  | 415     |

**Supplemental Table 2.2 : Description of the Excluded Studies**

| Author/Year             | Title   | Key Findings  | Reason for Exclusion   |
|-------------------------|---|---|--|
| Abuelezem et al. (2022) | Differences in Health Characteristics of Geographic Subgroups of Arab Americans in a Northern California Health Plan.                             | Women of the Gulf, African, and Other Arab communities exhibit a lower prevalence of smoking, while males had lower rates of obesity, diabetes, and hyperlipidemia but greater rates of depression as compared to Levant Arabs. | There was no exploration of risk factors for mental health symptoms among the Arabs studied.   |
| Javanbakht et al..2021  | Biological and Environmental Factors Affecting Risk and Resilience among Syrian Refugee Children.   | Findings suggested that, although the anxiety symptoms may show some decline one year post settlement, trauma symptoms do not seem to decline as a function of time.  | There was no exploration of mental health symptoms among the Arabs studied.  |
| Seff et al., 2021       | Psychosocial Well-Being, Mental Health, and Available Supports in an Arab Enclave: Exploring Outcomes for Foreign-Born and U.S.-Born Adolescents. | No statistically significant differences in immigration were observed between the foreign-born and U.S.-born groups.  | Mixed method study.  |
| Albdour et al., 2020    | Selfreported physical and psychological symptoms among victims and perpetrators of bullying in Arab American Adolescents.                         | Physical and psychological symptoms showed a positive correlation with both bullying victimization and bullying perpetration.   | The researchers only focused on the correlation between bullying victimization and psychological symptoms among Arabs. No risk factors investigated. |

| <b>Author/Year</b>              | <b>Title</b>  | <b>Key Findings</b>  | <b>Reason for Exclusion</b>                             |
|---------------------------------|---|--|---|
| Javanbakht et al., 2020         | Perceived health, adversity, and posttraumatic stress disorder in Syrian and Iraqi refugees<br>Perceived health, adversity, and posttraumatic stress disorder in Syrian and Iraqi refugees. | Self-reported rating of violence, armed conflict, and flight related adverse experience are significantly associated with perceived well-being among refugees. | No risk factors investigated.                           |
| Krohner et al., 2019            | Somatic and depressive symptoms in Arab American women: The influence of religion on social and emotional risk factors.   | No abstract available.   | Full text is not accessible.                            |
| M'zah, Cardozo and Evans (2019) | Mental Health Status and Service Assessment for Adult Syrian Refugees Resettled in Metropolitan Atlanta: A Cross- Sectional Survey.   | The study revealed a significant prevalence of anxiety and Posttraumatic Stress Disorder symptoms. Among Arab individuals.                                     | No exploration of risk factors among the Arabs studied. |
| Javanbakht et al. (2018)        | Mental Health in Syrian Refugee Children Resettling in the United States: War Trauma, Migration, and the Role of Parental Stress  | Increased anxiety and PTSD symptoms among Syrian refugee children resettling in the US.  | No exploration of risk factors among the Arabs studied  |

| Author/Year           | Title   | Key Findings  | Reason for Exclusion  |
|-----------------------|---|---|---|
| Arfken et al., 2018   | Recent Iraqi refugees: Association between ethnic identification and psychological distress.  | Iranian Arab had high psychological distress than and Chaldean refugees.  | The researchers exclusively measured the difference in psychological distress between ethnic groups (Arab and Chaldean). No data provided about risk factors of psychological distress. |
| Shara et al., 2018    | Depression, Metabolic Syndrome, and Locus of Control in Arab Americans Living in the DC Metropolitan Area: A Structural Equation Model.     | Metabolic syndrome was significantly correlated with external locus of control (powerful others and chance), and depression was correlated with a weak internal locus of control. | There was no analysis of mental health risk factors or symptoms.  |
| Uygun et al., 2018    | Factors associated with PTSD in a group of Syrian refugees who applied to immigrant/refugee mental health special branch outpatient clinic. | No abstract available.  | Full text is not accessible.  |
| Wilson & Thayer, 2018 | Impact of acculturation on depression, perceived stress, and self-esteem in young Middle Eastern American adults                            | Integrated middle Eastern Arabs showed less stress or depression than assimilated Arabs.  | No data on mental health symptoms or risk factors were provided.  |



| <b>Author/Year</b>     | <b>Title</b>   | <b>Key Findings</b>   | <b>Reason for Exclusion</b>   |
|------------------------|--|---|---|
| Abuelezam et al., 2017 | Depression Among Arab American and Arab Immigrant Women in the United States.  | Arab American women in the US are more likely to experience a multitude of stresses, such as immigration stress and intimate partner abuse, which increases their chances of developing depression. | This was a review article.  |
| Pampati et al., 2017   | Assessing the influence of migration status on self-rated health outcomes: a cross sectional study of Arab American in Michigan. | No abstract available.  | Full text is not accessible.  |
| Jaber et al. (2015)    | Measuring depression and stigma towards depression and mental health treatment among adolescents in an Arab-American community.  | Overall, considerable proportion of Arab-American adolescents endorsed moderate or moderately severe depression.  | No exploration of risk factors among the Arabs studied  |
| Aroian et al., 2014    | Longitudinal Study of Daily Hassles in Adolescents in Arab Muslim Immigrant family   | The results of the study pinpoint serious daily hassles and identify two subgroups of teenagers who are at risk: those whose mothers are refugees as well as those whose fathers are unemployed.    | The researchers' focus concerned resources for daily difficulties. There was no analysis of mental health risk factors or symptoms. |

| <b>Author/Year</b>   | <b>Title</b>   | <b>Key Findings</b>   | <b>Reason for Exclusion</b>                                      |
|----------------------|--|---|--|
| Tylor et al. (2014)  | Physical and mental health status of Iraqi refugees resettled in the United States.                                    | There was high prevalence of anxiety, depression, emotional distress, and PTSD in Iraqi refugees.   | No exploration of risk factors among the Arabs studied           |
| Kira et al. (2014)   | The Tremorgenic Dynamics of Internalized Stigma of Mental Illness Among Arab American, Muslim, and Refugee Clients.    | Internalized stigma predicted posttraumatic stress disorder and other post trauma spectrum disorders after controlling for cumulative trauma.   | There was no exploration of risk factors among the Arabs studied |
| Goforth et al., 2014 | Acculturation, acculturative stress, religiosity, and psychological adjustment among Muslim Arab American adolescents. | The researchers found that age, gender, religiosity, and time spent in the U.S. strongly predicted heritage cultural orientation but not mainstream cultural attitude.                | No mental health symptoms among Arab minorities were identified. |
| Amer and Hovy (2012) | Anxiety and depression in a post-September 11 sample of Arabs in the USA   | The Arab American sample in this study showed notably elevated levels of anxiety and depression in comparison to standardization and community samples of four other minority groups. | No exploration of risk factors for Arabs' mental health issues.  |
| Jadalla & Lee, 2012  | The relationship between acculturation and mental health of Arab Americans.  | Acculturation and physical or mental health among Arab Americans have distinct patterns of association.   | No exploration of risk factors for Arabs' mental health issues.  |

| <b>Author/Year</b>                                | <b>Title</b>   | <b>Key Findings</b>   | <b>Reason for Exclusion</b>                                     |
|---|--|---|---|
| Grant & Keltner, (2011),<br>Norris et al., (2011) | Anxiety and depression in a post-September 11 sample of Arabs in the USA.  | The Arab American sample in this study showed notably elevated levels of anxiety and depression in comparison to standardization and community samples of four other minority groups. | No exploration of risk factors among the Arabs studied          |
| Rousseau et al., 2011                             | Perceived Discrimination and Its Association with Psychological Distress Among Newly Arrived Immigrants Before and After September 11, 2001.                           | The perception of discrimination increased from 1998 to 2007 among the Arab Muslim, Arab non-Muslim, and Haitian groups.  | No exploration of risk factors for Arabs' mental health issues. |
| Padela & Hiesler, 2010                            | The association of perceived abuse and discrimination after September 11, 2001, with psychological distress, level of happiness and health status among Arab American. | Perceived post-September 11 abuse and discrimination were associated with increased psychological distress, reduced levels of happiness, and worse health status in Arab Americans.   | No exploration of risk factors for Arabs' mental health issues. |
| Jamil et al., 2009                                | The prevalence of self-reported chronic conditions among Arab, Chaldean, and African Americans in Southeast Michigan.  | Chaldeans reported lower prevalence of chronic conditions compared to Arabs.  | No mental health symptoms were examined.                        |

| <b>Author/Year</b>            | <b>Title</b>   | <b>Key Findings</b>   | <b>Reason for Exclusion</b>   |
|-------------------------------|--|---|---|
| Jamil et al., 2008            | Factors associated with self-reported depression in Arab, Chaldean, and African Americans.   | The highest rate of depression was found in Arab American participants: African Americans and Chaldeans had lower rates.  | No access to full text.   |
| Norris and Aronia (2008)      | Premigra Pre-immigration persecution, postmigration stressors and resources, and postmigration mental health: a study of severely traumatized U.S. Arab immigrant women. | Postmigration stressors have substantial impact on immigrant mental health outcomes.  | There was no exploration of risk factors among the Arabs studied  |
| Hassouneh and Kulwicki (2007) | Mental health, discrimination, and trauma in Arab Muslim women living in the US: A pilot study.  | Many challenges impact the mental health of Muslim women, such as discrimination, acculturative stress, and trauma.   | There was no exploration of risk factors among the Arabs studied  |
| Amer&Hovy, 2007               | Socio-demographic differences in acculturation and mental health for a sample of 2nd generation/early immigrant Arab Americans.  | Their findings point to distinct patterns of acculturation for Christian and Muslim subgroups, which can better guide future research and mental health services. | These researchers looked at sociodemographic variations in acculturation trends among first- and second-generation Arab Americans. No risk factors were investigated. |
| Jamil et al., 2009            | The prevalence of self-reported chronic conditions among Arab, Chaldean, and African Americans in Southeast Michigan   | Chaldeans were less likely to report having one more chronic condition compared to whites.  | No access to full text.   |

| <b>Author/Year</b>                   | <b>Title</b>  | <b>Key Findings</b>   | <b>Reason for Exclusion</b>                              |
|--------------------------------------|---|---|--|
| Jamil et a., 2008                    | Factors associated with self-reported depression in Arab, Chaldean, and African Americans.  | The highest rate of depression was found in Arab American participants; African Americans and Chaldeans had lower rates.  | No access to full text.                                  |
| Khuwaja et al., 2007                 | Pakistani Ismaili Muslim Adolescent Females Living in the United States of America: Stresses Associated with the Process of Adaptation to U.S. Culture. | Longer periods of stay in the United States, young age at migration, and speaking more English were associated with lower sociopsychological stress scores among Pakistani Muslims. | Wrong population (Pakistani are not an Arab population). |
| Kira et al., 2007                    | Health issues in the Arab American community.<br>The physical and mental status of Iraqi refugees and its etiology.                                     | No abstract available.  | Full text is not accessible.                             |
| Aboumediene, Farrag & Dakroub, 2005. | Depression and medical health complaints in a group of Arab-American women.   | No abstract available.  | Full text is not accessible.                             |
| Amer & Hovy, 2005                    | Examination of the impact of acculturation, stress, and religiosity on mental health variables for second-generation Arab Americans.                    | No abstract available.  | Full text is not accessible.                             |
| Jamil et al. (2002)                  | A retrospective study of Arab American mental health clients: trauma and the Iraqi refugees.  | PTSD is prevalent in Iraqi refugees than in other clients.  | No exploration of risk factors among the Arabs studied   |

## CHAPTER THREE

### Emotional Distress and Depression Feelings Among Arab Descendants in The United

#### States: A Cross-Sectional Study

##### Abstract

Introduction: Despite an increasing U.S. Arab population, only limited research exists reporting prevalence or associated risks for depression or emotional distress.

Aim: We examined the prevalence, trends, and factors influencing self-reported feelings of depression and emotional distress among U.S. Arab descendants.

Methods: We performed a secondary data analysis using the California Health Interview Survey data from 2013 to 2022 (Arab individuals' N=193,214). We used data combined from all pooled years to calculate the aggregate prevalence of feeling depressed and emotional distress. We used logistic regression to analyze differences between first- and second-generation immigrants, and to evaluate the socio-economic determinants concerning whether they had symptoms of depression or emotional distress.

Results: In the final sample, 56.57% were female; the mean age was 56.09 years (SD=18.33); 23.54% reported feelings of depression, and 4.43% reported more general emotional distress. Analysis of trends revealed stable levels of reported depressive feelings from 2013 to 2021, and slight fluctuations in emotional distress. There is no statistical difference in risk for feeling depressed between second and first second generation (OR 3.64, 95% CI [0.95, 13.92],  $p = 0.06$ ), or emotional distress between the two generations (OR 2.17, 95% CI [0.49, 9.65],  $p = 0.31$ ). Being female, of older age, having less education, unemployment, and staying in the U.S. longer were associated with increased risk for feelings of depression and emotional distress.

Discussion: Our results support earlier research into the nature of mental health rates among Arab immigrants and identify the risk factors linked to outcomes.

Implication for Practice: Culturally relevant mental health intervention and support programs appear warranted for the high-risk groups we have identified.

## **Introduction**

Arab Americans include roughly 3.5 million individuals living in the U.S. whose heritage, culture, or language is connected to at least one of the 23 Arab nations (Samari, 2016). This population includes first-generation immigrants (born overseas), second-generation descendants of those immigrants (born in the U.S.), and those individuals born to native-born (or American) second or greater-generation parents (Samari, 2016; Suleiman et al., 2021). Researchers have consistently shown that Arab communities incur a large rate of mental health problems during their transition process. Among the many types of distress, depression is one of the most prevalent mental health illnesses and is associated with greater disability compared to other chronic diseases (CDC, 2016). Emotional distress has been defined as a set of overwhelming and painful feelings or sentiments felt by an individual which may exert a significant impact on everyday activities (Belay et al., 2021). Depression imposes significant psychosocial impairments in an individual's life, frequently constituting a lifelong burden affecting their productivity and social integration (Albqoor et al., 2021; Dallo et al., 2018).

Depression and emotional distress can profoundly impact an individual's emotional, cognitive, and physical capacities. Moreover, they often result in a reduced quality of life, disrupted social relationships, and diminished productivity, constraining individuals' ability to thrive and participate fully in society (Belay et al., 2021). Arab Americans in the U.S. were 23% less likely to be evaluated for depression compared to non-Hispanic whites, perhaps resulting in

a higher proportion of undiagnosed cases of depression in this population (Arnetz et al., 2020; Dallo et al., 2018). The economic consequences of mental illness are substantial, similar to those of cardiac disease (Albqoor et al., 2020). Depression imposes a significant financial strain on the healthcare system, totaling \$216 billion per year and simultaneously resulting in \$147 billion in decreased productivity in the workplace (Benjamin., 2018). The increasing Arab population, of which about a third comprise displaced individuals or immigrants who may experience general psychological distress or depression more specifically, could intensify the strain on mental health services in the U.S. (Giacco, Laxman & Priebe, 2018).

Recent researchers have shown concerning patterns in the prevalence of depression or emotional distress among Arab immigrants in the U.S. Several studies have indicated that between 22.4% and 49% of Arab Americans manifest depressive symptoms, potentially leading to significant declines in social functioning (Kayrouz et al., 2018; Pampati et al., 2018; Wong et al., 2014). Research conducted over several survey waves from 2001 to 2015 has indicated changes in the prevalence rates of serious psychological distress (SPD) among Middle Eastern immigrants, ranging from 5.23% to 5.99% (Albqoor et al., 2021). SPD denotes severe mental health issues ( depression, anxiety causing detrimental impairment in social, occupational, or academic functioning, and warrant treatment. These fluctuations in Arabic immigrants' prevalence rates did not produce substantial differences within each sample population across survey waves, suggesting a consistent mental health burden (Albqoor et al., 2021; Elshahat, Moffat & Newbold, 2021). However, in the extant literature, there is a dearth of investigation into patterns of depression as well as differences in the prevalence of mental health issues by generation status within the Arabic communities. It is essential to understand how emotional distress and, specifically, depression change over time in Arab generations groups.



Recent studies have indicated that various sociodemographic characteristics appear to influence depression and psychological distress in Arab immigrants. Gender, age, and marital status are important predictors of higher risk for depression and general psychological distress, with females, older individuals, and unmarried people being more vulnerable (Abuelezam & El-Sayed, 2021; Wrobel, Farag & Haymes, 2009). Moreover, refugees and persons who have lived in the U.S. for extended periods have also displayed more depression. Several factors have been reported to increase psychological symptoms, including gender, length of residence in the U.S., or being a first-generation immigrant (Javanbakht et al., 2019; Samri, 2016). Arab immigrants' heightened PD may be due to decreased resilience and limited involvement in community groups (Lemaster et al., 2018). Moreover, the literature indicates that first-generation immigrants have different mental health issues compared to the later generations and that first-generation immigrants experience more distress than second-generation immigrants (Samri, 2016). Nevertheless, a significant lack of research exists regarding risk factors related to socio-demographic variables among Arab immigrants, indicating the necessity for more studies in this field.

To date, there has been a notable gap in our complete understanding of depression and emotional distress experienced by Arab immigrants in the U.S. Although some research has reported the prevalence of depression and emotional distress, a comprehensive examination has not yet been performed on the members of any Arabic community over time and possibly across different generations. The accompanying detailed analyses of risk factors are scarce, leaving gaps in our understanding of the determinants of mental health problems in the Arabic community. Understanding risk factors associated with emotional distress, and specifically depression feelings, is essential in developing culturally relevant mental health education and

support programs. We aimed to 1) investigate the pooled prevalence of depressive feelings and emotional distress among Arab immigrants in the US from 2013 to 2021, 2) analyze the differences in these rates over three waves (2013–2015, 2016–2018, and 2019–2021), 3) compare changes in odds of depressive feelings and emotional distress between first-generation and second-generation Arab immigrants, and 4) investigate whether any socio-demographic risk factors (e.g., age, gender, marital status, education level, years residing in the US, English proficiency, or poverty level ) associated with depressive feelings or emotional distress in the U.S. Arab-descended populations.

## **Methods**

### **Overall Research Method**

We used data from the California Health Interview Survey (CHIS), the largest state health survey in the country. CHIS is a cross-sectional annual survey and an ongoing survey conducted either online or via telephone. It covers a broad range of physical and mental health variables. More information about CHIS can be found at the following link: [ucla.edu/our-work/california-health-interview-survey-chis](https://www.ucla.edu/our-work/california-health-interview-survey-chis). We selected mental health data in CHIS for nine years (2013–2021) for Arab subsets. We chose this timeframe because the CHIS dataset for this period contained the essential factors for this study, including depression and PD.

### **Study Design and Participants**

CHIS utilizes a multistage sampling strategy, randomly selecting sampled households from every county in California. They used a random-digit-dialing (RDD) method to reach out to residential telephone numbers, randomly selecting adults (age 18 or older) for each household's interview. We identified Arab individuals from within the CHIS general respondent population. Inclusion criteria consisted of individuals who self-identified as being of Arab origin, individuals

who had emigrated to the U.S. at any age, who were 18 years of age or older, and with no restriction on the language spoken. Initially, we filtered respondents based on variable AH33, pinpointing those born in the Middle East or an Arab country. Subsequently, for respondents born in the U.S., we utilized AH34 (birth country of their father) and AH35 (birth country of their mother) to identify subgroups where at least one parent was born in the Middle East or an Arab country. Next, we used these variables to subset and extract data specifically from respondents born in Middle Eastern or Arab countries. We chose three waves to examine changes in trends in depression feelings and emotional distress to capture meaningful trends without complicating our analysis results with excessive data points. Our research qualified for an exemption from IRB review at the University of California San Francisco as our study exclusively deals with information unidentifiable by itself, de-identified data, or coded private information.

## **Variables Measured**

### ***Primary sociodemographic risk factors (predictors)***

We examined several sociodemographic factors in the CHIS dataset, including age, gender, marital status, education level, work status, length of stay in the U.S., and poverty level as the primary risk factors of our analysis. Age was documented as an integer-value variable, with a range between 18 to 117 years. Gender was recoded as a binary variable (male "0" and female "1"). The marital status response was recorded into one of four categories: married, living with a partner, widowed/separated/ divorced, or never married. We recoded education level into five classes: no formal education, high school or less, some college, college graduates, and advanced education. Working status was reduced to a binary variable: employed or unemployed. We grouped the participants' duration of living in the U.S. into four categories: < 4 years, 5 to 9

years, 10 to 14 years, or > 15 years. CHIS categorized the poverty level variable into five categories (0–99% FPL, 100–199% FPL, 200–299% FPL, and 300% FPL and Above). Our decisions to reduce categories for some demographic variables were based on established conventions in the literature (Abuelezam et al., 2018; Pampati et al., 2018; Samari, 2019) and practical considerations regarding the data distribution in our sample, data interpretability and meaningfulness of the analysis. Simplification of the statistical outputs ensures clearer communication of findings to readers and stakeholders, which is vital for informed decision-making and data dissemination.

### ***Outcome measures***

**Emotional Distress.** CHIS employed the CHIS Kessler-6 (K-6) scale score responses to measure our Arab participants' emotional distress. The K-6 scale involves six questions, responses to which were used by CHIS to assess whether the respondent had suffered any symptoms of emotional distress (such as anxiety, hopelessness, or worthlessness) in the past 30 days. Each question employed a 5-point scale to assess the frequency of these emotions, varying from "all of the time" to "none of the time. CHIS-categorized the dichotomous score for emotional distress, classifying individuals with a score equal to or greater than 13 as having emotional distress ("yes") and those with a score below 13 as not distressed ("no"). The K-6 scale has shown good validity in previous research. The sensitivity of the K-6 items ranged from 0.98 to 0.99; according to its developers, its initial Cronbach's alpha was 0.89 (Kessler et al., 2010; Vissoci et al., 2018). The instrument has been extensively validated in a variety of populations, including Arab immigrants (Easton et al., 2017).

**Self-reported Feeling of Depression.** We assessed an additional indicator of depression using the CHIS variable AF66 to assess the participant's most severe depressed emotions, which

capture a distinct psychological condition compared to a measure of the participant's recent emotional distress. AF66 was a Likert-scale type variable that contained information on how often participants felt depressed in their worst month. AF66 had five possible responses (similar to the K-6 variables' responses), but the codes and the matching values were reversed from those of the K-6 variables so that the list of codes and values became: "all the time" (5), "most of the time" (4), "some of the time" (3), "a little amount of the time" (2), or "none of the time" (1). A larger value for AF66 indicated that the respondent had more depressive symptoms. We recoded the CHIS AF66 variable from its original five classes to a dichotomous scale, in which "depressive feelings" represented those who answered (1) "all of the time" and (2) "most of the time," while "minimal or no depressive feelings" denotes the answers from (3-5) "some of the time to none of the time." By using AF66 we evaluated the respondent's worst depressive feelings which measured a different psychological state than would a measure of a participant's recent emotional distress:

### **Statistical Analysis**

The analyses were conducted using STATA version 17.1. Descriptive analyses were performed to estimate the prevalence of depressive feelings and emotional distress using frequency and percentages. We used CHIS-generated sample weights to ensure the reliability and representativeness of our analysis. CHIS assigned weight to each observation in the data set based on the sampling design of the survey to account for differences in the probability of selection and response rates within different demographic groups. For aim 2, we used logistic regression analysis (using interaction between years and generations) to examine variations in the prevalence levels of depression feeling and distress across three waves of data collection: 2012–2015, 2016–2018, and 2019–2021 among first- and second-generation Arab populations.

For aim 3, logistic regression analyses were utilized to examine the significant difference in odds of reporting depression and emotional distress among the first generation compared to the second generation from 2012–2021. Finally, logistic regression models were used to explore social-demographic factors associated with emotional distress and depression. We tested for multicollinearity between all independent variables before fitting the model, and the result displayed a mean variance inflation factor (VIF) of 1.02 (below the threshold of 10), indicating that no violations of the multicollinearity assumption were detected. A retrospective power analysis was conducted using our sample sizes ( $N = 43,517$  for depression and  $N = 193,214$  for emotional distress), with an alpha threshold of 0.05. The effect sizes were calculated for the outcomes, with depression at 23 % and emotional distress at 4%, along with an OR (risk factors) ranging from 0.67 to 2.03. This approach assessed the statistical power of this investigation and ensured the reliability and robustness of the findings. The research findings demonstrated a considerable degree of statistical power, over 85% for all non-significant results, and were rigorously upheld at an outstanding 100% for any significant findings, which further confirms the strength and reliability of our conclusions.

## **Results**

### **Sample Characteristics**

The final number of Arab participants for the 9-year period (2013–2021) was 193,241, spanning ages 18 to 117, with a mean age of 56.09 (SD =18.33) years. Our sample population included 83,920 males (43.43%) and 109,301 females (56.57%). Nearly half of the participants were married ( $n = 93,449$ , 48.36%), and about 52% of participants were employed. Arab respondents were well-educated overall, with 142,891 (73.96%) having at least a college education. Most participants had lived in the U.S. for more than 15 years (80.12%), while a

small proportion resided for less than 4 years (4.96%). The majority of them either spoke only English (70.41%) or spoke it very well (21.89%), and the majority of the participants (58.70%) had incomes greater than the 300% FPL (refer to **Table 1.3** for more details).

### **Prevalence and Trends for Feeling Depressed and Emotional Distress**

The pooled prevalence for all 9 years was 23.54% for feelings of depression and 4.43% for emotional distress (**Table 2.3**). Among first-generation Arabs, the prevalence of feeling depressed in their worst month was 20% in waves 1, 2, and 3. The prevalence of feeling depressed among second-generation Arabs was 30%, 20%, and 30% across waves 1, 2, and 3, respectively. There were no statistically significant differences in depression trends between first- and second-generation immigrants across three waves (second wave (2016–2018): OR = 0.14,  $p = 0.33$ , 95% CI [0.003, 7.64]; third wave (2019–2021): OR = 0.54,  $p = 0.66$ , 95% CI [0.03, 8.27]) compared to the first wave (**Figure 1.3**).

We observed fluctuations in the number of people experiencing emotional distress over time (**Figure 2.3**). In the first-generation cohort, emotional distress rates commenced at 10% in the initial wave and subsequently dropped to two cohorts without emotional distress (waves 2, 3). In contrast, second-generation immigrants exhibited no distress during waves 1 and 2, then an increase to 10% in wave 3. There were no statistically significant differences in emotional distress trends between first- and second-generation immigrants across three waves (second wave (2016–2018): OR = 4.36,  $p = 0.62$ , 95% CI [0.01, 1721.09]; third wave (2019–2021): OR = 6.71,  $p = 0.48$ , 95% CI [0.03, 1545.15]) compared to the first wave).

### **Depressive Feelings and Emotional Distress Odds for First generation Arabs compared to second generation Arabs.**

A comparison of the odds ratio (OR) of depressive and distress feelings between two Arab generations appears in **Table 3.3**. There is no statistical difference in risk for feeling depressed between second and first generation (OR 3.64, 95% CI [0.95, 13.92],  $p = 0.06$ ). Likewise, the comparison of emotional distress for second-generation Arab participants versus first-generation counterparts also yielded no statistically significant differences (OR 2.17, 95% CI [0.49, 9.65],  $p = 0.31$ ).

### **Socio-Demographic Factors Associated with Depressive Feelings among Individuals of Arab Descent**

We found that for each year of age, the risk of depressive feelings decreased significantly at 2% (OR 0.98, 95% CI [0.98, 0.99],  $p < 0.001$ ; **Table 4.3**). The odds of women reporting feelings of depression were significantly greater than those of men (OR: 1.36, 95% CI [1.09- 1.71],  $p = 0.008$ ). Respondents who are widow/ separate or divorced are 36% more likely to have feelings of depression than those who were married (OR = 1.36, 95% CI [1.01, 1.82],  $p = 0.041$ ). Those who are unemployed also showed a statistically significant increased risk of depressive feelings compared with those who are employed (OR = 1.48, 95% CI [1.20- 1.82],  $p < 0.001$ ). Those who had a family income at or above the 300% FPL showed a statistically significant protective effect against feeling depressed compared to those in the lowest category, i.e., 0% of the FPL to 99% of the FPL (OR = 0.74, 95% CI [0.55-0.99],  $p = 0.04$ ).

### **Socio-Demographic Factors Associated with Emotional Distress among Arab Descendants**

The risk factors that contributed to the emotional distress risk in Arab people in some ways paralleled those we observed for feelings of depression (**Table 5.3**). The risk of emotional distress significantly decreased by 2% for each additional year lived (OR = 0.98, 95% CI [0.98- 0.99],  $p < 0.001$ ). Women had a 34% greater risk than men of experiencing emotional distress



(OR = 1.34, 95% CI [ 1.09-1.64], p = 0.006). Interestingly, any respondent who was never married carried a significant increased risk of emotional distress (OR 2.02, 95% CI [1.63, 2.50], p< 0.001); even those who had been married (who were widowed or separated or divorced at the time of their CHIS interview) showed more than twice the risk of those who were married (OR 2.18, 95% CI [1.71, 2.78], p< 0.001). Unemployed people had more than twice the risk of emotional distress compared to employed people (OR =2.03, 95% CI [1.71, 2.42] p <0.001). If they had lived in the U.S. for more than 15 years, Arab descendants carried, on average, 54% more risk of emotional distress compared to those who had lived fewer than 5 years in the U.S. (OR 1.54, 95% CI [1.02, 2.34], p =0.041). Finally, individuals falling within higher-income levels showed decreased emotional distress risk, with 200% FPL and above having significantly reduced risk for emotional distress compared to those 0-99% FPL (OR 0.54, 95% CI [0.41–0.69], p=<0.001)

## **Discussion**

The psychological well-being of Arab descendants residing in the U.S. represents a multifaceted and increasingly critical focus of research. Using a cross-sectional design across nine years of data, we estimated a pooled prevalence of depressive feelings and emotional distress in Arab population living in California. This study confirmed previous work exploring influential demographic characteristics and also identified new influential factors. Our findings suggest that this population may suffer from an excess burden of depression feelings but a relatively low rate of emotional distress. Different factors associated with increased risk both mental health outcomes. These findings support the need for developing culturally sensitive approaches to address the challenges faced by Arab immigrants and their descendants in the U.S.

## **Prevalence and Trends of Depression and Emotional Distress Rates**

Our findings highlight a slightly concerning prevalence of self-reported depression among Arabs in the CHIS data, as 23.54% of our sample population reported some depressive feelings, either most or some of the time in the past 12 months. Our estimated prevalence rate supports and is supported by other rates of between 41.7% and 57% presented by other reports in the literature (Amer & Hovey, 2012; Arnetz et al., 2013; Assari, & Lankarani, 2017; Grant & Keltner, 2011; Jamil, 2002; Javanbakht et al., 2019; M'zah, Cardozo & Evans, 2019; Norris & Aroian, 2008; Norris et al., 2011; Tylor et al., 2014). We attribute the higher prevalence of depressive feelings in our study compared to the preceding literature to differences in measurement methods. While previous studies utilized comprehensive scales such as the Center for Epidemiological Studies Depression Scale (CES-D) or the Hopkins Symptoms Checklist 25 (HSC-25) to evaluate depression (Amer & Hovey, 2012; Arnetz et al., 2013; Assari, & Lankarani, 2017; Javanbakht et al., 2019; M'zah, Cardozo & Evans, 2019; Norris & Aroian, 2008; Norris et al., 2011; Tylor et al., 2014), our study relied on a single-item measure that assessed reported feelings of depression during the worst month an individual could recall. This single-item measure likely lacked the sensitivity and specificity needed to capture the full spectrum of depressive symptoms accurately. In addition, the individual's assessment of their own worst depressive feelings measured a different psychological state than would a measure of an individual's recent or current depressive feelings. Lastly, the item cannot be compared to the clinical diagnosis of depression by a mental health professional

We observed stabilized level of depression trends feelings among the first-generation Arab immigrants in all cohorts, and slight variations among second generations across the three studies waves. The odds of experiencing depression feelings among second-generation

immigrants showed a borderline significance of higher risk compared to first generations. These patterns suggest a potential shared vulnerability to depressive feelings regardless of generational status; if these two generations share a vulnerability to depression, this may, in turn, suggest that other factors may influence depression among Arab descendants in the U.S. Conversely, previous studies have reported substantial variation in depression rates and trends between immigrant generations among diverse immigrant residents. For example, Abdullhamad et al. (2022) found that first-generation immigrants were more likely to experience depression than second-generation immigrants, while others, such as Salas-Wright et al. (2014), reported the opposite trend. The observed consistency in rates of feeling depressed across generations in our study suggests that ongoing societal changes and individual adaptation processes may have mitigated these disparities over time between Arab generations. Such findings imply that additional factors beyond immigration status may influence depression rates among Arab descendants. However, given the borderline significance, more research is required to elucidate the actual differences in depression between Arab groups and the underlying relevant factors and to gain a deeper understanding of the dynamics of mental health within immigrant populations.

We observed a low prevalence of emotional distress among our Arab-descended participants, with a pooled prevalence of 4.43%. Previous investigations of the emotional distress rates of Arab communities reported discrepant figures, with some researchers reporting rates similar to ours of approximately 5% (Albqoor et al., 2021; Amin & Driver, 2019), yet others documented a prevalence of between 50 and 60% (M'zah, Cardozo & Evans, 2019; Tylor et al., 2014). No difference was found in emotional distress prevalence between the first and second generations. This contrasts with the results reported by Samri (2016), who indicated that first-generation Arab Americans faced a larger risk of emotional distress than did the 1.5-generation,

or second-generation. The discrepancy between our observed rate of less than 5% and that of other reports could be due to several factors. First, the CHIS data, solely centered on California, likely limited the representativeness of our Arab cohorts, thus resulting in an inadequately described Arab descendent diversity. Second, the CHIS survey lacked acculturation variables specific to immigrants or other relevant contextual factors that could have impacted immigrants' or their children's mental health outcomes. It is possible that the experience of navigating the challenges of immigration, such as, cultural identity, acculturation adjustment, support systems and accessibility to mental health services, constitutes a relatively consistent difficulty for multiple generations within these communities (Albqoor et al., 2021; Amin & Driver, 2019). Thus, although each generation may face unique stressors, the similar context of immigrant life between first and second generations may contribute to the roughly similar rates of emotional distress prevalence (Albqoor et al., 2021; M'zah, Cardozo, & Evans, 2019; Tylor et al., 2014).

### **Socio-demographic Factors Associated with Reported Feelings of Depression and Emotional Distress among Arab Descendants**

We found that age, gender, marital status, education, duration of residence in the U.S., and poverty level were key factors associated with depressive feelings and emotional distress risk. First, age influenced both depression and emotional distress feelings among Arab individuals, with older age decreasing the risk for depressive feelings and emotional distress. Several studies of Arab individuals suggest that older age is a protective factor for depression (Abuelezam & El-Sayed, 2021; Abu-Ras & Abou Badr, 2009). This finding aligns with broader trends in mental health research, which attribute the protective effect of aging to factors such as increased emotional regulation skills, greater life satisfaction, and improved coping mechanisms that were developed over time (Jurewicz, 2015; Kiely, Brady & Byles, 2019).

Gender emerges as another critical determinant of mental health outcomes among Arab individuals, with females consistently showing higher rates of feeling depressed and emotional distress compared to males. Studies by Abuelezam & El-Sayed (2021) and Driver (2009) also found that being female was associated with a greater risk for depression and emotional distress symptoms among Arab immigrants. Gender roles and expectations in the originating Arab culture might increase the risk of mental health problems among women. Arab heritage, for instance, delineates conventional gender roles, where men are usually tasked with breadwinning and decision-making roles, whereas women are anticipated to prioritize caregiving, household management, and upholding family honor (Khalil et al., 2022; Sharara et al., 2018). Moreover, societal expectations may influence women's decisions regarding marriage timing and career pursuits (Rahal et al., 2022). The pressure to fulfill gender roles and societal expectations even at the expense of personal well-being may lead to feelings of confined autonomy, personal satisfaction, and fulfillment, contributing to feelings of emotional distress or depression (Khalil et al., 2022; Sharara et al., 2018). The strong link between gender and depression feelings/emotional distress emphasizes the necessity for gender-specific strategies in promoting mental health and providing interventions in the Arab community.

Another key factor involved in the risk of both feeling depressed and emotional distress in our sample was marital status (being never married, divorced, separated, or widowed are higher risk). Marital status can serve as a proxy for the quality and availability of social support networks (kruse et al., 2013), which play a crucial role in buffering against mental health issues. Similarly, Abuelezam & El-Sayed (2021) indicated that being single carried 2.2 greater odds of having depression. This finding aligns with extensive literature highlighting the protective effects of marriage on mental health outcomes across diverse cultural contexts (Abuelezam & El-Sayed,

2021; Aroian, Uddin, and Blbas, 2017; Bulloch et al., 2017; Zhao et al., 2022). Within the Arab community, marital disruptions can profoundly affect mental health due to the cultural emphasis on family cohesion and social bonds, with cultural norms potentially intensifying stigma around marital dissolution and exacerbating emotional distress (Abuelezam & El-Sayed, 2021; Aroian et al., 2017).

We also found that educational attainment played a role in mental health outcomes, with lower levels of education associated with increased odds of emotional distress. Abd-El Rahman (2023) reported that attaining less education is a mental health risk factor for Arab individuals. These findings align with existing research indicating that education is associated with numerous health benefits, including better overall health outcomes, opportunities for personal growth and fulfillment, and lower rates of mental illness (Foo et al., 2018; Hammoudi Halat et al., 2023; Li et al., 2022; Mindlis & Boffetta, 2017; Taple et al., 2022).

Unemployment emerges as a significant risk factor for both depression and distress, feelings underscoring the detrimental impact of economic instability on mental well-being within the Arab community. In accordance, a study conducted by Patel et al (2022) found that Social risk factors including financial strains and unemployment increased risk for PD among Arabs in US. Unemployment disrupts individuals' ability to provide for themselves and their families, leading to financial strain and insecurity, which can exacerbate feelings of stress, anxiety, and hopelessness, contributing to psychological distress (Amiri, 2022). In Arab community, work is not just a means of earning income but also a source of social status, fulfillment, and belonging (Dhalimi et al., 2018). The loss of employment can lead to feelings of isolation, social exclusion, and a loss of meaning in life, all of which are risk factors for psychological distress.

Interestingly, an increasing duration of residence in the U.S. (after the first 5 years) seemed to increase the odds of emotional distress among Arab individuals in our sample, particularly those who lived in the US for more than 15 years. It is possible that acculturation and assimilation processes may contribute differently (than expected) to mental health issues among immigrants and their children. Aroian, Uddin, and Pham (2015) found that a longer duration of residence in the U.S. also was associated with larger rates of depression among Arab immigrants. According to Amin and Driver (2009), female immigrants with longer U.S. stays had larger emotional distress rates. Identity conflicts and cultural alienation might worsen emotional distress due to pressure to conform to mainstream American society (Aroian, Uddin, and Balbas, 2017). The literature identified remarkably similar patterns among Latino immigrant populations, particularly those who have resided in the US for a longer period of time (Perreira et al., 2015). This underscores the importance of studying the changes in emotional health of specific immigrant groups, and how these patterns relate to the duration of their stay in the U.S., through the implementation of intra-ethnic versus inter-ethnic studies.

Lastly, our findings with respect to the poverty level demonstrate a significant association with both depressive feelings and emotional distress, with higher income levels associated with decreased odds of both outcomes. This partly supports a study done by Patel et al. (2022), who also found that financial strains and unstable housing increased the risk of emotional distress among Arabs in the U.S. This finding may reflect the complex relationship between socioeconomic status and mental health and warrants further exploration. Cultural attitudes about resilience, spirituality, and coping may affect socioeconomic responses (Suleiman et al., 2021). Arab values such as perseverance, determination for seeking financial stability, and solidarity within their supportive network influence how individuals perceive and tackle economic

difficulties and the emotional responses to it. Arabic culture fosters to embrace a resilient mindset seeing challenges as temporary rather than intractable impediments. Income level could be a proxy for other factors such as access to healthcare and social services, which may vary by income level and affect mental health outcomes.

### **Strengths and Limitations**

Our study possesses several notable strengths. The overall sample size spanning nine years allows for robust statistical analyses and the examination of trends over time. Moreover, our inclusion of both first and second-generation Arab Americans enhanced the comprehensiveness of our results and facilitated our comparisons across generational cohorts. Our measure of emotional distress has been validated in Arab individuals and has had extensive testing to support its validity and reliability. Considering various demographic and socio-economic variables also enabled a more thorough knowledge of factors influencing mental health outcomes among Arabs living in the U.S. Identifying important risk factors and providing actionable suggestions for policy and practice enhance our results' practical significance in addressing mental health issues in U.S. Arab communities.

Despite the valuable insights provided by this study, several limitations warrant acknowledgment. Firstly, the reliance on self-reported measures of depressive feelings and emotional distress may introduce response bias and underreporting of symptoms. Secondly, due to data availability in the CHIS database, we quantified depression with a one item measure of depressive feelings during the worst month a participant could recall, which limits the assessment of the full spectrum of depressive symptoms across an established range of time. The cross-sectional structure of our data limited our ability to draw causal inferences and, as CHIS did not interview the same respondent more than once during the nine years of data collection we



analyzed, prevented our performing a temporal analysis of identified risk factors. The lack of specific demographic indicators in the CHIS data (beyond those derived from the FPL), such as socioeconomic position and acculturation assessments, likely restricted our ability to detect significant cultural differences impacting mental health outcomes in Arabs in the U.S. Lastly, the retrospective design we employed may have introduced recall bias, particularly in assessing variables such as duration of residence and English proficiency.

### **Implications and Future Research**

The concerning prevalence of depressive feelings and emotional distress among Arab immigrants and their descendants highlights the need for specific mental health interventions designed to address the distinct needs of this population. Healthcare providers working with U.S.-based Arab populations should focus on screening for depression and emotional distress, especially in females, younger individuals, those who have no formal education or only some college, and those who are unemployed or who have lived in the U.S. for a long time. Specific interventions and support services should be put in place to target these risk factors and to enhance the community's mental well-being. Marital status is an important indicator that strong relationships provide a balance or at least a reduction in the risk of emotional distress or feeling depression, thus also suggesting the need to promote such relationships and to enhance social support systems, particularly for those who are not in a strong relationship. Interventions targeting a lack of formal education or unemployment should focus on offering accessible resources and vocational training programs to empower individuals, thereby reducing the risk of emotional distress. Policymakers may focus on funding culturally competent mental health programs catering to the varied needs of the Arabs living in the U.S.

Our results suggest some important implications for future work in the area of mental health among Arabs in the U.S. Future researchers should further explore the underlying processes contributing to mental health issues in this group, beginning with the risk factors we found. Examining the effects of cultural, social, and economic factors that impact mental health outcomes in Arab communities may provide a more detailed knowledge of these intricate interactions. Longitudinal studies are necessary to investigate the development of depression and emotional distress over time as well as to examine modifiable contextual and environmental risk and resilient factors within the context of acculturation, socio-political hassle and social support networks, to fully comprehend the complex challenges experienced by Arab communities in the U.S. Investigating distinct demographic and cultural characteristics such as those differentially assigned to one gender or the other, an individual's immigrant status, and acculturation intersections with other factors might clarify the different mental health experiences within different sections of the Arab community. Additional investigation for understanding national, global events such as adversities, socio-political instability that can eggiest mental health is warranted. Future researchers should address these research gaps to develop evidence-based therapies and policies that successfully enhance the mental health and well-being of the people of Arab heritage.

## **Conclusion**

In conclusion, this research provided insights into the degree of emotional distress and depressive feelings experienced by Arabs residing in the U.S. We also identified key sociodemographic factors associated with depression and emotional distress. These findings indicate the specific need for focused mental health interventions to assist females, younger people, those who never married, participants with no formal education

or only some college, and individuals who are unemployed or have lower income. We recommend interpreting these uncovered demographic determinants of distress and depression trends within the context of other social and environmental influences among Arab populations. Future researchers should concentrate on discovering the biopsychosocial processes underlying our observed trends for depressive feelings and emotional distress, along with other factors that may influence these outcomes. The use of a longitudinal study design may furnish useful insights into the many elements impacting mental well-being.

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## Appendix C

### Tables and Figures

**Table 1.3:** Descriptive Characteristics of Participants

| <b>Characteristics<br/>(N= 193,221 )</b>            | <b>Weighted N (%), or,<br/>Mean (SD)</b> |
|---|--|
| <b>Age (Years)</b>                                  | 56.090 (18.33)                           |
| <b>Sex</b>  |  |
| Male  | 83,920 (43.43%)                          |
| Female  | 109,301 (56.57%)                         |
| <b>Marital Status</b>                               |  |
| Married   | 93,449 (48.36%)                          |
| Living with Partner                                 | 11,152 (5.77%)                           |
| Widow/Separate/Divorced                             | 52,065 (26.95%)                          |
| Never Married                                       | 36,555 (18.92%)                          |
| <b>Education Attainment</b>                         |  |
| No formal education                                 | 1,186 (0.61%)                            |
| High School or Less                                 | 49,144 (25.43%)                          |
| Some College  | 38,3929 (19.87%)                         |
| College Graduate                                    | 63,698 (32.97%)                          |
| Advanced Education                                  | 40,801 (21.12%)                          |
| <b>Employment Status</b>                            |  |
| Employed  | 101,001(52.27%)                          |
| Unemployed  | 92,220 (47.73%)                          |
| <b>Number of years Living in U.S<br/>(N=43,517)</b> |  |
| ≤ 4 Years   | 2,159 (4.96%)                            |
| 5-9 Years   | 2,732 (6.28%)                            |
| 10-14 Years   | 3,760 (8.64 %)                           |
| >15 Years   | 34,866 (80.12%)                          |
| <b>English Use and Proficiency<br/>(N=193,214)</b>  |  |
| Speak only English                                  | 136,037 (70.41%)                         |
| Very Well/Well                                      | 42,292 (21.89%)                          |
| Not Well/ Not at All                                | 14,885 (7.70%)                           |
| <b>Poverty Level</b>                                |  |
| 0-99% FPL   | 23,897 (12.37%)                          |
| 100-199% FPL  | 30,689 (15.88%)                          |
| 200-299% FPL  | 25,209 (13.05%)                          |
| 300% FPL and Above                                  | 113,426 (58.70%)                         |
| Note: Age Range (18-117 years)                      |  |

**Table 2.3:** Pooled Prevalence of Depression Feelings and Emotional Distress among Arab Descendants

| <b>Characteristics</b>         | <b>Yes</b>     | <b>No</b>        |
|--------------------------------|----------------|------------------|
| Depression Feelings (N=40,457) | 9,522 (23.54%) | 30,935 (76.46%)  |
| Emotional distress (N=192,567) | 8,529 (4.43%)  | 184,128 (95.57%) |

**Table 3.3:** Odds Ratios for Depression Feelings and Emotional Distress among second Generation Arab versus First Generation Arab Americans

| <b>Outcome</b>      | <b>OR</b> | <b>95% CI</b> | <b>p-value</b> |
|---------------------|-----------|---------------|----------------|
| Depression Feelings | 3.64      | (0.95, 13.92) | 0.06           |
| Emotional Distress  | 2.17      | (0.49, 9.65)  | 0.31           |

**Table 4.3:** Risk Factors for Depression Feelings among Arab descendants

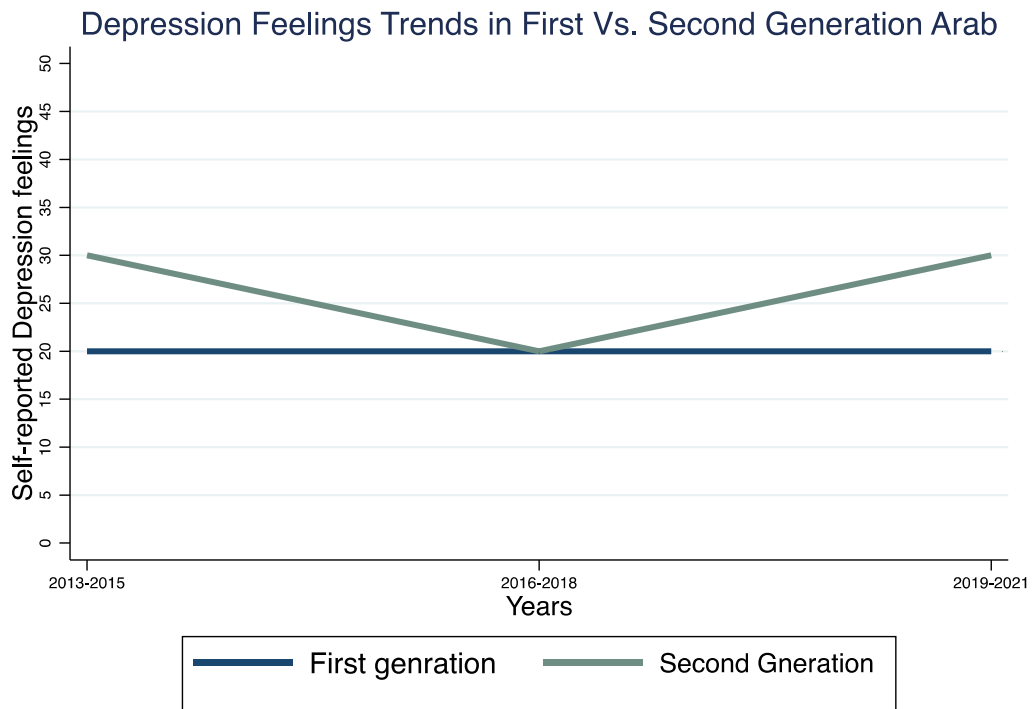
| <b>Characteristic<br/>(N=40,457)</b>  | <b>OR</b> | <b>95% CI</b> | <b>p-value</b> |
|---|-----------|---------------|----------------|
| <b>Age (Years)</b>  | 0.98      | 0.98- 0.99    | **0.000        |
| <b>Sex</b>  |           |               |                |
| Female  | 1.36      | 1.09- 1.71    | **0.008        |
| <b>Marital Status</b>   |           |               |                |
| Living with Partner   | 1.23      | 0.84- 1.80    | 0.28           |
| Widow/Separate/Divorced   | 1.42      | 1.04-1.92     | *0.03          |
| Never Married   | 1.25      | 0.98-1.58     | 0.07           |
| <b>Education Attainment</b>   |           |               |                |
| High School or less   | 1.04      | 0.75- 1.44    | 0.82           |
| Some College  | 0.88      | 0.65 -1.18    | 0.38           |
| College Graduate  | 0.91      | 0.66-1.25     | 0.54           |
| Advanced Education  | 0.75      | 0.25- 2.25    | 0.59           |
| <b>Employment Status</b>  |           |               |                |
| Unemployed  | 1.48      | 1.20- 1.82    | **0.00         |
| <b>Number of years Living<br/>in U.S</b>  |           |               |                |
| 5-9 Years   | 0.81      | 0.46-1.43     | 0.46           |
| 10-14 Years   | 0.82      | 0.51-1.34     | 0.43           |
| >15 Years   | 0.99      | 0.66-1.50     | 0.97           |
| <b>English Use and<br/>Proficiency</b>  |           |               |                |
| Very Well/Well  | 1.01      | 0.69- 1.48    | 0.95           |
| Not Well/ Not at All  | 1.17      | 0.85-1.60     | 0.34           |
| <b>Poverty Level</b>  |           |               |                |
| 100-199% FPL  | 0.97      | 0.73- 1.31    | 0.85           |
| 200-299% FPL  | 0.93      | 0.69-1.24     | 0.60           |
| 300% FPL and Above  | 0.74      | 0.55-0.99     | *0.04          |
| Note: *p<0.05, **p < 0.001, Abbreviations: OR(odd ratio), FPL(federal Poverty Level), CI(Confidence Interval) |           |               |                |



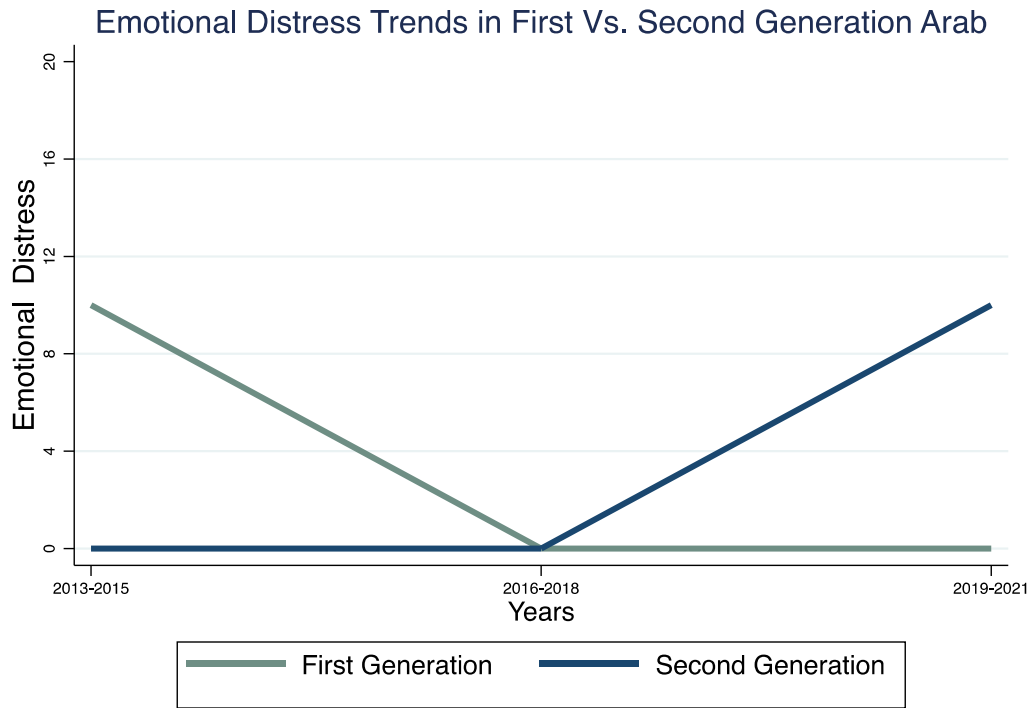
**Table 5.3: Risk Factors for Emotional Distress among Arab descendants**

| <b>Characteristics (N=192,567)</b>                   | <b>OR</b>    | <b>95% CI</b>          | <b>p-value</b>     |
|--|--------------|------------------------|--------------------|
| <b>Age (Years)</b>                                   | 0.98         | 0.98-0.99              | **0.000            |
| <b>Sex</b><br>Female                                 | 1.34         | 1.09-1.64              | **0.006            |
| <b>Marital Status</b><br>Living with Partner         | 1.43         | 1.01-2.02              | *0.044             |
| Widowed/ Separated/<br>Divorced                      | 2.18<br>2.02 | 1.71-2.78<br>1.63-2.50 | **0.000<br>**0.000 |
| Never Married  |              |                        |                    |
| <b>Education Attainment</b><br>High School or less   | 0.60         | 0.41-0.91              | *0.02              |
| Some College   | 0.76         | 0.48-1.22              | 0.26               |
| College Graduate                                     | 0.46         | 0.30-0.72              | **0.001            |
| Advanced Education                                   | 0.52         | 0.32-0.84              | **0.000            |
| <b>Employment Status</b><br>Unemployed               | 2.03         | 1.71-2.42              | **0.00             |
| <b>Number of years Living in U.S</b><br>5-9 Years    | 1.23<br>1.18 | 0.76-1.97<br>0.75-1.85 | 0.39<br>0.46       |
| 10-14 Years<br>>15 Years                             | 1.54         | 1.02-2.34              | *0.04              |
| <b>English Use and Proficiency</b><br>Very Well/Well | 1.02         | 0.788-1.326            | 0.866              |
| Not Well/ Not at All                                 | 0.82         | 0.619-1.078            | 0.150              |
| <b>Poverty Level</b><br>100-199% FPL                 | 0.89         | 0.72-1.12              | 0.34               |
| 200-299% FPL   | 0.67         | 0.49-0.91              | *0.01              |
| 300% FPL and Above                                   | 0.54         | 0.41-0.69              | **0.00             |

Note: \*p<0.05, \*\*, p < 0.001, Abbreviations: OR(odds ratio), FPL(federal Poverty Level), CI(Confidence Interval)



**Figure 1.3:** Trends of Depression Feelings among First Generation Arab versus Second Generation.



**Figure 2.3:** Trends of Emotional Distress among First generation Arab versus Second Generation.

## CHAPTER FOUR

### **Mediation Analysis of Social Cohesion and Family Life Impairment on the Relationship between Self-reported Depression and Emotional distress among Arabs in the United States**

#### **Abstract**

Background: Arab immigrants in the U.S. grapple with a high level of depression and emotional distress. Despite known associations between depression and more general emotional distress, the specific nature of this relationship and its underlying mechanisms are unknown. The aim of this research is to: 1) determine whether self-report of the worst depression experienced over the previous 12 months among Arab immigrants will predict emotional distress in the most recent month of their life; and 2) evaluate the potential mediating effect of social cohesion and family life impairment on the association between worst depressive feelings and emotional distress.

Methods: We conducted secondary data analyses using the California Health Interview Survey (CHIS) from 2013-2022. A total sample of 193,214 Arabs were included in our analyses.

Eligible respondents included those who self-identified as of Arab origin(s) living in the U.S., with no restriction on age or language spoken. We employed a generalized structural equation model to test the direct effect of depressive feelings on emotional distress and the mediating effect of both social cohesion and family life impairment on the association between Arab immigrant depressive feelings and emotional distress.

Results: Participants' ages ranged from 18 to 117 years, with a mean age of 56.090 (SD 18.44) years. Our sample population consisted of 83,920 men (43.43%), and 109,301 (56.57%) women. Worst depressive feelings over the previous year significantly predicted greater odds of recent emotional distress among our Arab cohort after controlling for demographic and socioeconomic

factors (adjusted OR = 5.28, 95% CI [12.10-21.21],  $p < 0.001$ ). Both social cohesion (OR = 1.05, 95% CI [1.01- 1.09],  $p < 0.001$ ) and family life impairment (OR = 3.01, 95% CI [2.44- 3.57],  $p < 0.001$ ) partially mediated the relationship between worst depressive feelings over the past 12 months and recent emotional distress.

Conclusion: Our results underscore the importance of assessing prior history of depression and social determinants in the lives of Arab individuals. Tailoring interventions to address depressive symptoms as well as social and familial factors may reduce risk for later emotional distress and improve mental health outcomes in Arab communities.

## **Introduction**

### ***Background and Significance***

The United States (U.S.), known for its diverse cultural composition, is the living area for a sizable Arab immigrant population, estimated to encompass between 2 million and 3.7 million individuals (Albqoor et al., 2021). Depression is the second highest-ranking cause of worldwide disability; it is frequently accompanied by indeterminate health and financial tolls, distressing the individuals affected, their families, and the national economies (Institute of Health Metrics and Evaluation, 2022). Previous studies highlight a large rate of depression among Arabs, varying from 22% to 50% (Javanbakht et al., 2019; M'zah et al., 2019; Suleiman et al., 2021). However, compared to non-Hispanic whites, Arab immigrants have a 23% lower screening rate for depression, which exacerbates public health concerns (Dallo et al., 2016; Wilson & Thayer, 2018). Social stigmas surrounding mental illness are prevalent in Arab culture, and individuals are hesitant to seek mental health assistance when internal resources, such as individual resilience or family support, crumble (Khatib, Alyafei & Shaikh, 2023). To tackle these

challenges effectively, understanding key predictors and mediators of emotional distress among Arab immigrants in the U.S. is vital, considering their intensely unique migration stressors.

Arabs who settle in the U.S. encounter a plethora of relocation stressors during their immigration to the U.S., including discrimination, cultural detachment, language hurdles, socioeconomic pressures, limited healthcare access, and visa-related concerns (Alkaid Albqoor et al., 2021; Pampati et al., 2018; Patel et al., 2022; Suleiman, 2021). These stressors, combined with feelings of collective or cultural distancing, can contribute to emotional distress as well as, potentially, depression (Aroian, Uddin, & Blbas, 2017; Assari, 2017). Emotional distress, characterized by feelings of sadness, despair, anxiety, anguish, fear, anger, and confusion, may serve as a precedent for depression among Arab immigrants (Barry et al., 2020; Lazar-Neto et al., 2017; Pampati et al., 2018). Researchers have found that depression correlates with more general emotional distress in Arab immigrant groups, emphasizing the interconnectedness of these mental health problems (Aroian, Uddin, & Blbas, 2017; Suleiman et al., 2021; Su & Tom, 2021). Studies have also implied higher rates of loneliness, perceived prejudice, and psychological distress among Middle Eastern immigrants compared to other immigrant groups or the host country's population (Alkaid Albqoor et al., 2021; Dallo et al., 2018; Schlaudt et al., 2020). Research has also suggested that immigration-related stressors may continue beyond the initial relocation period and thus may aggravate an existing mild case of depression over time (Aroian, Uddin & Blbas, 2017; Su, Tom, 2021). However, there remains a gap in understanding whether an Arab immigrant's worst, most intense feelings of depression over an extended period of time can predict their current or recent emotional distress. If this relationship was substantiated, the need to assess an individual's perception of their worst-case feelings of depression would be essential. .

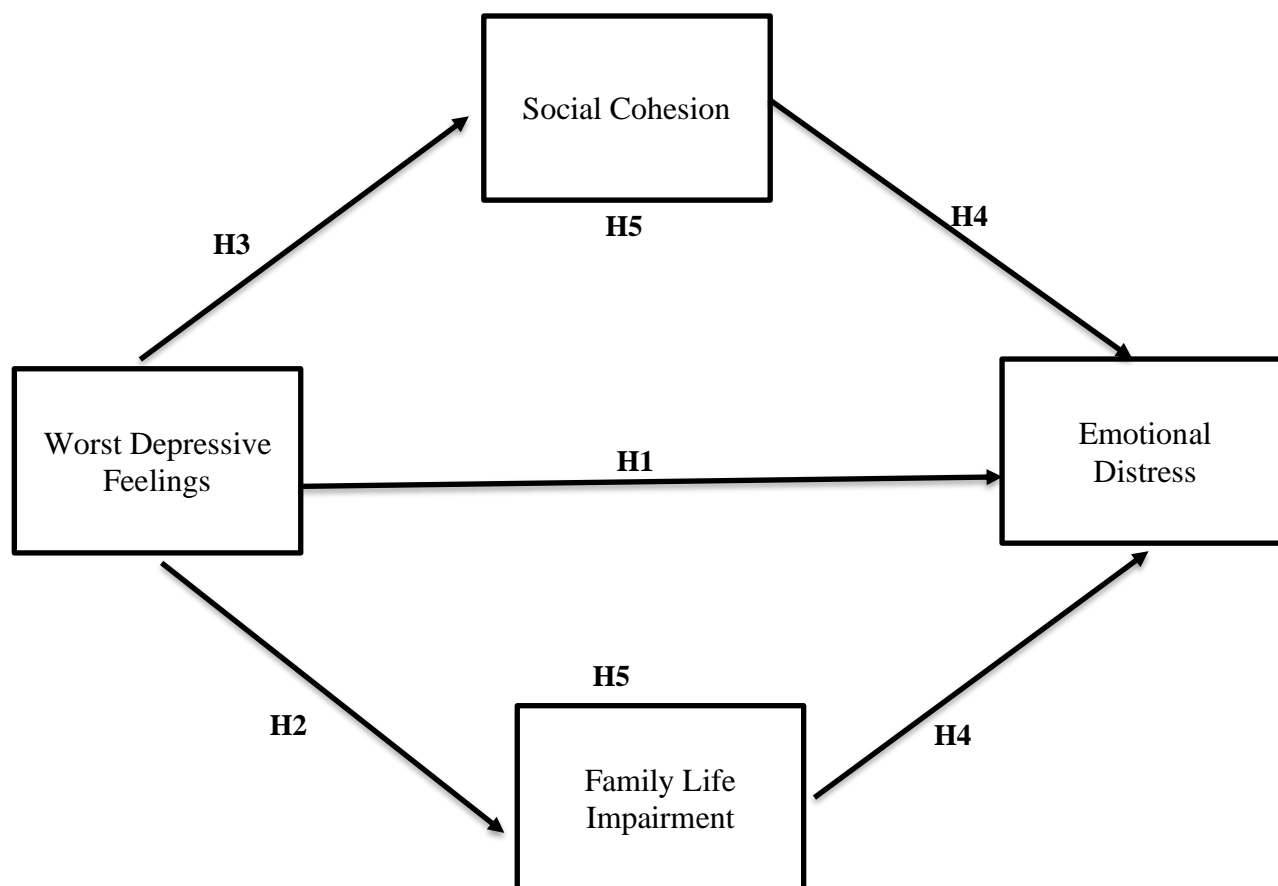
Studies conducted to examine the intersection of depression and emotional distress among Arab immigrants in the U.S. have indicated the noteworthy influence of two potential mediators in whether emotional distress may be more severe: social cohesion and impairment in family life. Social cohesion encapsulates the degree of unity, shared values, and mutual bonds within a community (Alhasanat et al., 2019). The concept of social cohesion extends beyond mere social integration into the host community's society; social cohesion encompasses the extent to which immigrants can forge social networks, establish meaningful relationships, and access social support within their new environment (Assari & Lankarani, 2017; Su & Tom, 2021). Social cohesion indicators encompass both structural dimensions, such as social networks as well as community participation, and relational aspects, like trust and social support. Reports from the literature suggest the importance of social cohesion for immigrant Arabs' social and emotional well-being (Lazar-Neto, 2017; Nashwan & Jebiril, 2014). Scholars have found that social cohesion and cultural socialization play crucial roles in the mental health of Arab immigrants. Benjamin et al. (2018) and Kronick (2018) found that feeling accepted by or involved in American culture correlated with improved mental health among Arab minorities.

Impairment in family life is depicted by a collapse in family communications, difficulties in engaging in formerly routine household activities, and the upholding of congruent interactions within the family (Hammer-Helmich et al., 2018). Research consistently indicates the critical importance of both family life (with its often-concomitant support) and societal cohesiveness for improving psychological well-being, minimizing behavioral problems, and mitigating the emotional impacts of distress among Arab immigrants (Nashwan & Jebiril, 2014; Neto et al., 2017; Su, Tom, 2021). A lack of familial networks and strengths, chaos in family activities, and a disturbance of the family's dynamics can cause feelings of insignificance, alienation, resentment,

and loneliness, any of which could amplify mental issues such as emotional distress or depression (Aroian, Uddin, & Ullah, 2015; Girgis, 2018; Nassar et al., 2023). Researchers have also confirmed that perceived cohesion with family, friends, society, and school personnel positively correlates with assistance-seeking and coping (Benjamin et al., 2018; Giacco et al., 2018; Kronick, 2018). However, it is not known whether social cohesion or family life impairment acts as a modifier in the relationship between worst-case feelings of depression and more general emotional distress. Thus, a further examination of social cohesion and impairment of family life as key mediating factors is crucial to elucidating the pathways to emotional distress among Arab immigrants.

Our aims for this research endeavor are as follows: 1) to determine if Arab immigrants' worst-case depression from the previous 12 months will predict the intensity of their emotional distress in the last 30 days; 2) to evaluate the potential mediating effect of social cohesion and family life impairment on the association between worst-case depressive feelings and emotional distress. To answer the two research questions, we proposed five hypotheses (Figure 1): H<sub>1</sub>: worst depressive feelings in the previous 12 months will be positively associated with greater odds of emotional distress in the past 30 days; H<sub>2</sub>: worst depressive feelings will be positively linked to family life impairment; H<sub>3</sub>: worst depressive feelings will be linked inversely with social cohesion; H<sub>4</sub>: less social cohesion and greater family life impairment will be linked to emotional distress; H<sub>5</sub>: social cohesion and family life impairment will independently mediate the relationship between worst depressive feelings and emotional distress.





**Figure 1.4 :** Structured Model of Hypotheses

## Methods

### *Overall Research Method*

We used data from the California Health Interview Survey (CHIS), the largest state health survey in the country. CHIS is a cross-sectional annual survey and an ongoing survey conducted either online or via telephone. CHIS covers a broad spectrum of mental health and health-related items. Additional information concerning CHIS can be found at the following link: [ucla.edu/our-work/california-health-interview-survey-chis](https://www.ucla.edu/our-work/california-health-interview-survey-chis). We chose mental health data in CHIS for nine years (2013–2021) for Arab subgroups. We selected this timeframe because the

CHIS dataset for this period contained our desired variables, including depression, emotional distress, social cohesion, and family life impairment.

### **Study Design and Participants**

CHIS utilizes a multistage sampling strategy, randomly selecting sampled households from every county in California. They used a random-digit-dialing (RDD) method to reach out to residential telephone numbers and randomly selected adults (age 18 or older) for each household's interview. We have identified individuals of Arab descent among the respondents in the CHIS sample population over our chosen nine-year period. Our inclusion criteria were as follows: individuals (1) who self-identified as of Arab descent, (2) who had immigrated to the U.S. at any point in their lives, (3) who were 18 years of age or older, and (4) who had no limitations regarding the language spoken. At first, we selected respondents by using the variable AH33 (birth country of respondents) to identify individuals who were born in the Middle East or an Arab nation. For respondents who were born in the U.S., we used variable AH34 (the birth country of their father) and AH35 (the birth country of their mother) to identify those subgroups for which at least one parent of a respondent was born in the Middle East or an Arab nation. Subsequently, we used these characteristics to refine the selection (search) process we employed, thereby obtaining data exclusively from individuals who were born in either Middle Eastern or Arab nations. Our research qualified for an exemption from IRB review at the University of California San Francisco as our study exclusively dealt with information unidentifiable by itself, de-identified data, or coded private information.

### **Variables Assessed**

#### ***Primary risk factor (predictor)***

**Self-reported Worst Depressive Feelings.** We assessed a respondent's worst feelings of depression over the last year using CHIS variable AF66, which was a Likert-scale type variable that assessed quantitatively how often participants felt so depressed that nothing could cheer them up emotionally in their worst month in the past 12 months. AF66 had five possible responses, including "all the time" (1), "most of the time" (2), "some of the time" (3), "a little amount of the time" (4), or "none of the time" (5). Larger values for AF66 indicated that the respondent had greater feelings of depression in their worst month. We recoded the CHIS AF66 variable from its original five classes to a dichotomous scale, in which "yes" represented those who answered (1) "all of the time" and (2) "most of the time," while "no" denotes the answers from (3-5) "some of the time to none of the time." This score indicated that the respondent had substantial feelings of depression at the worst time point they could recall over the last year.

### *Outcome measures*

**Emotional Distress.** CHIS employed the Kessler Psychological Distress Scale -6 (K-6; Kessler et al., 2002) to assess the emotional distress of its respondents. The K-6 scale consisted of six questions, which CHIS utilized to evaluate the frequency with which respondents felt any symptoms related to emotional distress (unpleasant emotions, such as worry, despair, and worthlessness) over the previous 30 days. Each question employed a 5-point scale to assess the frequency of these emotions, varying from "all of the time" to "none of the time. CHIS- categorized the dichotomous score for emotional distress, classifying individuals with a score equal to or greater than 13 as having emotional distress ("yes") and those with a score below 13 as not distressed ("no"). The sensitivity of the K-6 items ranged from 0.98 to 0.99; according to its developers, its initial Cronbach's alpha was 0.89 (Kessler et al., 2010; Vissoci et al., 2018).

The instrument has undergone extensive validation in several groups, including Arab immigrants (Easton et al., 2017).

### ***Mediators***

**Social Cohesion.** We created a composite variable that combined the scores of four questions in the CHIS survey to indicate our participants' social cohesiveness. These questions included the following: "People in the neighborhood are willing to help each other" (AM19), "people in the neighborhood don't get along" (AM20), "people in the neighborhood can be trusted" (AM21), and "How often do you feel safe in the neighborhood" (AK28). To ensure consistency with the direction of the other items in the scale, we reversed the scoring for the second item (AM20) when creating the total score. We employed Cronbach's alpha to evaluate the internal consistency of our variables' construction, thereby ensuring the reliability of our obtained data. Our reliability analysis of our proposed Social Cohesion Index Scale yielded satisfactory results, with the estimated Cronbach's alpha coefficient indicating good internal consistency ( $\alpha = 0.70$ ). Furthermore, we conducted a confirmatory factor analysis (CFA) to rigorously assess the construct validity of the Social Cohesion Index variable. We proposed a distinct component structure for the social cohesiveness index, drawing from the conceptual framework proposed in previous literature (Botoni., 2018; Chuang et al., 2013; Kaiser, Barnhart & Huber-Krum, 2020; Miller et al., 2020). This structure includes three underlying constructs: cohesion, neighborliness, and commitment. Our CFA displayed that the four proposed items exhibited moderate to substantial loading (0.48–0.67) on a single factor (social cohesion), with an overall good fit index for the factor structure ( $\chi^2$  (df) = 1174.992 (2),  $p < 0.01$ , CI (0.057, 0.06)), supporting the validity of the factor analysis results.

**Impairment In Family Life.** We used the CHIS variable FAMILY2, which identified whether respondents had any impairment in family life within the past 12 months due to their emotions. CHIS assessed this item specifically for those who had moderate to severe emotional distress, as indicated by a K-6 score greater than 8. The values for this variable consisted of a three-point scale: none, moderate, and severe, providing an overall assessment of the degree of impairment experienced by CHIS respondents within their families.

### *Covariates*

In this research, we controlled for several demographic characteristics, including age, gender, married status, highest educational attainment, employment status, language proficiency, and poverty level. The age variable was recorded as an integer number, with values ranging from 18 to 117 years. The binary gender variable was categorized as either 0 for “male” or 1 for “female.” Possible values for marital status include these four: 01 (“married”), 2 (“living with partner”), 3 (“widowed, separated, or divorced”), or 4 (“never married”). We categorized education levels into five distinct classes: 1 (“no formal education”), 2 (“high school degree or less”), 3 (“some college education”), 4 (“college education”), and 5 (“advanced education”). We simplified the CHIS working status into a binary categorization: 1 (“employed”) or 2 (“non-employed”). We categorized the length of time that the participants had lived in the U.S. into four groups: less than 4 years, 5 to 9 years, 10 to 14 years, or more than 15 years. CHIS categorized the poverty level variable into five categories related to the federal poverty level (FPL; 0–99% FPL, 100–199% FPL, 200–299% FPL, and 300% FPL and above). We chose to reduce some demographic variables based on recognized guidelines from the literature (Abuelezam et al., 2018; Pampati et al., 2018; Samari, 2019) and relevant considerations regarding the data distribution in our sample, data interpretability, and meaningfulness of the

analysis. Simplification of the statistical outputs ensures clearer communication of findings to readers and stakeholders, which is vital for informed decision-making and data dissemination.

### **Statistical Analysis**

CHIS assigned a weight to each observation in the data set based on the sampling design of the survey to account for differences in the probability of selection and response rates within different demographic groups (CHIS, 2019–2020). Descriptive statistics, i.e., the arithmetic mean with its standard deviation (SD) for continuous variables and frequencies with percentages for categorical variables, were computed. We first tested for multicollinearity between all independent variables (i.e., feelings of depression, age, gender, married status, highest educational attainment, employment status, language proficiency, and poverty level) before fitting the regression or mediation models; the result displayed the mean variable inflation factor (VIF) of 1.02 (below the standard threshold of 10). This VIF indicated that all variables had not violated the multicollinearity assumption (or, at least, that no such violation was detected). For Aim 1, we employed logistic regression to identify the association between participants' emotional distress in the past 30 days based on their worst depression feelings in the previous 12 months while controlling for sociodemographic variables (explained above). We reported an estimated adjusted odd ratio (aOR) with its 95% confidence interval (95% CI). Data analyses were conducted in STATA 17.1 software.

A generalized structural equation model (GSEM) was employed to test Aim 2. We investigated the mediating effect of both social cohesion and family life impairment experienced by our participants on the association between Arab immigrant worst depression feelings and their emotional distress. As stated previously, we accounted for demographic and socioeconomic factors in the model. We estimated the overall effect as well as the direct and indirect effects of

both mediators. For our mediation model, we employed an aOR with a 95% CI to evaluate the mediators' effects. If the 95% CI did not include 1, we inferred that the mediator's indirect impact on the relationship was statistically different from zero at  $p = 0.05$ , indicating the presence of mediation. We checked several model fit indices, including the Comparative Fit indices (CFI), the Standardized Root Mean Square Residual (SRMR), and the Root Mean Square Error (RMSEA), to determine if the model fit the data well enough. Literature indicates that RMSEA below 0.08,  $CFI \geq 0.95$ , and  $SRMR > 0.05$  are indicative of a good fit (Kim et al., 2016).

## **Results**

### **Sample Characteristics**

CHIS obtained survey data from 193,241 Arab respondents throughout the chosen nine-year (2013-2021) time period (Table 1). Participants' ages ranged from 18 to 117 years, with a mean age of 56.09 (SD= 18.44) years. Our sample population comprised 83,920 men (43.43%) and 109,30 (56.57%) females. Approximately half of the participants (93,449, or 48.36%) were married. Overall, Arab respondents were well-educated, with 142,891 (73.96%) having at least a college education, and the majority of participants (52.27%) were employed and had lived in the U.S. for more than 15 years (80.12%). About two-thirds of participants either listed English as their sole language or possessed a high degree of fluency in the English language. More than half of the participants, 113,426 (58.70%), had an income above 300% of the FPL.

### **Association Between Worst Depressive Feelings in the Past 12 Month and Recent**

#### **Emotional Distress Among Arab Descendants**

Participants who reported feeling depressed most or all of the time during their worst month of depression across the year showed an increased 11-fold odds of recently experiencing more general emotional distress than those who reported less frequency of depression feelings

during their worst month, after controlling for the demographic factors listed previously (aOR = 11.18, 95% CI [8.69, 14.37],  $p < 0.001$ ). Details are shown in Table 2.

### **Generalized Structural Equation Model Analysis of the Mediation Effect**

The output of our GSEM examining the mediation effect of both social cohesion and impairment in family life in the association between depressive feelings and emotional distress appears in Table 3 and Figure 2. Total effects in the model increased the odds of Arab individuals experiencing emotional distress by 16.65 times (aOR = 16.65, 95% CI [12.10-21.21],  $p < 0.001$ ). The direct effect of worst depressive feelings alone increased the odds of emotional distress by 5.28 times. As shown in Figure 2, depressive feeling is statistically significantly associated with lower odds of social cohesion (OR = 0.68, 95% CI [0.54, 0.86],  $p < 0.01$ ). Less social cohesion is significantly associated with higher odds of emotional distress (aOR = 0.88, 95% CI [0.82, 0.94],  $p < 0.001$ ). The indirect effect of social cohesion reduced the odds of emotional distress by 32% (aOR = 0.68, 95% CI [0.542, 0.86],  $p = 0.002$ ). Conversely, depression is significantly associated with higher odds of family life impairment (OOR = 3.66, 95% CI [3.36, 3.99],  $p < 0.001$ ). Greater family life impairment is significantly associated with a higher likelihood of emotional distress (aOR = 2.33, 95% CI [2.05, 2.66],  $p < 0.001$ ). The indirect effect of family life impairment increased the odds of emotional distress by 3.66 times (aOR = 3.66, 95% CI [3.36, 3.99],  $p < 0.001$ ).

The relationship between reported worst depressive feelings over the prior year and participants' recent emotional distress was partially mediated by social cohesion (aOR = 1.05, 95% CI [1.01- 1.09],  $p < 0.001$ ). Similarly, family life impairment significantly partially mediates the association between depressive feelings and emotional distress among the participants (aOR = 3.01, 95% CI [2.44- 3.57],  $p < 0.001$ ). The model is a good fit as indicated by



Model Fit Indices;  $\chi^2$  (df)= 78.92 (2),  $p < 0.001$ , Root Mean Square Error (RMSEA)= 0.051, CI (0.04, 0.06), CFI (Comparative Fit Index)= 0.985, Standardized Root Mean Square Residual (SRMR)=0.005.

## **Discussion**

Our work signifies a pioneering effort to investigate the role in which social cohesion and family life impairment may act as mediators of the association between depressive feelings and emotional distress among Arab immigrants living in the U.S. This study found that worst-case depressive feelings in the last 12 months were significantly associated with increased odds of emotional distress in the previous 30 days among our Arab cohort after controlling for demographic and socioeconomic factors. We also found that less social cohesion and greater family life impairment increased the odds of emotional distress and partially mediated the relationship between worst feelings of depression over the prior year and more recent emotional distress.

Results highlight the enduring and interrelated nature of mental health challenges within this population. The established correlation between emotional distress and depression is consistently identified in the literature (Suleiman et al., 2021; Su & Tom, 2021), underscoring the pattern of the burden of depression together with its devastating effects on emotional health among immigrant groups (Aroian, Uddin, & Blbas, 2017; Suleiman et al., 2021; Su & Tom, 2021). The history of depressive symptoms as a longitudinal predictor for emotional distress has been reported in several diverse populations (D'Addario et al., 2021; Hammer-Helmich et al., 2018; Husky et al., 2021), although there is a lack of similar studies conducted exclusively on Arab populations. Our observed large effect of worst depressive feelings over the last year on more recent emotional distress among Arab immigrants compared to other studies may be

attributable to several aspects of this group. First, the methodological limitations in our study concern our reliance on a single-item measure. This single-item measure may lack the sensitivity and specificity needed to capture the full continuum and complexity of depressive symptoms, potentially oversimplifying the depression construct. By overlooking the multidimensional nature of depression, the single item may fail to account for the diverse ways in which depressive symptoms manifest, thereby intensifying the perceived relationship with emotional distress. Moreover, the cultural beliefs of Arab societies on the management of mental health issues may exacerbate the long-term consequences of depressive feelings on subsequent levels of distress (Lindheimer et al., 2020; Suleiman & Whitfield, 2021). For example, stigmatization of mental disorders and restricted access to culturally In particular, findings suggest the importance of worst-case depressive feelings as a potential indicator of later emotional distress among Arab immigrants. The severity of depressive symptoms at any particular time may be a salient indicator of later risk for distress. This finding warrants further research to examine longitudinally the ways in which a one-time episode of more severe depressive symptoms may influence the trajectory of emotional distress among individuals of Arab descent.

Although the implication that both social cohesion and family life impairment influence immigrants' mental health has been extensively acknowledged (Nashwan & Jebri, 2014; Neto et al., 2017; Su & Tom, 2021), their potential mediating effect on emotional distress among Arabs has not been studied in previous research. Our findings address this literature gap and indicate that lower social cohesion can intensify the impact of depression on emotional distress. Specifically, we found that greater depression is associated with lower social cohesion, which in turn intensifies the effect of emotional distress. This implies that social cohesion has a buffering and mediating role in emotional distress outcomes, underscoring the need for further research

into the complex dynamics of social cohesion on depression and distress among Arab immigrants.

Depressive feelings can deeply affect how someone sees and feels about their social connections, which in turn affects how they impact their emotional distress (Santini et al., 2015). When people are depressed, they may see social interactions in a more negative light, feel like they don't belong with others, or completely avoid socializing (Seff et al., 2021). These symptoms of depression can make someone feel less connected or supported by their social circle, which changes how effective those connections are in providing comfort (Santini et al., 2015). As a result, the impact of social connections on emotional distress may be different depending on whether or not someone is feeling depressed. In accordance with our findings, previous researchers have demonstrated that social cohesion protects mental health and well-being in various ethnic and cultural groups (Arion, Uddin, and Balbas, 2017; Jesus, 2021; Seff et al., 2021). Furthermore, researchers discovered an inverse relationship between psychological distress and neighborhood social cohesion among Brazilian immigrants (Holmes & Marcelli, 2020). However, research on its mediating role in Arab communities remains unexplored.

Social cohesion may play a shielding mediation role in the effect of depression feelings on emotional distress symptoms by fostering support, coping, and resilience (Aroian, Uddin, & Blbas, 2017). Social cohesion promotes a sense of belonging and interconnectedness among different groups, providing individuals with emotional support and a sense of security that helps sustain their mental well-being (Johnson et al., 2017; Seff et al., 2021). Arab societies exhibit strong collectivist values, emphasizing communal bonds, solidarity, and mutual support among individuals beyond familial ties (Elshahat & Moffat, 2022; Seff et al., 2021). Elshahat & Moffat's (2022) scoping review found that social support and cohesiveness were important

protective variables against psychological distress, depression, and trauma symptoms among worldwide Arabic-speaking immigrants and refugees. Social cohesion fosters a harmonious atmosphere among members of a community, facilitating the healthy integration of diverse immigrants into mainstream communities and reducing the likelihood of negative mental health consequences (Johnson et al., 2017). Given the limitations of creating social cohesiveness index variables without accurately capturing their full spectrum, it is important to approach this result with caution. More research is needed on the temporal sequences and processes by which social cohesion may reduce the strength of depressive feelings as contributors to future risk of emotional distress.

In our Arab sample, family life impairment also emerged as a partial mediator in the connection between depression and emotional distress, emphasizing the multifaceted interplay between mental health, familial dynamics, and distress outcomes in this group. We found that depressive feelings can greatly affect how a family works and interacts, which can then have amplifying effects on emotional distress. Research indicated that when someone is depressed, they may show behaviors like isolating themselves, being easily annoyed, or lacking the drive to do things, all of which can strain relationships and communication within the family (Guerrero-Munz et al., 2021). These signs of depression can disrupt how family members usually interact with each other, leading to more arguments, stress, or a lack of emotional support within the family (van Sprang et al., 2022). As a result, the family problems caused by someone's depression can make emotional distress worse through more conflicts, feeling alone, or thinking that family doesn't understand or support them.

Prior researchers have consistently suggested the influence of family functioning on individual well-being, particularly among immigrant societies (Bun et al., 2022; Hodes,

Hussain, 2020; Mood et al., 2017). While no studies have explored the role of family life as a mediator in the depression-distress link, previous reports indicate that family dysfunction significantly predicts depression and anxiety among Chinese adolescents (Wang, Guo & Huebner, 2020) and African American populations (Chapman & Woodruff-Borden, 2009). Within the Arab context, elevated levels of family life impairment can modify the association between feelings of depression and emotional distress by potentially intensifying the effects of stressors and diminishing the shielding effect of family bonds. The family unit is of utmost significance in Arab culture, serving as the key source of emotional and marital support, personal identity, and interconnection (Hammer-Helmich et al., 2018). Any interruptions or collapses within family life can lead to feelings of insecurity and loneliness, along with potentially intensifying the adverse emotional consequences of depressive symptoms (Aroian, Uddin, & Ullah, 2015; Nassar et al., 2023). Migration-related stress, cultural adaptability challenges in Arab groups, generational differences, and marital discord can trigger family life interruption, leading to clashes and exacerbating feelings of emotional distress (Fakhrou et al., 2023; Khatib, Alyafei & Shaikh, 2023). Furthermore, Arab individuals' failure to comply with cultural norms, particularly expectations regarding family duties and obligations, can produce feelings of inadequacy and insecurity and may exacerbate depression and emotional distress (Bun et al., 2022; Hodes & Hussain, 2020). For instance, in many Arab contexts, men are expected to be the primary breadwinners and decision-makers, while women are tasked with domestic duties, and deviations from this family role function can create a momentous family conflict for the whole family, which might intensify feelings of emotional distress. The multifaceted impact of family dysfunction on increasing emotional distress implies the need to target an intervention to address the individual's family nuances and support networks, thereby mitigating depression in

Arabs as well as promoting more robust pathways to psychological recovery and resilience within Arab communities.

### **Strength and Limitations**

This study has numerous strengths. First, using a large sample population spanning nine years of data collection allows for more reliable and generalizable results. Second, our study used a standardized, well-established scale to assess emotional distress. We also used factor analysis to evaluate the construct validity of our self-developed social cohesion scale and to provide reliability estimates for the scale's internal consistency, all of which reinforce the reliability and accuracy of our assessment of the factors. Additionally, we used GSEM to examine direct and indirect effects of our variables as well as a number of fit indices to evaluate our model testing. GSEM helped to carefully think about many possible paths as well as more fully explore the complex connections between them, which eventually made our results more valid and useful. Lastly, looking at two different mediators representing social cohesiveness in society as a whole and disruption in family life makes our results more in-depth and helps us understand the various factors influencing our target population's mental health outcomes in a more nuanced way.

However, the study also has limitations. First, using self-reported measures to assess depressive feelings and emotional distress may create response bias or social desirability bias. Furthermore, we only assessed our participants' depressive feelings via a single-item measure, which might overstate the observed outcome. Still, it is important to note that this one item assessment of depressive feelings during the worst month of the past year had such a strong predictive effect, suggesting its potential value as an easy clinical measure of risk. We also used the CHIS one variable measure for the family life impairment, which may not capture the

multidimension nature of family functioning and lacks sensitivity to detect nuances in family dynamics. The cross-sectional nature of the research limits our ability to establish causal effects or temporal associations between depression and emotional distress. Finally, our inability to analyze several potential modifiers, specifically contextual or social factors such as acculturation, perceived discrimination, social support, and individual coping, might affect the interplay between depression and emotional distress outcomes among our sample population.

### **Implications and Future Research**

Our findings contain several potentially substantial clinical and policy implications that may be employed to assist Arab immigrants in the U.S. with their mental health. Healthcare professionals should assess prior periods of depression among Arab immigrants, especially attending to reports of more severe depressive feelings, even if limited to a short period of time. A past incident of depressive feelings when nothing could cheer them up, occurring most or all of the time may be a key risk indicator that warrants timely intervention and evidence-based therapies to prevent the likelihood of more severe emotional distress in the future. Another noteworthy implication of this study's results is the importance of a comprehensive assessment of the roles of the individual for whom care is being provided in their family during their mental health examination, along with cultivating social and family support systems. Mental health interventions, at least in the U.S. Arab immigrant community, can focus on supporting social bonds and social networks as well as family-based approaches to address and enrich family dynamics and communication, thereby improving their coping mechanisms and overall well-being. Policymakers should spotlight efforts to bolster the role of families within immigrant communities, involving programs that engage the community, initiatives that foster cultural integration, and increasing the available resources for mental health support. Such a collaborative

approach can assist with the early identification of those who need mental health services among vulnerable Arabs, thereby augmenting the overall well-being of Arabs living in the U.S.

Future researchers should utilize standardized depression diagnostic instruments and a more inclusive social cohesion scale to accurately assess the mediating effect of social cohesion on emotional distress in Arab populations. Researchers need to explore the influences of contextual and cultural factors, including acculturation patterns, cultural elements, individual coping approaches, and the culturally specific stigma associated with mental issues and its consequent impact on Arab mental well-being. Longitudinal study designs will be valuable for investigating the predictive effect of family life chronologically on emotional distress outcomes and the role of family or social support versus any impairment in family dynamics. Investigating latent moderators, such as cultural alterations or socioeconomic factors, could help tailor interventions for different Arab populations and improve their efficacy in reducing the emotional distress they experience and instead supporting their overall emotional health.

## **Conclusion**

In conclusion, our result shed light on the complex interplay between the previous occurrence of depressive feelings and recent emotional distress and their potential mediators. Worst depressive feelings in the prior 12 months significantly increased the odds of recent emotional distress symptoms among U.S. Arabs, which highlighted the impact of depressive feelings on their overall mental health. We determined that social cohesion and family life impairment have a significant partial mediating role in the relationship between prior depressive feelings and more recent emotional distress, highlighting the critical influence of family and community subtleties on any effect that depressive feelings may have. These findings have significant implications for the development of targeted therapies designed to reduce distress



symptoms and improve overall mental health outcomes in Arab individuals who have experienced prior depression.

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## Appendix D

### Tables and Figures

**Table 1.4:** Descriptive Characteristics of Participants

| <b>Characteristics<br/>(N= 193,221 )</b>            | <b>Weighted N (%), or,<br/>Mean (SD)</b> |
|---|--|
| <b>Age (Years)</b>                                  | 56.090 (18.33)                           |
| <b>Sex</b>  |  |
| Male  | 83,920 (43.43%)                          |
| Female  | 109,301 (56.57%)                         |
| <b>Marital Status</b>                               |  |
| Married   | 93,449 (48.36%)                          |
| Living with Partner                                 | 11,152 (5.77%)                           |
| Widow/Separate/Divorced                             | 52,065 (26.95%)                          |
| Never Married                                       | 36,555 (18.92%)                          |
| <b>Education Attainment</b>                         |  |
| No formal education                                 | 1,186 (0.61%)                            |
| High School or Less                                 | 49,144 (25.43%)                          |
| Some College  | 38,3929 (19.87%)                         |
| College Graduate                                    | 63,698 (32.97%)                          |
| Advanced Education                                  | 40,801 (21.12%)                          |
| <b>Employment Status</b>                            |  |
| Employed  | 101,001(52.27%)                          |
| Unemployed  | 92,220 (47.73%)                          |
| <b>Number of years Living in U.S<br/>(N=43,517)</b> |  |
| ≤ 4 Years   | 2,159 (4.96%)                            |
| 5-9 Years   | 2,732 (6.28%)                            |
| 10-14 Years   | 3,760 (8.64 %)                           |
| >15 Years   | 34,866 (80.12%)                          |
| <b>English Use and Proficiency<br/>(N=193,214)</b>  |  |
| Speak only English                                  | 136,037 (70.41%)                         |
| Very Well/Well                                      | 42,292 (21.89%)                          |
| Not Well/ Not at All                                | 14,885 (7.70%)                           |
| <b>Poverty Level</b>                                |  |
| 0-99% FPL   | 23,897 (12.37%)                          |
| 100-199% FPL  | 30,689 (15.88%)                          |
| 200-299% FPL  | 25,209 (13.05%)                          |
| 300% FPL and Above                                  | 113,426 (58.70%)                         |
| Note: Age Range (18-117 years)                      |  |

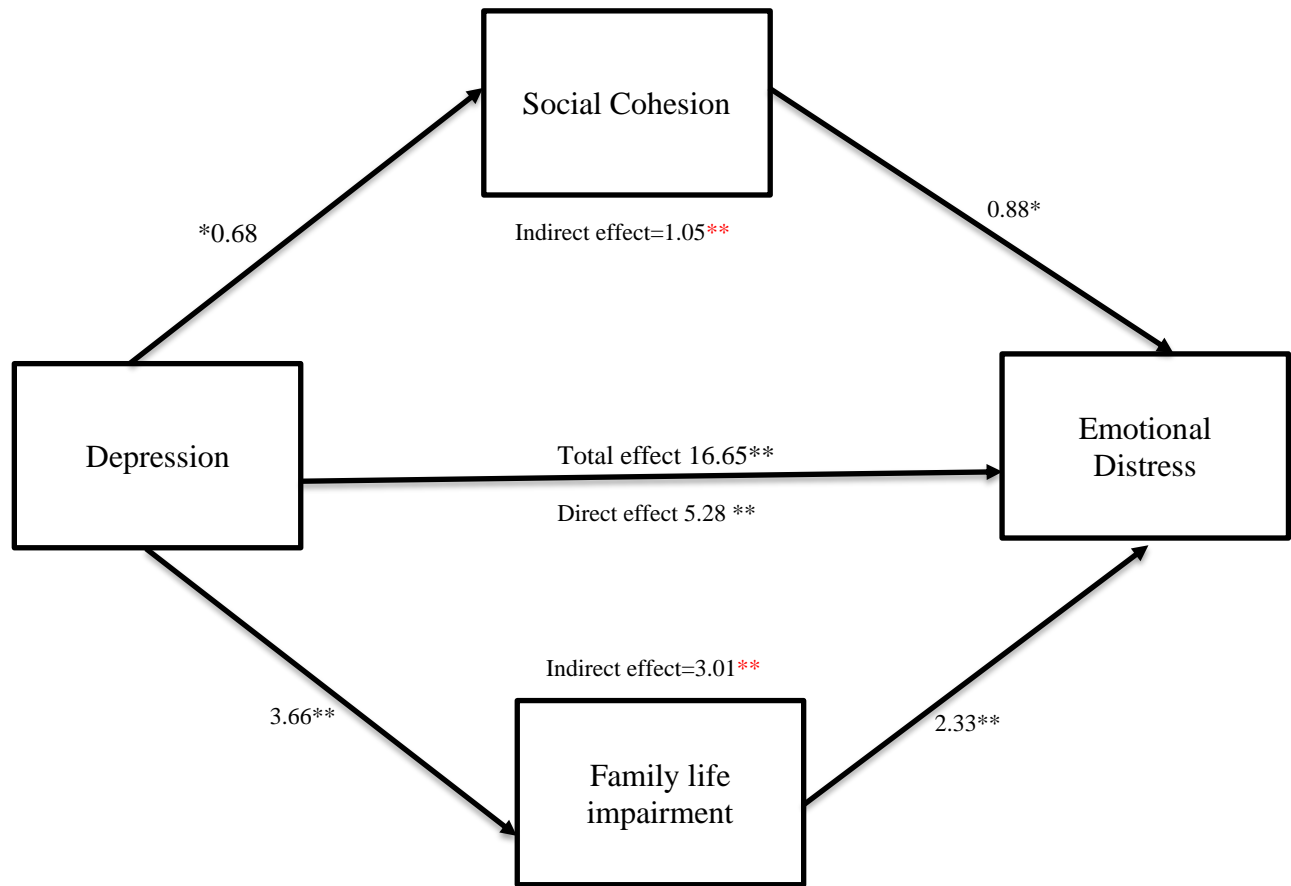
**Table 2.4:** Results of the Logistic Regression for the Relationship between Worst Feelings of Depression in the last 12 months and Emotional Distress in the previous 30 Days Among Arabs Descendants\*\*

|  | <b>B</b> | <b>OR</b> | <b>SE</b> | <b>95% CI</b> | <b>p-value</b> |
|--|----------|-----------|-----------|---------------|----------------|
| <b>Depressive Feelings (AF66)</b>  | 2.41     | 11.18     | 1.41      | 8.69,-14.37   | 0.000*         |
| <b>Age (Years)</b>   | 0.003    | 1.004     | 0.005     | 0.99-1.01     | 0.45           |
| <b>Sex</b>   | 0.05     | 1.05      | 0.15      | 0.79- 1.39    | 0.73           |
| Female   |          |           |           |               |                |
| <b>Marital Status</b>  |          |           |           |               |                |
| Living with Partner  | 0.05     | 1.50      | 0.37      | 0.92-2.44     | 0.10           |
| Widow/Separate/Divorced  | 0.26     | 1.30      | 0.23      | 0.92-1.86     | 0.13           |
| Never Married  | 0.50     | 1.65      | 0.27      | 1.19-2.27     | .003           |
| <b>Education Attainment</b>  |          |           |           |               |                |
| No Formal Education  | -0.03    | 0.97      | 0.19      | 0.65- 1.55    | 0.87           |
| Some College   | -0.51    | 0.60      | 0.12      | 0.39- 0.90    | 0.01           |
| College Graduate   | -0.30    | 0.74      | 0.17      | 0.46- 1.17    | 0.19           |
| Advanced Education   | 0.64     | 1.89      | 0.76      | 0.85-4.22     | 0.12           |
| <b>Employment Status</b>   |          |           |           |               |                |
| Unemployed   | 0.58     | 1.79      | 0.26      | 1.34- 2.40    | 0.001          |
| <b>Number of years Living in U.S</b>   |          |           |           |               |                |
| 5-9 Years  | 0.18     | 1.20      | 0.39      | 0.63- 2.31    | 0.57           |
| 10-14 Years  | 0.49     | 1.64      | 0.52      | 0.88- 3.07    | 0.12           |
| >15 Years  | 0.37     | 1.46      | 0.40      | 0.84- 2.53    | 0.18           |
| <b>English Use and Proficiency</b>   |          |           |           |               |                |
| Very Well/Well   | -0.37    | 0.69      | 0.16      | 0.44- 1.09    | 0.11           |
| Not Well/ Not at All   | -0.03    | 0.97      | 0.18      | 0.66- 1.39    | 0.85           |
| <b>Poverty Level</b>   |          |           |           |               |                |
| 100-199% FPL   | -0.28    | 0.75      | 0.103     | 0.57- 0.99    | 0.04           |
| 200-299% FPL   | -0.37    | 0.69      | 0.13      | 0.48- 1.02    | 0.06           |
| 300% FPL and Above   | -0.67    | 0.51      | 0.09      | 0.36- 0.71    | 0.001          |
| Note: *p < 0.001, Abbreviations: OR(odd ratio), FPL(federal Poverty Level), CI(Confidence Interval); ** age, gender, marital status, highest educational attainment, employment status, language proficiency, and poverty level were controlled for in the analysis. |          |           |           |               |                |



**Table 3.4:** Generalized Structural Equation Model Analysis of Mediation Effect: Depressive Feelings, Family life Impairment, Social Cohesion, and Emotional Distress

|  | <b>OR</b> | <b>Std. Err</b> | <b>z</b> | <b>p-value</b> | <b>95% CI</b> |
|--|-----------|-----------------|----------|----------------|---------------|
| <b>Total effects</b>   |           |                 |          |                |               |
| Depression→ ED   | 16.65     | 2.32            | 7.17     | 0.00*          | 12.10-21.21   |
| <b>Direct effects</b>  |           |                 |          |                |               |
| Depression→ ED   | 5.28      | 0.76            | 3.31     | 0.00*          | 3.96- 7.02    |
| <b>Indirect effects</b>  |           |                 |          |                |               |
| Depression → Social Cohesion →ED   | 1.05      | 0.018           | 56.28    | 0.00*          | 1.01- 1.09    |
| Depression → Family life Impairment→ ED  | 3.01      | 0.29            | 10.42    | 0.00*          | 2.44- 3.57    |
| Note: *p < 0.001, Model Fit Indices; $\chi^2$ (df)=78.97 (2), p<0.001, Root Mean Square Error (RMSEA)= 0.051, CI (0.04, 0.06), CFI(Comparative Fit Index)=0.985, Standardized Root Mean Square Residual (SRMR)=0.005. Controlling for age, sex, marital status, education level, English use and proficiency, numbers of years living in US, and poverty level, OR(odd ratio), ED (Emotional distress), CI(Confidence Interval). |           |                 |          |                |               |



**Figure 2.4:** GSEM Diagram for Mediating role for Social Cohesions and Family Life

Impairment between Depressive Feelings and Emotional Distress

Note: Abbreviations: GSEM (Generalized Structural Equation Model). Controlling for age, sex, marital status, education level, English use and proficiency, numbers of years living in US, and poverty level,  $*p < 0.01$   
 $**p < 0.001$

## CHAPTER FIVE

### Conclusion, Implications, and Future Research Recommendations

#### Summary of the Findings

In this dissertation, I sought to determine the prevalence rates and investigate the associated risk factors for two mental health outcomes in particular, depressive feelings and emotional distress, among U.S.-based Arab populations while shedding light on the roles of social cohesion and family life on these two mental health outcomes. Emotional distress and depression constitute significant public health concerns and have been associated with deleterious social, economic, and emotional morbidity for Arabs and the countries they inhabit (Albqoor et al., 2021). However, little is known about the prevalence rates of these outcomes as well as any changes in the trends of these mental conditions among these groups. Furthermore, this dissertation is one of the first to explore the mediating roles of social interconnection and family life in the association between self-reported depressive feelings and emotional distress among Arabs.

In the systematic review of mental health symptoms among Arab individuals living in the U.S., I assessed those psychosocial and demographic factors previously associated with depression, anxiety, PTSD, or PD in this population. After applying the inclusion and exclusion criteria following the PRISMA guidelines, I included seventeen distinct studies in the analysis (Abuelezam and El-Sayed (2021); Abu-Ras and Abou badr (2009); Amin & Driver (2019); Alkaid Albqoor et al. (2020); Arion, Uddin, and Blbas (2017); Aroian, Uddin and Pham (2015); Arnetz et al. (2020); Assari and Lankarni (2017); Ikizler and Szymanski (2017); Javanbakht et al. (2019); Jamil et al. (2010); Kader et al. (2020); Lemaster et al. (2018 ); Pampati et al. (2018); Patel et al. (2022); Suleiman and Whitfield

(2021); Samri (2016)). Results of the review indicated that four key risk factors predisposed Arab populations to mental health problems: female gender, older age, perceived discrimination, and immigration status (those who were refugees, in particular). Several sociodemographic factors also increased risk, including being single (unmarried), the man in the relationship being unemployed, or having less education. This review also highlighted risks resulting from perceived stress, acculturation stress, daily hassles, and less community participation; all of these stressors have been previously implicated in poor mental health development for Arab Americans (Kader et al., 2020; Spruill et al., 2019; Suleiman et al., 2021). The review findings highlight the need for mental health services to prioritize providing gender-sensitive and age-appropriate mental health services or support groups to provide a safe space in which Arab immigrants may discuss their concerns and access the appropriate resources.

In the examination of self-reported depression feelings and emotional distress among Arab descendants living in the U.S., the sample population was composed of 193,241 individuals between the ages of 18 and 117. The overall prevalence of depression was 23.54%, while that of emotional distress was 4.43%. We found no significant difference in the prevalence rates of either depression feelings or emotional distress between first-generation Arab immigrants and second-generation Arab Americans. We also found that being of female gender, of a younger age, being less well-educated, being unemployed, or having lived in the U.S. for more than 15 years were associated with an increased risk for feelings of depression or emotional distress. Healthcare providers caring for U.S.-based Arabs may focus on screening their patients for depression or emotional distress, especially the women who come to them for their healthcare, younger individuals,

those with little or no formal education (or who only have some college), as well as those who are unemployed or who have lived in the U.S. for a long time (more than about 15 years).

We discovered divergent findings for age-related depression risk factors. The systematic review showed that older age is a risk factor, while the survey study using CHIS data found that younger age is more prone to the condition. The methodological differences in the use of depression measurement tools could explain this discrepancy; the systematic review analyzed studies using comprehensive standardized scales like CESD and PHQ9, while the CHIS survey only used a single-question measure. Another possible reason is that the populations studied in these two research methods may have different characteristics, such as age, income levels, cultural backgrounds, and access to healthcare. These factors can influence the prevalence of depression across age groups. Younger people may be more open about their mental health struggles, making them more likely to report depressive symptoms (Jurewicz, 2015; Kiely, Brady, & Byles, 2019). On the other hand, older generations may be less willing to talk about their mental health or may not recognize their symptoms as depression (Saracino & Nelson, 2019). Additionally, the systematic review included studies from different time periods and recruited samples from different settings in different states, whereas the CHIS included samples from only Arab respondents in California, which might impact these observed differences. These factors show how complex depression is and why we need to consider multiple variables when interpreting and comparing findings from various studies.

In the mediation analysis, we sought to determine whether self-report of the worst depression experienced over the previous 12 months among Arab immigrants will predict

emotional distress in the most recent month of their life. We also tested the potential mediating effects of social cohesion and family life on this association using CHIS data collected between 2013 and 2021. The results revealed that depressive feelings occurring in the previous 12 months were significantly associated with a greater amount of emotional distress in the previous 30 days among our Arab cohort. In the depression-emotional distress linkage, statistically significant partial mediations for both social cohesion and family life impairment were found. Specifically, the effect of depression on emotional distress increased primarily for those with lower social cohesion and higher family life impairment. The findings from the mediation analysis thus emphasize the critical role of familial dynamics in shaping emotional distress outcomes among Arab people with prior reported depression, as well as the importance of interventions tailored to both individual and familial factors for improved mental health outcomes in Arab communities. Culturally appropriate and target interventions focusing on addressing family nuances and support networks to mitigate depression in U.S. Arabs are needed to promote psychological health and resilience within Arab communities.

### **Integrating Results within the Theoretical Framework**

In this dissertation's introduction, I proposed a theoretical framework to examine mental health outcomes (depression, anxiety, PTSD, and PD) and the roles of associated factors, including those in the socio-demographic category, social cohesion, and family life impairment. I simultaneously investigated Meyer's refined collection of MSM-related stress factors (race/ethnicity, gender, environmental stressors, minority stress (prejudice), social coping, and mental health outcomes) in an ethnic context to determine which elements influence Arab immigrants' distress patterns. Utilizing the MSM's framework,

which included both environmental stressors and social coping elements (social cohesiveness and family life), provided valuable insights into the interplay between depression and emotional distress among Arab minorities.

The MSM model suggests that marginalized or minority-identified individuals bear distinct pressures associated with their social identity, which can result in negative mental health consequences (Meyer, 2003). In the second and third chapters of this dissertation, I dissected the specific demographic risk factors that result in a greater susceptibility to depressive feelings, emotional distress, and related mental health outcomes (anxiety, PD, PTSD) among Arab communities. Findings described in these chapters support the importance of considering socio-demographic characteristics of Arab immigrants while understanding mental health inequalities and developing targeted treatments to alleviate minority stress. Ultimately, these findings may enable us to improve mental well-being in U.S. Arab populations. For results described in the fourth chapter, the MSM framework informed the analysis of how social cohesion may protect against minority stressors in Arab communities, preventing Arab minority status' negative effects. The framework also enabled us to explore how family disruptions, such as conflicts or a lack of support, can exacerbate minority stress and contribute to emotional distress. We employed the lens of the MSM model to shine a light on the pathways by which these factors influence mental health outcomes among Arab populations, enhancing our understanding of minority stress and its implications. This understanding will inform the development of targeted interventions to reduce minority stress and promote mental well-being among Arab individuals and families.

The findings from the three studies within this dissertation support the core principles of the MSM model. Firstly, the discovery of factors like immigration-related factors (e.g., refugee status, immigration generation), and psychosocial factors (e.g., perceived discrimination) as significant indicators of mental health issues validate the notion that individuals from minority groups face unique challenges due to their social situations. These challenges, originating from disparities and discrimination, contribute to an increased susceptibility to health issues. Secondly, identifying demographic risk factors such as gender, age, education level, and length of stay in the United States further highlights minority individuals' varying experiences. These experiences can contribute to variations in mental health outcomes and indicate that belonging to a minority group—whether based on gender, age, background, or immigration status—exposes individuals to heightened levels of stressors that can have effects on their mental well-being. Finally, findings of the mediation analysis illuminate the potential impact of minority stress on health outcomes. By identifying cohesion and disruptions in family life as mediators in the relationship between depression and emotional distress, it suggests that the impact of minority stress is not always direct but can work through mechanisms related to social support and familial ties. The Minority Stress Model underscores the interaction between experiences, societal influences, and mental well-being in minority groups. In general, the cohesive results presented in all three studies of this dissertation strongly endorse the MSM model by showcasing how inequalities and bias in society can heighten the likelihood of health challenges among minority communities.

### **Strength and Limitations**



This dissertation possesses several notable strengths. The overall sample size, which spans nine years, allows for robust statistical analyses and the examination of trends over time. Moreover, the inclusion of both first- and second-generation Arab Americans enhanced the comprehensiveness of our results and facilitated comparisons across generational cohorts. I have validated the measure of social cohesion in Arab individuals with findings that support its validity and reliability. Considering various demographic and socio-economic variables also enabled a more thorough knowledge of factors influencing mental health outcomes among Arabs living in the U.S. Identifying important risk factors and providing actionable suggestions for policy and practice enhances the findings' practical significance in addressing mental health issues in U.S. Arab communities.

Despite the valuable insights provided by this research, several limitations warrant acknowledgment. Firstly, the reliance on self-reported measures of depressive feelings and emotional distress may introduce response bias and underreporting of symptoms. Secondly, due to data availability in the CHIS database, we quantified depression with a one-item measure of depressive feelings during the worst month a participant could recall, which limits the assessment of the full spectrum of depressive symptoms across an established range of time. We also used the CHIS one variable measure for the family life impairment, which may not capture the multidimension nature of family functioning and lacks sensitivity to detect nuances in family dynamics. The cross-sectional structure of our data limited our ability to draw causal inferences, and the fact that CHIS investigators did not interview the same respondent more than once during the nine years of data collection we analyzed prevented a temporal analysis of identified risk factors. Finally, the

retrospective design we used may have introduced recall bias, particularly in assessing variables such as length of residence and English proficiency.

### **Significance and Implications**

This dissertation work has produced findings that hold imperative research, public health, and policy implications for the support of the mental health of Arab immigrants and their descendants in the United States. The current literature lacks a clear understanding of the prevalence rates as well as the trends of depression among Arabs in the U.S. I attempted to fill this gap in the literature by examining trends over time, assessing additional factors that may influence risk for depression and emotional distress, and addressing the mediating role of both social cohesion and family functioning in emotional distress outcomes among this underrepresented minority group. My findings of a substantial prevalence of depressive feelings among Arab descendants suggests a need for directing mental health resources to screen and prevent depression in this population. Mental healthcare providers should be aware of the vulnerability of certain subpopulations identified in my dissertation results, including women, older adults, refugees, and Arabs with less education. An example of this increased awareness among providers might include offering gender-sensitive mental health services and support groups for Arab immigrants to discuss concerns and access resources in a safe space. Mental health interventions should focus on family-based approaches to address and enrich family dynamics and communication, thereby improving coping mechanisms as well as overall well-being. Policymakers should spotlight efforts to bolster the role of families within immigrant communities; this involves developing programs to engage the community, fostering initiatives that enhance cultural integration, and providing resources for mental

health support. Such a collaborative approach will enable the early identification of those in need of mental health services and the potential dissolution of the pathway to emotional distress among vulnerable Arabs.

### **Recommendations for Future Research**

Future researchers examining mental health among Arab populations should use standardized instruments to assess depression along with inclusive social cohesion scales to evaluate the psychological health of the Arab population in their country. Researchers should explore (in detail) the often-circumstantial social factors, including acculturation patterns, coping mechanisms, stigma, and family subtleties, to understand their influence on mental well-being. Future studies should also delve deeper into the intersectionality of identity, like religion, ethnicity, and assimilation experiences among Arab immigrants, and their impact on mental health outcomes. Exploring how these intertwined identities interact with demographic risk factors and family dynamics could provide an understanding of mental health disparities in this community. Additionally, examining the importance of resilience traits such as pride, community involvement, and coping strategies may help identify strengths that can be leveraged to improve well-being.

We need longitudinal study design and research efforts to forecast the trajectories and the impact of family life (together with individuals and other social groups) on distress outcomes over time, as well as to scrutinize the role of family and social assistance. Investigating the latent moderators, such as cultural adaptation and socioeconomic factors, may lead to tailored interventions useful for different and varied Arab populations, thus improving such interventions' effectiveness in reducing distress and supporting emotional health. Upcoming researchers should focus on comparing the mental health differences

between U.S. Arab generations (immigrants and their children) along with designing psychosocial interventions to alleviate the mental health burden in such populations. Comparative research looking at differences in health outcomes among Arab ethnic groups or immigrant generations could offer valuable insights into the diverse experiences within the Arab immigrant population and inform tailored treatment approaches. Lastly, involving community members in research through methods can ensure that studies are culturally sensitive, relevant, and impactful, empowering immigrant communities to address mental health disparities effectively.

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