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The relationship between immigration and depression in South Africa: Evidence from the first South African National Income Dynamics Study

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Abstract

Few studies have examined depression among immigrants in post-apartheid South Africa, and factors that strengthen the relationship between immigration and depression. The first wave of the National Income Dynamics Study was used to investigate links between immigration and depression (n=15,205). Depression symptoms were assessed using a 10-item version of the Center for Epidemiologic Studies Depression (CES-D) Scale. Immigrants in South Africa had fewer depressive symptoms (CES-D = 10) than locally-born participants (17.1% vs. 32.4%, $F=13.5$, $p<0.01$). Multilevel mixed-effects logistic regression analyses found that among immigrant populations, younger age (adjusted OR=1.03, 95% CI = 1.01-1.05) and black African ethnicity (adjusted OR=3.72, 95% CI = 1.29-10.7) were associated with higher depression. Younger age was associated with lower depression among locally-born study participants (adjusted OR=0.98, 95% CI = 0.97-0.98). The varying relationship between certain demographic factors, depression and the different mental health challenges among these groups requires closer attention.

Keywords

Depression; South Africa; immigration; multilevel analysis

Introduction

South Africa, with its diverse cultures, languages, and racial/ethnic groups, is in the process of redefining a national identity of inclusiveness, with immigration representing a difficult

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dilemma following the end of apartheid [1]. Immigrants from across the continent seek refuge in South Africa, pursuing new opportunities or fleeing difficult circumstances in their countries of origin, often triggered by war and economic/political instability. South Africa, however, has a history of income inequality, racism and migrant labor, which undermined family cohesion and engendered violence under the apartheid regime; these factors have had a devastating impact on physical health [2] as well as an enduring effect on mental health in the post-apartheid era. South Africa has a population of 51.8 million, with approximately 4.4% being foreign-born [3], although an internal census of migrants is somewhat indefinable. For many immigrants living in South Africa, their struggles are often exacerbated by a climate of xenophobia and discrimination [4].

The process of migrating and encountering different cultures is stressful, with migration-related stress and associated mental health outcomes including depression often being inconsistent. In the United States, there has been extensive debate and research examining the mental health consequences of migration [5]. Surprisingly, those studies, with a few exceptions, tend to indicate that immigrants have a lower prevalence of mood disorders compared to native or US-born individuals of the same national origin [6,7]. On the other hand, a mental health study of 23 European nations found the prevalence rates of depressive symptoms to be higher for immigrants from certain countries [8]. In addition to the mental health disparities between different racial and ethnic immigrant groups [9], past studies often point to complex linkages between immigration and depression, with age of migration playing an important role. A number of studies suggest that migration to the United States and Canada at a younger age may constitute a greater risk for depression [6, 10, 11] and psychotic disorders [12].

The relationship between immigration and depression outcome is inconsistent with respect to country of origin and host nation. While two studies have extensively assessed the significant socioeconomic correlates of depression as well as migrant characteristics in South Africa [13,14], none to our knowledge has focused on depression among immigrants in sub-Saharan Africa and South Africa, especially at a population level. The purpose of the current study was to address this knowledge gap by examining the association between immigration and depression, and by assessing the level of depression among different race/ethnic groups of immigrants in post-apartheid South Africa at the population-level, with a specific focus on age factors. These factors are hypothesized as being contributory to significant depressive symptoms among immigrant populations.

Methods

Participants

This study analyzed data from the first wave (version 4) of the South African National Income Dynamics Study (SA-NIDS). The SA-NIDS survey method is described in its published report [15]. Briefly, it was designed as a longitudinal panel survey of a nationally representative sample of households in South Africa. The study involved an estimated 16,800 continuous sample adult members in approximately 7,300 total households across 400 primary sampling units (areas) using a stratified, two-stage cluster sample design.

Data Collection

The first wave of the interview was conducted in 2008 and became publicly available in 2009. The target population was private households, excluding living quarters such as old age homes, hospitals, prisons and boarding schools. Trained fieldworkers were instructed to interview all available household members residing at the selected address, and every household at a designated dwelling was included. Four types of questionnaire were administered in the SANIDS: household, adult, child and proxy questionnaires. Our study utilized publicly available data from household and adult questionnaires. The household questionnaires were administered to the oldest woman or another knowledgeable member in the chosen household to obtain information related to household background and living situation. Adult questionnaires were subsequently administered to every household member aged 15 years or older to obtain information related to personal background, including a history of immigration (foreign-born status based on self-report) and emotional health status.

The SA-NIDS questionnaires were available in all 11 of South Africa's officially recognized languages. The household-level response rate was 69% and the adult-level response rate was 93% [15]. The SA-NIDS study was approved by the Ethics Committee of the University of Cape Town, and the use of the SA-NIDS data in the current analysis was approved by the University of KwaZulu-Natal Biomedical Research Ethics Committee.

Measures

Depressive symptom outcomes were assessed using the 10-item version [16] of the Center for Epidemiologic Studies Depression Scale [17]. As a widely used self-report scale to screen for depression with strong psychometric properties [18,19], which has previously been used in a number of South African studies [20,21], the shorter version of the Center for Epidemiologic Studies Depression Scale (CES-D) correlates well with little loss of psychometric properties when compared to the original version [22]. In the adult questionnaire, study participants were asked how often they experienced symptoms associated with depression over the past week by choosing from four possible responses in a Likert format, where "0" is "rarely or none of the time (less than 1 day)," and "3" is "almost or all of the time (5-7 days)." The depression outcome was assessed as the sum of scores for the 10 items, where a cut-off score of 10 or higher in the total score indicated the presence of depressive symptoms [16]. The internal reliability using Cronbach's alpha for the CES-D was 0.75.

Analysis

Following a descriptive analysis of baseline characteristics, multilevel mixed-effects logistic regression models were used to assess the association between immigration (foreign-born status) and depression outcomes. Multilevel models were utilized as many of the covariates in the regression were drawn from individual and household level characteristics. Two adjusted models were further fitted, each with a different aim. The first aimed to assess whether immigration was associated with higher depression, including an interaction term between age and migration to determine the possible effect modification of age. The second aimed to do the same using the interaction between race/ethnicity and migration. All analyses were adjusted by age, gender, race/ethnicity, marital status, educational attainment,

residence in urban areas and occurrence of household hunger (as a measure of household financial strain) within the past 12 months. All proportions in the descriptive analysis and regression models were also adjusted by the study's post-stratification weight to match the 2008 mid-year population estimates produced by Statistics South Africa [23]. Proportional differences in the characteristics between immigrant and locally-born study participants were based on Pearson chi-squared statistics, adjusted using the post-stratification weight, with the second-order correction method [24] that was converted into *F* statistics. The data were analyzed using STATA 12 [25].

Results

The demographic characteristics analysis of our study was based on complete and available information on 15,205 adult resident respondents (90.1% of 16,879). Table 1 compares the demographic characteristics between immigrant (n=322) and South African-born (n=14,883) study participants. Immigrant (foreign-born) study participants accounted for approximately 3.7%, the majority being black (69.5%). Immigrant study participants were mostly born in Africa (82.1%) and two-thirds (67.4%) were from countries bordering South Africa: Zimbabwe (26.3%), Mozambique (20.4%), Lesotho (10.4%), Namibia (7.1%), Swaziland (2.1%), and Botswana (1.1%). Outside Africa, the largest country of origin was the United Kingdom (7.1%). The proportion of immigrant participants between the ages of 15-25 was low (14.8% vs. 33.1%, $F = 18.1$, $p = 0.01$) with many being highly educated (45.3% vs. 29.0%, $F = 8.1$, $p = 0.01$) and married (54.3% vs. 30.1%, $F = 20.6$, $p = 0.01$), a contrast to locally-born study participants. The proportion (17.1% vs. 32.4%, $F = 13.5$, $p = 0.01$) of CES-D 10 were generally lower among immigrant study participants than the locally-born study participants.

The result of the multilevel mixed-effects logistic model without interaction terms (Model 1) from Table 2 suggests that immigrants were less likely to have depression compared to South African-born study participants (adjusted OR=0.53, 95% CI = 0.36-0.77). The assessment of the model containing the interaction term (Model 2) suggests that younger age was associated with lower depression among the South African-born study participants (adjusted OR=0.98, 95% CI = 0.97-0.98). Conversely, younger age was associated with higher depression among immigrant study participants (adjusted OR=1.03, 95% CI = 1.01-1.05). The assessment of the model containing another interaction term (Model 3) suggested that black African immigrants were more likely to be depressed compared to non-immigrant and non-black African study participants (adjusted OR=3.72, 95% CI = 1.29-10.7). Other covariates including gender (female), non-married marital status, frequent household hunger (as proxy for financial strain) and lower educational attainment were significantly related to higher depression symptoms.

Discussion

Overall, immigrants fared better than South African-born study participants in the depression outcome. While our finding is based on significant risk symptoms rather than a depression diagnosis, it is consistent with other U.S.-based studies in that immigrants may be better off than natives with regard to certain mental health outcomes [26,27], including

depression. Possible explanations include the protective effects of retaining cultural traditions [28] and possible availability of positive coping sources [29], as reflected in the higher proportion of married status in these study participants compared to South Africans. Lastly, while there is limited data on the true prevalence of mental disorders in sub-Saharan Africa, a number of studies have suggested that depression in South Africa may be higher than in other African countries, for example Nigeria [30,31]. Thus, lower rates of depression in foreign study participants' home countries compared to South Africa may potentially explain the lower depression symptoms outcome in that group.

Our study also found that certain demographic factors, such as age, alter the relationship between immigration and depression. In particular, younger age was associated with higher depression among immigrants, while older age was associated with higher depression among South African participants. Plausible explanations may be that younger immigrants are more negatively impacted by cultural conflict [32], residential instability, and geographic relocation, providing an unstable foundation for development and, thereby, increasing the risk of psychological distress [33] and depression [34]. Research on psychological reactivity hypothesizes that older individuals may be less susceptible to stress due to having developed better coping strategies over time [35], which may explain why older immigrant participants had lower depression in our study. In addition to developmental challenges, unmet expectations may contribute to immigrant depression [36]. Despite South Africa's wealthy status among fellow African nations, its poverty, income inequality, and unemployment may mitigate the long-term hope of young immigrants.

Studies on race/ethnic disparity often hypothesize that discrimination adversely affects physical and mental health through a stress mechanism guided by the biopsychosocial model [37]. While the exact connection between stress and depression remains uncertain, sustained stress leads to elevated long-term cortisol levels, which is often linked to depression [38]. Xenophobia towards immigrant Africans in South Africa continues to be a major challenge, and we would argue that discrimination towards such ethnic minorities is a significant source of chronic stress that may explain higher levels of depression [4]. While immigrants of various race/ethnic groups generally had lower depression symptoms relative to their South African-born racial/ethnic counterparts, the black African immigrants showed the highest depression within this group; these findings underscore the need for closer attention to racial/ethnic disparities in mental health outcomes.

Gender, higher income, married status, and higher educational attainment were found to be significantly related to lower depression symptoms, similar to another study that found these socio-demographic characteristics to be protective factors against depression [39]. Many of the immigrants were older, better educated and more likely to be married, which may partially explain the finding that immigrants generally had lower depression symptom scores than South Africans. This study has several limitations including: lack of data on the age at emigration (which can affect migration and rates of depression); and lack of reliable data on the length of stay in the new host country (which can affect acculturation and depression). The cross-sectional nature of our study prevents the establishment of causal relationships; further studies utilizing a longitudinal design are needed to assess the long-term effect of migration on depression outcomes.

Conclusion

Immigrants had fewer depressive symptoms than South Africans in our study. However, the relationship between immigration and depression is often complex, and requires closer examination as there are certain demographic factors (such as age and race/ethnicity) that can contribute to variations in depression. This is relevant to the multitude of mental health challenges faced by diverse immigrants in South Africa. Our study calls for more research into the mental health challenges faced by young and ethnic minority migrants, groups that may be susceptible to disproportionately higher rates of depression. As we seek to raise awareness and improve visibility of the mental health issues confronting migrants in South Africa, we would like to highlight their needs for access to treatment and recovery support.

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Table 1

Baseline characteristics on immigrant vs. South African-born study participants.

	Immigrant/Foreign born (n=322)			South African-born (n=14,883)		
	n	%	CES-D 10	n	%	CES-D 10
Gender:						
Male	180	61.5%	18.3%	5 909	42.7 %	27.6%
Female	142	38.5%	15.2%	8 974	57.3%	36.0%
Race/Ethnicity:						
African	229	69.5%	24.2%	11 699	79.1%	35.2%
Coloured [‡]	7	0.3%	19.0%	2 151	8.6%	29.6%
Asian/Indian	4	0.5%	<0.1%	216	2.6%	22.2%
White	82	29.7%	0.8%	817	9.8%	15.2%
Age:						
15-25	61	14.8%	26.7%	4 944	33.1%	26.4%
26-34	78	36.8%	16.4%	2 450	21.3%	32.9%
35-59	126	34.9%	16.4%	5 407	34.7%	36.6%
60+	57	13.6%	10.7%	2 082	10.9%	36.0%
Education:						
<High school-level	30	5.4 %	20.7%	2 020	9.0 %	45.6%
Completed High School	178	49.3%	24.0%	9 593	62.0%	34.5%
>High school-level	114	45.3%	9.2%	3 270	29.0%	23.8%
Marital Status:						
Married	174	54.3%	14.4%	4 207	30.1%	28.5%
Living with partner	41	13.5%	23.5%	1 222	8.5%	39.6%
Widow/Widower	20	3.8%	7.0%	1 322	7.1%	47.6%
Divorced/Separated	6	1.8%	<0.1%	395	3.2%	40.4%
Never Married	81	26.6%	22.0%	7 737	51.1%	30.9%
Hunger:						
Never/Seldom	286	92.4%	17.0%	11 082	76.6%	29.7%
Sometimes	33	7.1%	19.4%	3 014	18.7%	39.6%
Often/Always	3	0.6%	4.9%	787	4.7%	46.8%
Current Residence:						
Urban informal area	13	5.3 %	6.0 %	971	11.0%	34.5%
Overall:						
Depression Symptom	322	100%	17.1%	14 883	100%	32.4%

[‡]The word 'Coloured' is the term used by Statistics South Africa. % adjusted based on post-stratification weight.

Table 2

Multilevel mixed-effects logistics models for depression outcomes

	Model 1				Model 2				Model 3			
	adjusted OR	SE	p-value	95%CI	adjusted OR	SE	p-value	95% CI	adjusted OR	SE	p-value	95% CI
Age [‡] :	0.98	<0.01	0.97	0.98	<0.01	<0.01	0.97	0.98	<0.01	<0.01	0.97	0.98
Gender:	1.49	0.07	<0.01	1.35 1.63	1.49	0.07	<0.01	1.35 1.63	1.49	0.07	<0.01	1.36 1.64
Marital status:												
Living with partner	1.44	0.15	<0.01	1.17 1.77	1.43	0.15	<0.01	1.16 1.76	1.44	0.15	<0.01	1.36 1.64
Widow/widower	1.34	0.13	<0.01	1.11 1.61	1.33	0.13	<0.01	1.11 1.61	1.34	0.13	<0.01	1.11 1.62
Divorced/separated	2.06	0.31	<0.01	1.53 2.77	2.06	0.31	<0.01	1.53 2.78	2.07	0.31	<0.01	1.54 2.79
Never married	1.24	0.09	<0.01	1.08 1.43	1.25	0.09	<0.01	1.09 1.44	1.25	0.09	<0.01	1.09 1.44
Education:												
<High school-level	0.92	0.07	0.28	0.79 1.07	0.91	0.07	0.26	0.78 1.07	0.91	0.07	0.26	0.78. 1.07
>High school-level	0.72	0.05	<0.01	0.64 0.82	0.73	0.05	<0.01	0.64 0.82	0.73	0.05	<0.01	0.64 0.83
Race/ethnicity:												
Black African	2.49	0.19	<0.01	2.14 2.90	2.47	0.19	<0.01	2.12 2.88	2.43	0.19	<0.01	2.09 2.84
Hunger:												
Never/Seldom	0.63	0.05	<0.01	0.54 0.73	0.63	0.05	<0.01	0.54 0.73	0.63	0.05	<0.01	0.54 0.73
Often/Always	1.59	0.23	<0.01	1.20 2.10	1.59	0.23	<0.01	1.20 2.10	1.59	0.23	<0.01	1.20 2.11
Living in informal urban area												
Yes	0.98	0.12	0.85	0.78 1.23	0.98	0.12	0.84	0.77 1.23	0.98	0.12	0.85	0.78 1.23
Migration (Foreign-born):												
Yes	0.53	0.10	<0.01	0.36 0.77	1.67	0.85	0.31	0.61 4.54	0.19	0.09	<0.01	0.07 0.49
Interaction term:												
Age [‡] * migration				1.03	0.01	0.02	1.01	1.05				
Interaction term:												
black African* migration								3.72	2.01	0.02	1.29	10.70

All results are adjusted using the post-stratification weights (n=15,205). Reference category: male (gender), married (marital status), high school-level completed (education), non-black African (race/ethnicity), sometimes (hunger).

[‡]Age is in descending value. OR = odds ratio. SE = standard error. CI = confidence interval.