Religious minority identity associates with stress and psychological health

among Muslim and Hindu women in Bangladesh and London.

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The data that support the findings of this study are available from the corresponding author upon reasonable request.

CONFLICT OF INTEREST
None

AUTHOR CONTRIBUTIONS

SJ Dornisch: Conceptualization, visualization, formal analysis, writing - original draft; LL Sievert: Conceptualization; funding acquisition, project administration, investigation, supervision, resources, data curation, formal analysis, writing - review and editing; T Sharmeen: Investigation, data curation, writing - review; K Begum: Investigation, data curation, writing - review; S Muttukrishna: Conceptualization, funding acquisition, project administration, investigation, supervision, resources, data curation; O Chowdhury: Project administration, resources, writing – review; GR Bentley: Conceptualization; funding acquisition, project administration, investigation, supervision, resources, data curation, writing - review and editing.

ABSTRACT

Objectives: This study examined the association of minority religious identification (Hindu or Muslim) with self-reported stress and psychological symptoms among sedentee and immigrant Bangladeshi women.

Methods: Women, aged 35-59, (n=531) were drawn from Sylhet, Bangladesh and London, England. Muslim immigrants in London and Hindu sedentees in Sylhet represented minority religious identities. Muslim sedentees in Sylhet and Londoners of European descent represented majority religious identities. In bivariate analyses, minority religious identity was examined in relation to self-reported measures of stress, nervous tension, and depressed mood. Logistic regression was applied to examine the relationship between these variables while adjusting for marital status, parity, daily walking, and perceived financial comfort.

Results: In bivariate analyses, religious minorities reported more stress than religious majorities in all group comparisons (p<0.05), and minority Muslims reported more nervous tension and depressed mood than majority Muslims (p<0.05). In logistic regression models, minority Muslims had greater odds of high stress than majority Muslims (OR 2.00, 95% CI 1.18-3.39). Minority Muslims had greater odds of stress (OR 3.05, 95% CI 1.51-6.17) and nervous tension (OR 3.37, 95% CI 1.66-6.87) than majority Londoners. Financial comfort reduced odds of stress and symptoms in all models.

Conclusions: Socioeconomic situation, immigration history, and minority ethnicity appear to influence the relationship between religious identity and psychosomatic symptoms in Bangladeshi women. Attention to personal and socioeconomic context is important for research examining the association between religion and mental health.

KEYWORDS: religious identity, stress, mental health, Bangladesh, Islam

INTRODUCTION

Identifying with a religion is generally associated with mental health benefits (Garssen et al., 2021), but cultural context and personal factors can influence the direction and strength of this association (Lucchetti et al.,2021). The growing body of literature that supports the positive association between religiosity and mental health has primarily focused on Christianity in affluent societies, particularly the United States and western Europe (Dien et al., 2012; Malinakova et al., 2020). To better understand how religious identity interacts with mental health in different cultural contexts, biocultural research can attend to a diversity of religions and places (Kiang et al., 2022, Ransome, 2020; Satariano, 2020; Zimmer et al., 2016). As humans migrate around the world and bring their religious identities into new cultural contexts, a variety of factors intersect with religion and mental health, including ethnic majority/minority status, social roles, and political economy.

Meta-analyses of religion-health associations conclude that religiosity provides a protective effect across measures of physical health, mental health, and mortality (Levin & Idler, 2021; Yaden et al., 2022). The mechanisms underlying these associations are described in three dimensions: cognitive-emotional, social, and behavioral. That is, religion and health are connected through what people think and feel, how people socialize, and how people act. In a review of studies examining the association between religion and mental health in racial and ethnic minorities in the U.S., Nguyen (2020) found that the salutary effects of religion are stronger for Blacks and Latinos than for Whites. Other studies have examined how ethnic and religious identities interact with mental health in minority and immigrant populations around the world, such as Christians in Pakistan (Schwaiger et al., 2022) and Muslims in New Zealand (Adam & Ward, 2016). In these cases, religion was found to intersect with ethnic minority immigrant identities and bolster well-being through the mechanisms of psychological coping and social support.

It is important to distinguish between the concepts of religious identity and religiosity when interpreting scholarship on religion and health. Religious identity is the named association (or dissociation) with a religious organization or tradition. Religiosity is the intensity with which an individual or population adheres to the religious beliefs and practices of their religion (van der Noll et al., 2018). Studies of religious identity typically explore cultural context, while studies examining religiosity usually focus on personal religious actions that may influence health.

The purpose of the investigation presented here was to examine the association between religious identity (Hindu or Muslim) with self-reported stress and psychological symptoms among immigrant Bangladeshi women in London, England, and Bangladeshi women living in Sylhet, Bangladesh ("sedentees"). The immigrant women moved to London either as children or as adults, and all identified as Muslim; Bangladeshi sedentees identified as Muslim or Hindu. Both Bangladeshi and English societies have demonstrated significant changes in religious identity and socio-cultural attitudes towards religion in recent decades (Coleman & Collins, 2017). The UK is becoming less Christian, with Christianity no longer being the majority religion and an increasing number of people reporting "no religion" (Office for National Statistics, 2021). Bangladesh has increasingly politicized Islam and has been increasingly less tolerant of its minority religions (Mostofa, 2021). As these societies change and people move between them, the associations between Muslim or Hindu identity and mental health may be impacted.

The nation of Bangladesh was formerly part of British India, then became designated as East Pakistan from 1947 until the national liberation war in 1971, following which a national Bangladeshi government

was established (Guhathakurta, 2012). Since then, Bangladesh has been an independent country. Bangladesh is a densely populated low-to-middle income country with approximately 165 million people whose religious identities are 90% Muslim (mostly Sunni), 8% Hindu, and 2% Christian and Buddhist (Bangladesh Population & Housing Census, 2022). Since 1960, the percentage of Hindus in the Bangladeshi population has declined from 28% to its current percentage, mostly due to emigration out of the nation in response to waves of social and political discrimination (U.S. Department of State, 2022). The Bangladesh constitution designates Islam as the state religion but upholds the principle of secularism, prohibits religious discrimination, and provides equality for all religions (The Constitution of the People's Republic of Bangladesh Act No. of 1972; U.S. Department of State, 2022).

Bangladesh established a penal code to punish deliberate and malicious intent to insult religious sentiments, which has been interpreted by the courts to include the Prophet Muhammad. These restrictions extend to online communications and are upheld through the Digital Security Act of 2018. This has been critiqued for fueling religious tensions by criminalizing religious minorities for acts perceived to be a slight to Islam (Aziz, 2021). In recent years, communal anti-Hindu violence has surged, most egregiously in 2021 during the Hindu festival of Durga Pija (Ellis-Peterson, 2021). Following these violent events, minority religious groups claim the government failed to protect victims during the attacks or adequately punish perpetrators (U.S. Department of State, 2022). Financially, minority Hindus earn significantly less than Muslims across the nation, with variation in these disparities over time (Mamuna & Ahmed, 2017).

Regarding health disparities between religious groups in Bangladesh, higher rates of hypertension have been found among religious minorities (Haider et al., 2023), and psychological distress has been suggested as a potential mechanism for the increased hypertension among religious minority women (Datta & Chowdhury, 2022). Hossain and colleagues (2022) found that religious minorities in Bangladesh have a higher likelihood of chronic disabling illness and higher out-of-pocket expenditure for care. Sievert and colleagues (2008) found differences between Hindu and Muslim women's subjective experiences of menopausal symptoms, and highlighted the religious ideologies and practices involved in the experience of physiological phenomena. The participants in the study presented here were recruited from the major city of Sylhet, the wider region of which is the place of origin for most Bangladeshi immigrants in London (Kibria, 2011; Miah & King, 2023). Sylhet is the wealthiest division in Bangladesh and is known as the most conservative and religious part of Bangladesh. Gender, religion, and wealth interact in Sylhet, with Muslim women being increasingly secluded as a way for families to signal their economic prosperity. Hindu women in Sylhet are not subject to these restrictions but are financially less well-off on average (Sharmeen, 2012).

England is a wealthy constituent country of the UK, with a population of approximately 56 million people. In the 2021 census, 46% of England's population identified as Christian, 7% as Muslim, 2% as Hindu, 0.9% as Sikh, 0.5% as Jewish, and 0.5% as Buddhist. Approximately 37% of the population reported no religious affiliation. These percentages marked the first time that less than half of England's population identified as Christian (Office of National Statistics, 2021; U.S. Department of State, 2022). The UK lacks a written constitution, and the law establishes the Church of England as England's state church. The British Monarch serves as the Head of the Church of England, and therefore appoints key church leaders. Aside from these appointments, the state is not involved in church administration. The UK incorporated the European Convention on Human Rights into law through the Human Rights Act 1998, which provides freedom of thought, conscience, and religion. England has a penal code that

prohibits religiously motivated hate speech and acts. With these laws in place, an increase in reported religious hate crimes has occurred, with a spike following the World Trade Center attack on September 11, 2001 (Spalek, 2002). According to recent statistics, 40% of hates crimes were directed towards Muslims when the victim's religious identity was known. This may be due to an increase in hate acts or an increase in reporting. The main political parties currently face accusations of religious bias (U.S. Department of State, 2022).

The metropolitan area of London, from where participants in this study were recruited, is the most religiously diverse region of England, with over 25% of all religion-identifying residents reporting a non-Christian identity, primarily Muslim (15%) and Hindu (5%) (Office of National Statistics, 2021). As the Muslim population in London has grown through immigration, the practice and experience of Islam in London has changed (Dein et al., 2008), reflecting a pattern of Islamic adaptation to new cultural contexts following the global Muslim diaspora (Roy, 2004). Census statistics show health differences between religious groups in England after adjusting for age, sex, region, and broad ethnic group. Those who identified as Muslim reported a lower mean level of physical functioning than those who identified as Jewish, Christian, or with no religion (Ayoubkhani, 2020). Aksoy and colleagues (2022) analyzed longitudinal data from the UK "Understanding Society" household study to find that Pakistani and Bangladeshi Muslims had worse mental well-being than their UK counterparts with no religious affiliation. Laird and colleagues (2007) argue that "Islamophobia" in the UK is partially responsible for an increased burden of disease and other adverse health conditions for UK Muslims.

In addition to religious prejudice, skin shade prejudice and discrimination exists in the UK (Pheonix & Craddock, 2022) and may influence the experience of South Asians with darker skin who live there (Craddock et al., 2023). While darker skin is a key trait underlying discrimination stress in other parts of the world (Gravlee et al., 2005; Hersch, 2011; Monk Jr, 2015), other factors such as nationality, class, religion, and language (Fernández-Reino, 2020) may be better markers of divisions in London society, where the population is now minority White at 37% (Office for National Statistics, 2021) and a "super-diversity" of skin colors and ethnicities is present in society and government (Vertovec, 2006).

According to Begum and colleagues (2016), England has a better economy and healthcare than Bangladesh, and the Bangladeshis who immigrate to England come from relatively high social status in Bangladesh. However, negative life course effects have been found for both sedentee and immigrant Bangladeshi women, who experience menopause at an earlier average age than Londoners of European origin, possibly associated with more infectious diseases in childhood and lower levels of education (Murphy et al., 2013). Furthermore, Bangladeshi Muslim migrants to London have higher levels of Vitamin D deficiency, indicating an environmental mismatch to sunlight exposure (Smith et al., 2021). Núñez-de la Mora and Bentley (2008) found that social, cultural, and biological changes in the Bangladeshi immigrant community in the UK have increased migrants' risk for breast cancer compared to their counterparts living in Bangladesh. Taken together, studies examining immigrant Muslim's health in the UK reveals multiple threats to health, including early life risk factors, psycho-social stress, and acculturative risk factors following migration.

The ethnographic contexts of this study involve two related experiences: ethno-racial minority status and transnational migration. This biocultural examination of religion and mental health in sedentee Muslim and Hindu Bangladeshis, and in Bangladeshi Muslim migrants in London, requires an engagement with the literature on minority ethnicity, migration, and mental health. Most research on

the mental health experiences of ethnic minorities comes from sexuality and psychology studies in the USA. From this literature, minority stress theory focuses on the role of stigma in differentiating minority stress from general stress (Hoy-Ellis, 2023; Frost & Meyer, 2023). In this model, minority stress includes both "distal" stressors, which are external forces of stigma and discrimination, and "proximal" stressors, which are internalized stigma that minority people turn on themselves. Hatzenbuehler (2009) provides a psychological mediation framework for how stigma comes to impact cognitive, emotional, and interpersonal regulation. In addition to the stress of stigma, minorities' mental health is often under threat of poverty and diminished resources (Gonzales & Kim, 1997), which all together can translate social inequalities into biology (Gravlee, 2009). On the other hand, minority ethnic identity seems to provide a protective effect, possibly by bolstering social support, self-esteem, and sense of belonging (Gaylord-Harden et al., 2007). For example, members of ethnic minority groups in the United States do not have an increased risk for psychiatric disorders, despite having socio-economic disadvantages (Breslau et al, 2005). The literature on ethnic minorities' experiences of mental health indicates oppositional forces, one of stigma that is uniquely stressful and another of psychological and social belonging that buffers against stress.

In our study, the Hindus in Bangladesh are a historically marginalized ethnic minority group. The Muslims in London are also an ethnic minority group, but unlike the Hindus in Bangladesh, these participants migrated into an ethnic minority position during their lifetimes. A body of research has examined migration and mental health to find surprisingly better health outcomes than expected, given the stress of relocation and the discrimination faced by migrants (Alegría et al., 2017; Scribner, 1996). Described as "The Healthy Immigrant Effect" (Ichou & Wallace, 2009), first generation immigrants often experience better health than their offspring, who are raised as second-generation immigrant minorities. Migration and mental health scholars point to a person's orientation to acculturation, level of resilience, and degree of community support to explain the unexpectedly positive health outcomes in first-generation immigrant communities, despite lower socioeconomic status (Wu et al., 2018). Studies highlighting The Healthy Immigrant Effect have focused primarily on Hispanic immigrants to the United States. Bas-Sarmiento and colleagues (2017) completed a systematic review of studies examining mental health in immigrants versus native populations around the world, concluding that immigration is universally challenging and is associated with increased prevalence of mental disorders in some contexts, but not all. These authors suggest that access to primary and community care is a mediating factor.

Time, at both individual lifespan and socio-historical levels, also appears to influence the association between immigration and mental health. Pre-migratory and post-migratory factors are both involved in undermining or supporting migrants' mental health (Rousseau et al., 1997). At the individual lifespan level, immigrating as a child involves a different set of stressful or supportive factors than does immigrating as an adult. For example, young child refugees in Canada demonstrated an easier time separating from their home countries and integrating into social network in their new countries, compared to their adult refugee counterparts (Morantz et al., 2012). Child immigrants often experience more opportunities for social and linguistic incorporation in their destination country compared to adult immigrants, provided primarily through public schooling and other programs. These integrative experiences in childhood make life stage at the time of immigration perhaps more influential than total time in the destination country because adults may be socially confined to encapsulated immigrant communities (Beck et al., 2012). At the socio-historical level, immigrating before or after a traumatic sociopolitical event in one's origin country or destination country can impact self-rated health (Jamil et

al., 2010). As with minority health, immigrant health appears to be impacted by both stressors and supports unique to the specific context, including the dimension of time.

Associations between religion and mental health have been well-established (Dien et al., 2012; Garssen et al., 2021; Malinakova et al., 2020), but the cultural context of religious identity and the intersection of religion, migration, and minority ethnicity have been generally overlooked and deserve greater theorical and methodological attention. The study presented here examines the relationship between religious identity and mental health in two cultural contexts that vary in the way religion, minority ethnicity, immigration, and mental health interact. In this context, we examined the following hypotheses:

Hypothesis 1: Immigrant Muslim women in the UK (who identified with a minority religion) will report higher levels of stress, nervous tension, and depressed mood compared to Muslim women in Bangladesh (who identified with a majority religion).

Hypothesis 2: Immigrant Muslim women in the UK (who identified with a minority religion) will report higher levels of stress, nervous tension, and depressed mood compared to women of European descent living in UK.

Hypothesis 3: Hindu women in Bangladesh (who identified with a minority religion) will report higher levels of stress, nervous tension, and depressed mood compared Muslim women in Bangladesh (who identified with a majority religion).

MATERIALS & METHODS

This investigation included 531 female participants, ages 35-59, living in Sylhet, Bangladesh or London, England. The data were collected between September 2006 and August 2010, as part of a larger study of reproductive aging and symptom experience. Of the participants living in London, 223 were Muslim immigrants from Sylhet who moved to London as either children or adults, and 154 were neighbors of White European descent with parents born in the UK or Ireland. Of the Muslim immigrants, 49 had migrated to the UK as children and 174 had immigrated as adults. Of the participants living in Sylhet, 120 identified as Muslim and 34 identified as Hindu. Table 1 provides descriptive statistics of the total study sample.

To improve comparability of the immigrant and sedentee groups, women in Sylhet with the means to emigrate, or with relatives who had already emigrated to London, were targeted for study. Due to social and physical mobility restrictions on Muslim women outside of the home, random methods of recruitment were not possible. Rather, social network and snowball sampling techniques were used. Undergraduate research assistants from Shahjalal University assisted in recruitment in Sylhet. Four of nine research assistants were Hindu, thus increasing the overall representation of Hindu women . For these reasons, the sample is not representative of women in Bangladesh, nor was it intended to be. Bangladeshi participants signed letters of consent and were compensated monetarily for their time and trouble.

In London, Muslim immigrants were recruited using paper advertisements in local boroughs where immigrants had settled (primarily Camden) and through community centers. Londoners of British and

Irish descent were recruited through paper advertisements dispersed in community centers. Ethical approval for the study was obtained from the Institutional Review Board of UMass Amherst, the Ethics Committees at University College London, Durham University, and the M.A.G. Osmani Medical College, Sylhet, Bangladesh. The consent document was explained verbally to Bangladeshi participants in Bengali (the national language of Bangladesh) or Sylheti (the local dialect of Sylhet). Data were collected and stored in compliance with the Data Protection Act, UK. London participants signed letters of consent, and all were compensated monetarily for their time and trouble.

In both UK and Bangladesh, participants completed face-to-face interviews with semi-structured questionnaires. Interviews and questionnaires were carried out in Bengali or Sylheti by two co-authors (K.B. and T.S.). Colleagues at Shahjalal University translated the questionnaires into the Sylheti dialect and then back-translated them to standard Bengali to check accuracy of meaning and comprehension. The questionnaires collected demographic, reproductive, and biobehavioral information related to menopause and symptom experience at midlife. The religious identity of Muslim or Hindu participants in Bangladesh was clearly expressed through symbolic clothing, behavior, and sociality, and was recorded by the researchers without directly asking. Muslim identity was recorded through the same means in London, where all Bangladeshi immigrants available to participate were Muslim. Londoners of European descent were not asked about their religious identity, and no religious identity was recorded by the researchers for this group. Following the UK census information, the majority of White participants were likely to be Christian or to report no specific religion (Office for National Statistics,2011).

Menopausal symptoms were assessed by asking "During the past two weeks, have you ever been bothered by…?" followed by a four-point intensity scale, ranging from "not at all" to "extremely". The symptom list was based on a validated checklist of everyday complaints developed for menopause studies with added items from the Greene Climacteric Index (Sievert et al., 2023). The study presented here analyzed two of the psychosomatic symptoms as outcome variables: nervous tension and depressed mood. Stress was measured using a single-item survey question, which asked participants to rate their stress on a six-point scale from 1 (I can shake off stress) to 6 (stress eats away at me). Stress was measured in this way following the guidance of Littman and colleagues (2006), who found that single-item stress measures are similar in reliability and validity to longer self-perceived stress questionnaires. In this analysis, responses regarding psychological symptoms and stress were collapsed into bivariate categories (no/yes or low/high). Table 2 presents the variables included in this analysis, and how these variables were originally measured and then transformed for analyses.

Statistical analyses were completed using SPSS 28.0. Participants were organized into four groups according to religious identity and immigrant status: Muslims in London (immigrant religious minorities, comprised of women who immigrated as either children or adults), Muslims in Sylhet (sedentee religious majorities), Londoners of European descent (non-migrant ethnic majorities), and Hindus in Sylhet (sedentee religious minorities). These groups were paired for comparison in three primary formulations: (1) Muslims in London compared to Muslims in Sylhet, (2) Muslims in London compared to Londoners of European descent, and (3) Hindus in Sylhet compared to Muslims in Sylhet. These groups of participants and these group pairings support the examination of associations between religious identity, minority ethnicity, and immigration. An additional analysis was carried out for Muslims in London to compare symptoms between childhood or adult immigrants, given the literature suggesting lifespan effects on the association between immigration and mental health.

Bivariate chi-square analyses compared levels of self-reported stress, nervous tension, and depressed mood in the paired groups. Multivariable logistic regression was applied to examine the relations between stress and psychological symptoms and minority religious identity, while adjusting for marital status, parity, perceived financial situation, and daily walking. Marital status and parity were included as measures of household and family context, perceived financial situation was included as a measure of socioeconomic status, and daily walking was included as a measure of exercise and physical mobility outside of the home. Considering the gender roles, socioeconomic stratification, and physical/spatial mobility restrictions experienced by Bangladeshi women and Muslim immigrants, these covariates were deemed potentially important to the mental experiences of Muslim and Hindu women in midlife. Statistical significance was set at p<0.05.

RESULTS

Percentages of participants in each of the four primary groups (with the Muslims in London also split into childhood versus adulthood immigrants) who reported high versus low stress, high versus low nervous tension, and high versus low depressed mood are presented in Table 3. In bivariate analyses, significantly more minority immigrant Muslims in London reported high stress (p<0.001), high nervous tension (p<0.05), and high depressed mood (p<0.05) than majority sedentee Muslims in Sylhet. Significantly more minority immigrant Muslims in London reported high stress (p<0.005), high nervous tension (p<0.001), and high depressed mood (p<0.05) than majority Londoners of European descent. Significantly more minority sedentee Hindus in Sylhet reported high stress (p<0.05) than majority sedentee Muslims in Sylhet, but there was no significant difference in percentage reporting high nervous tension or high depressed mood between these groups. Significantly more minority immigrant Muslims in London who immigrated in adulthood reported high nervous tension (p<0.05) and high depressed mood (p<0.005) than minority immigrant Muslims in London who immigrated in childhood, but no difference in stress was found between these groups.

Separate multivariable logistic regression models for stress, nervous tension, and depressed mood were significant for group comparisons between minority immigrant Muslims in London and majority sedentee Muslims in Sylhet, and between minority immigrant Muslims in London and majority Londoners of European descent, while adjusting for parity, financial situation, marital status, and daily walking. Separate multivariable logistic regression models for nervous tension and depressed mood were significant for group comparisons between childhood immigrant and adulthood immigrant Muslims in London, while adjusting for the covariates. The multivariable logistic regression models were not significant for comparisons between minority sedentee Hindus in Sylhet and majority sedentee Muslims in Sylhet, while adjusting for the covariates. The results of the significant regression models are presented in Tables 4 to 6.

In the multivariable logistic regression model comparing stress in minority immigrant Muslims in London and majority sedentee Muslims in Sylhet (Table 4), the minority Muslims were significantly more likely to report high stress (OR 2.00, 95% CI 1.18-3.39), while financial comfort reduced the odds of reporting high stress (OR 0.28, 95% CI 0.14-0.62). In the model for nervous tension, no significant differences were found between minority and majority Muslims, while financial comfort reduced the odds of reporting high stress (OR 0.45, 95% CI 0.23-0.85), while parity between one and three offspring increased the odds of high stress (OR 5.32, 95% CI 1.11-25.56). In the model for depressed mood, no significant differences were found between minority and majority Muslims, while financial comfort

reduced the odds of high depressed mood (OR 0.19, 95% CI 0.09-0.41), and married women were less likely to report depressed mood than unmarried women (OR 0.35, 95% CI 0.19-0.65).

In the multivariable logistic regression model comparing stress in minority immigrant Muslims in London and London neighbors of European descent (Table 5), immigrant minority Muslims were more likely to report high stress (OR 3.05, 95% CI 1.51-6.17), while financial comfort (OR 0.35, 95% CI 0.17-0.72) and parity greater than four (OR 0.40, 95% CI 0.16-0.97) reduced the odds of reporting high stress. In the model for nervous tension, immigrant minority Muslims were more likely to report high nervous tension (OR 3.37, 95% CI 1.66-6.87), while financial comfort reduced the odds of high nervous tension (OR 0.37, 95% CI 0.18-0.74). In the model for depressed mood, no significant differences were found between immigrant Muslims and their London neighbors, while financial comfort reduced the odds of reporting high depressed mood (OR 0.18, 95% CI 0.08-0.39).

In the multivariable logistic regression model comparing nervous tension in childhood immigrant and adulthood immigrant Muslims in London, no differences between child or adult immigrants were found, while financial comfort reduced the odds of reporting high nervous tension (OR 0.35, 95% CI 0.16-0.78). In the model for depressed mood, no differences between child or adult immigrants were found, while financial comfort reduced the odds of reporting depressed mood (OR 0.13, 95% CI 0.05-0.33).

DISCUSSION

The study presented here examined whether women with minority religious identities in either Bangladesh or England were more likely to report stress, nervous tension, or depressed mood than women identifying with the religious majority in these places. We compared majority Bangladeshi Muslims in Sylhet Bangladesh to minority Muslim women in London and minority Hindu women in Sylhet, and we compared majority White women in London to minority Muslim Bangladeshi women also in London. Grouping participants according to their religious identity allowed us to compare psychosomatic symptoms between religious minorities and religious majorities. The degree to which minority or majority religious identity was linked with migration varied by group and therefore impacted how these variables related in the three primary group pairings. In our comparison of majority Muslims to minority Hindus, all participants were Bangladeshi sedentees, so migration status was not a factor. In our comparison of majority Muslims in Bangladesh to minority Muslims in London, the latter were all first-generation immigrants from Bangladesh to London, some of whom had immigrated in childhood and others in adulthood. Similarly, in our comparison of minority Muslims in London to their White neighbors of European descent, all minority Muslims were also first-generation immigrants from Bangladesh. These varied combinations of religious identity and migration history across participants groups are important to consider when interpreting the results.

The bivariate analyses showed that religious minority and religious majority groups differed in their experiences of stress and psychological symptoms. These findings, especially that minority Muslims experience more stress and more symptoms than majority Muslims, suggest that religious identity is differentially associated with psychosomatic experiences according to the political, economic, and cultural context and personal history linked to that religious identity. However, these bivariate statistical relationships do not reflect the involvement of contextual or personal variables measured in the study. When adjusting for covariates in multivariable logistic regression models for stress, nervous tension, and depressed mood, religious identity remained significant in some models, while marital status, parity, and financial comfort were also revealed as significant. A clear pattern emerged across all regression models:

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Financial comfort (compared to financial struggle) reduced the odds of high stress, high nervous tension, and high depressed mood. These results partially support our predictions that women identifying with a minority religion experience greater stress and psychological symptoms than women identifying with a majority religion. At the same time, the regression models indicate the involvement of family and financial variables in the experience of stress and psychological symptoms. Furthermore, the results of the additional analysis comparing child and adult immigrant Muslims in London support the involvement of life course experiences in the relationship between religious identity and mental health.

Our finding that minority Muslim identity was associated with higher stress and psychological symptoms is consistent with previous research demonstrating reduced mental well-being in minority Muslims in London (Aksoy et al., 2022). These results also fit with the general pattern of elevated stigma-related stress in people with minority identities (Frost & Meyer, 2023; Hatzenbuehler, 2009). The significant involvement of financial situation with stress and psychological symptoms in our study aligns with existing frameworks for understanding minority stress (Gonzales & Kim, 1997; Hoy-Ellis, 2023), which highlight how internal and external stressors can accumulate for people with stigmatized minority identities. The greater significance of financial situation compared to minority religious identity in our regression models may reflect the coping benefit of ethnic minority identification described by Gaylord-Harden and colleagues (2007). In other words, the external stress of limited resources may have negatively impacted the Muslim minorities in our sample, while belonging to a tight-knit minority Muslim community simultaneously provided a coping buffer to stress.

Our findings also align with existing scholarship that identifies stressors specific to transnational migration (Rousseau et al., 1997). In addition to minority identity stressors and buffers, the Muslim immigrants in our study experienced stressors related to relocation from Sylhet to London. Our bivariate analysis results showing that Muslim women who immigrated to London as children experienced fewer psychological symptoms than those who immigrated as adults connects with scholarship highlighting the role of time in immigrant's well-being, consistent with Aronowitz (1984) and Morantz and colleagues (2012). However, when analyzed with covariates in regression models, lifespan stage at time of immigration lost its significance to financial situation, again indicating the importance of self-reported financial comfort in immigrants' and minorities' mental health experiences. In our sample, child immigrants likely had more opportunities for cultural and linguistic incorporation through the UK school system than adult immigrants, who may have remained encapsulated in the local Muslim community. Differences in levels of cultural integration in London may relate to the variation in stress and financial comfort we observed between child and adult immigrants. While our study analyzed only one temporal dimension (childhood versus adulthood) that may influence immigrants' mental health, other important temporal variables exist, including total time elapsed since immigration and whether immigration occurred before or after a significant event that impacted the sociopolitical climate in either the origin country or destination country.

The interpretation of our results is informed by existing scholarship on the lives and well-being of immigrant Muslim minorities in the context of English-speaking countries. Regarding Islamic identity in transnational contexts, Roy's (2004) study of the Muslim diaspora described how Islam is adapted in globalized contexts where it does not carry the social authority that it did in the immigrants' place of origin. In immigrant Muslim communities in France, for example, beliefs and practices depart from immigrants' original local customs to a standardized and simplified version of Islam that transcends geographical and cultural boundaries (Roy 2004). These religious shifts may also have been relevant for

the Bangladeshi immigrant Muslims in our study who moved from a place steeped in Islamic social authority to a place where Islam is marginalized in a milieu of multiculturalism and secularism. On the other hand, and more closely related to our sample, Dein and colleagues (2008) argue that the immigrant Muslim community in London is characterized by regular travel to and from Sylhet, which fosters continuity of beliefs and practices between these places. These authors describe Muslim immigrants in London as participating in the economic, political, and social life of both Sylhet and London, establishing a "transnational" community in which traditional lifeways are maintained. In belief and practice, Bangladeshi Muslim immigrants in London tend to be quite conservative, possibly even more so than their sedentee counterparts in Bangladesh, and have experienced waves of Islamic revivalism comparable to those in Bangladesh (Kibria, 2011).

Considering the interaction of minority stigma and Islamic traditionalism in London, Dein and colleagues' (2008) analyzed the mental health narratives of East London Bangladeshi immigrants finding a common perception of powerlessness and deprivation in these informants, many of whom turned to Islamic spiritual healers for the treatment of *jinn*, a form of sudden-onset spiritual illness with a variety of psychological and somatic symptoms. Gender is also a significant factor in a discussion of power and Islamic conservativism. Mahmood's (2005) study of Muslim women in Egypt argued that gender and Islam interact in nuanced ways that impact how agency is exerted and social norms are navigated. Mahmood's work focused particularly on women who chose more conservative religious paths in Egypt, a patriarchal majority Islamic society like Bangladesh. Mahmood's conclusions are important for our study because they challenge the assumptions of western feminism on how agency, freedom, and religion interact. While patterns of belief and behavior in immigrant minority Muslims are important to identify and consider, Ibrahim and Whitley (2021) argue that researchers examining the mental health of Muslim migrants in English-speaking countries should remain aware of the internal heterogeneity of Islamic immigrant communities, which reflect the diversity of traditions within their Islamic societies of origin. Taken together, we can situate our results regarding the mental health of minority Muslim immigrant women in a sociocultural context of stigmatized conservative Islam that remains tied to Sylhet and varies according to Islamic diversity within Sylhet and also adaptations to London society.

The results of this study also connect with previous research examining broad and general patterns in the relationships between mental health and financial situation, parity, and marital status (covariates in our regression models). Financial comfort was the most consistently significant variable in our analyses. The literature indicates a complex relationship between subjective and objective financial status and mental health, suggesting a general pattern that financial struggles are psychologically and socially deleterious, but financial comfort beyond a certain point has no further bearing on mental health (Kahneman & Deaton, 2010; Tan et al., 2020). Research on the relationship between parity and mental health has highlighted the importance of financial stability, family/partner support, and perception of reproductive control. Generally, the impact of parity on mental health appears to be context dependent, involving personal desires and cultural expectations (Margolis & Myrskylä, 2011). The literature on the relationship between marital status and mental health indicates that married people experience better mental health than unmarried people (Uecker, 2012). However, this association is impacted by personal and cultural ideologies regarding marriage. The Muslim participants in our study likely favored marriage as a social necessity, and many were likely to have been in arranged marriages, sometimes to significantly older husbands (Ahmed, 2005; Gardner, 2006; Hossain, 2003).

Study Limitations

This was not an epidemiological study representative of Hindu or Muslim women in Bangladesh or London, and the results should not be interpreted as such. Rather, the results provide an insight into how religious identity, minority ethnicity, and transnational migration interact with subjective psychosomatic experiences in the local populations involved. While we collected and analyzed data on participants' minority/majority religious identities and national origin, other important variables may have also influenced the mental health experiences of our sample. Particularly for the immigrant minority Muslims in London, skin color, class, and language may have also impacted social discrimination and psychosomatic experiences, according to results of other recent studies from the UK (Craddock et al., 2023; Fernández-Reino, 2020).

The study was limited by three methodological issues. First, we did not collect quantitative religiosity data such as frequency of religious behaviors or intensity of religious beliefs. Most research on religion-health associations utilize religiosity data in addition to religious identity to test hypotheses on the mechanisms underlying the religion-health link. We only included religious identity in our study, which required us to interpret the results in relationship to participants' sociocultural context, rather than what they particularly practice or believe. However, other data affirm that religiosity is relatively high among Bangladeshi Sylhetis and particularly those living as immigrants in London (Dein et al., 2008; Kibria, 2011; Office of National Statistics, 2011).

Secondly, the power of our analyses was limited by a smaller sample size from Sylhet, which might explain the non-significance of our regression model for stress in minority Hindus versus majority Muslims living in Sylhet. Without this model, we were unable to analyze the stress levels of religious minorities who were *not* also immigrants (i.e., the Hindus in Sylhet) while adjusting for covariates. Relatedly, all minority Muslims in our sample were also first-generation immigrants, so we were unable to analyze separately the influence of minority religious identity and immigration history in this group. Furthermore, Muslim minorities in London are also ethnic minorities in other important ways, particularly in their racialization as South Asians.

Thirdly, we did not collect data on religion from Londoners of European descent, which limited our ability to compare religious identity with the minority Muslim women. While we knew that the European Londoners were not first-generation transnational immigrants like the Muslim Londoners in this study, we could only assume the likelihood of their majority religious identity as Christians or having no particular religion, according to the UK 2011 Census data (Office of National Statistics, 2011).

CONCLUSION

The study presented here found differences in stress and psychological symptoms between sedentee Muslim women living in Sylhet, Bangladesh and immigrant Bangladeshi Muslims living in London, England. Our results indicate that, in addition to religious identity, contextual and personal life factors influence mental health experiences. Islam and Hinduism's minority or majority cultural status intersects with transnational migration, family factors, and socioeconomic status for a complex combination of variables impacting the association between religion and mental health. Future research on the association between religion and mental health can expand beyond majority religions in wealthy English-speaking nations and should account for variation in participants' life history and cultural context. To people and organizations aiming to support the mental health of religious minorities and/or

immigrants, this study highlights the importance of designing interventions with sensitivity to the intersecting forces that impact mental health in these contexts. These efforts can optimize the psychosocial coping benefit of minority religious identity by encouraging in-group belonging and support. External stressors, particularly financial insecurity, can be ameliorated with relevant resources. Immigration-specific stressors, which appear to be most intensive for adult immigrants, may be buffered through programs that support inclusion and resilience among societal newcomers.

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TABLE 1. Descriptive Statistics of the Sample (n=531)

Country of Origin	Current Location	Religious ID	Religious Minority	Time of Migration	n
Bangladesh	Bangladesh	Muslim	no	-	**120**
Bangladesh	Bangladesh	Hindu	yes	-	**34**
Bangladesh	United Kingdom	Muslim	yes	child	**49**
Bangladesh	United Kingdom	Muslim	yes	adult	**174**
United Kingdom	United Kingdom	-	no	-	**154**

This table identifies the number (n) of participants according to each grouping variable in the study.

TABLE 2. Variables in the Analysis.

Variable	Code at Collection	Transformed Categorization
religion	Muslim, Hindu, or other	no change
stress	1-6 intensity scale rating	low (1-3) or high (4-6)
nervous tension	0-3 intensity scale rating	low (0-1) or high (2-3)
depressed mood	0-3 intensity scale rating	low (0-1) or high (2-3)
parity	total	0, 1-3, or 4+
financial situation	struggling, OK, or comfortable	no change
marital status	single, married, divorced, or widowed	not married or married
20 mins. of daily walking	no or yes	no change

Demographic and lifestyle variables were collected with face-to-face interviews in participants' primary language. Levels of stress, nervous tension, and depressed mood were collected on multipoint scales, but collapsed into dichotomous categories (low or high) for analysis.

TABLE 3. Percentages of participants in religious groups reporting high stress, high nervous tension, and high depressed mood.

	High Stress	High Nervous Tension	High Depressed Mood
minority immigrant Muslims in London	74%	37%	32%
childhood Muslim immigrants	70%	23%	17%
adulthood Muslim immigrants	75%	40%	37%
majority sedentee Muslims in Sylhet	52%	27%	21%
majority Londoners of European descent	60%	14%	21%
minority sedentee Hindus in Sylhet	72%	29%	35%

In bivariate analyses of group differences, minority immigrant Muslims in London reported more stress (p<0.001), more nervous tension (p<0.05) and more depressed mood (p<0.05) compared to majority sedentee Muslims in Sylhet. Minority immigrant Muslims in London reported more stress (p<0.005), more nervous tension (p<0.001) and more depressed mood (p<0.05) compared to Londoners of European descent. Minority sedentee Hindus in Sylhet reported more stress (p<0.05) compared to majority sedentee Muslims Sylhet, but no significant difference in nervous tension or depressed mood. Minority immigrant Muslims in London who immigrated in adulthood reported more nervous tension (p<0.05) and more depressed mood (p<0.005) compared to minority immigrant Muslims in London who immigrated in childhood.

TABLE 4. Results of logistic regression models comparing stress and psychological symptoms in minority immigrant Muslims in London and majority sedentee Muslims in Sylhet. (n=343)

	STRESS	NERVOUS TENSION	DEPRESSSED MOOD
Religious ID in context			
Majority Muslim	(Ref)*	(Ref)	(Ref)
Minority Muslim	2.00 (1.18-3.39)*	1.44 (0.84-2.45)	1.28 (0.70-2.37)
Marriage Status			
Not Married	(Ref)	(Ref)	(Ref)*
Married	0.94 (0.95-1.51)	0.63 (0.34-1.13)	0.35 (0.19-0.65)*
Parity			
0	(Ref)	(Ref)	(Ref)
1-3	0.57 (0.13-2.54)	5.32 (1.11-25.56)*	1.08 (0.31-3.75)
≥4	0.48 (0.11-2.16)	3.91 (0.82-18.58)	1.29 (0.38-4.41)
Walk 20mins Daily			
No	(Ref)	(Ref)	(Ref)
Yes	0.86 (0.52-1.43)	1.18 (0.74-1.90)	1.46 (0.86-2.47)
Financial Situation			
Struggling	(Ref)*	(Ref)*	(Ref)*
OK	0.58 (0.27-1.22)	0.57 (0.31-1.03)	0.34 (0.18-0.65)*

| Comfortable | 0.28 (0.14-0.62)* | 0.45 (0.23-0.85)* | 0.19 (0.09-0.41)* |

Multivariable logistic regression models examined stress, nervous tension, and depressed mood in minority Muslims and majority Muslims, while adjusting for marriage status, parity, daily walking, and perceived financial comfort. Minority religious identity increased odds of high stress. Financial comfort was negatively associated with stress, nervous tension, and depressed mood.

*The results for each model are arranged vertically in columns. Reference categories are marked with "(Ref)" for each covariate. The odds ratio is given for each category, followed by the 95% confidence interval. * Indicates significant results (p<0.05).*

TABLE 5. **Results of logistic regression models comparing stress and psychological symptoms in minority immigrant Muslims in London and their majority London neighbors of European descent. (n=377)**

	STRESS	NERVOUS TENSION	DEPRESSED MOOD
Religious ID in context			
Majority Londoners	(Ref)*	(Ref)*	(Ref)
Minority Muslim	3.05 (1.51-6.17)*	3.37 (1.66-6.87)*	1.76 (0.88-3.53)
Marriage Status			
Not Married	(Ref)	(Ref)	(Ref)
Married	0.72 (0.40-1.30)	0.90 (0.50-1.62)	0.62 (0.35-1.11)
Parity			
0	(Ref)*	(Ref)	(Ref)
1-3	0.63 (0.30-1.29)	1.49 (0.67-3.34)	1.04 (0.51-2.13)
≥4	0.40 (0.16-0.97)*	1.70 (0.71-4.08)	1.69 (0.76-3.80)
Walk 20mins Daily			
No	(Ref)	(Ref)	(Ref)
Yes	0.88 (0.52-1.48)	1.21 (0.73-2.00)	1.18 (0.71-1.96)
Financial Situation			
Struggling	(Ref)*	(Ref)*	(Ref)*
OK	0.71 (0.38-1.36)	0.69 (0.40-1.20)	0.49 (0.29-0.83)*
Comfortable	0.35 (0.17-0.72)*	0.37 (0.18-0.74)*	0.18 (0.08-0.39)*

Multivariable logistic regression models examined stress, nervous tension, and depressed mood in immigrant Muslim Londoners and majority Londoners of European descent, while adjusting for marriage status, parity, daily walking, and perceived financial comfort. Minority religious identity increased odds of high stress and high nervous tension. Financial comfort was negatively associated with stress, nervous tension, and depressed mood.

*The results for each model are arranged vertically in columns. Reference categories are marked with "(Ref)" for each covariate. The odds ratio is given for each category, followed by the 95% confidence interval. * Indicates significant results (p<0.05).*

TABLE 6. **Results of logistic regression models comparing psychological symptoms in minority immigrant Muslims in London who immigrated in adulthood and immigrant Muslims in London who immigrated in childhood. (n=222)**

	NERVOUS TENSION	DEPRESSED MOOD
Time of Immigration		
adulthood	(Ref)	(Ref)
childhood	0.46 (0.21-1.04)	0.48 (0.19-1.02)
Marriage Status		
Not Married	(Ref)	(Ref)
Married	1.35 (0.65-2.80)	2.05 (0.97-4.36)
Parity		
0	(Ref)	(Ref)
1-3	-	0.59 (0.15-2.31)
≥4	1.24 (0.67-2.03)	0.74 (0.37-1.47)
Walk 20mins Daily		
No	(Ref)	(Ref)
Yes	1.21 (0.67-2.18)	1.75 (0.91-3.35)
Financial Situation		
Struggling	(Ref)*	(Ref)*
OK	0.66 (0.33-1.32)	0.36 (0.18-0.72)*
Comfortable	0.35 (0.16-0.78)*	0.13 (0.05-0.33)*

Multivariable logistic regression models examined nervous tension and depressed mood in minority immigrant Muslims in London who immigrated in adulthood and immigrant Muslims in London who immigrated in childhood, while adjusting for marriage status, parity, daily walking, and perceived financial comfort. Financial comfort was negatively associated with nervous tension, and depressed mood.

*The results for each model are arranged vertically in columns. Reference categories are marked with "(Ref)" for each covariate. The odds ratio is given for each category, followed by the 95% confidence interval. * Indicates significant results (p<0.05).*