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RESEARCH

The mental health toll of the Great Migration: a comparison of mental health outcomes among descendants of African American migrators

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Abstract

Introduction Research is beginning to examine the health outcomes of migrators of the Great Migration, a movement of up to eight million African Americans from the South to the North and West during the twentieth century. However, sparse evidence exists studying the health outcomes of the descendants of Great Migration movers. The aim for this study was to compare the lifetime prevalence of mental health disorders by migration status.

Methods We used a sample of 3183 African American adults from the National Survey of American Life (2001–2003). Using birthplaces of participants and their mothers, we classified adults as (1) Southern stayers, (2) migrators to the South, (3) migrators to the North or (4) Northern stayers. The outcomes were lifetime prevalence of any mental health, mood, anxiety, and substance use disorders. We used weighted log-Poisson regression models and adjusted for demographic characteristics and socioeconomic status.

Results Migrators to the North and Northern stayers had higher risks of any lifetime mental health, mood, anxiety, and substance use disorders compared to Southern stayers in the adjusted models. Migrators to the North and Northern stayers were more likely to report perceived discrimination.

Conclusion This study suggests that migrating families to the North may have experienced mental health adversities.

Keywords Migration · Psychiatric disorders · Perceived racial discrimination · United States · Geography

Introduction

In recent years, there has been an increasing amount of scholarship spotlighting the significance of the Great Migration. The Great Migration was a demographic movement of roughly 8 million African Americans migrating from the rural South to the urban North and West from approximately 1910 to 1980. Motivations to move varied. They included pursuing labor opportunities in the North, leaving racial segregation under Jim Crow, escaping racial violence, and reuniting with family and friends already settled Northward [1–4]. One important consequence of the Great Migration was the demographic shift of the African American population. In 1900, only 8% of African Americans lived outside the South. By the end of the Great Migration in 1980, the proportion jumped to almost half (47%) [2]. African Americans found homes in cities like Chicago, Los Angeles, and Cleveland, causing a quadrupling of the Northern urban Black population from 4 to 16% between 1940 and 1970 [1].

Migrators experienced some notable economic benefits. Movers increased their earnings by 56% moving Northward, even after accounting for positive migrant selection and the higher cost of living in the North [1]. Descendants of migrators benefited economically as well [5–7]. Research linking parental and child US Census data from 1940 to 2000 showed children of migrators to the North achieved higher high school graduation rates, higher median income, and

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lower poverty rates as adults compared to their Southern peers [5]. Using the same dataset, the authors also showed that descendants of migrators were more likely to live in wealthier and more highly educated neighborhoods as adults compared to children of Southern stayers [7].

Although migrators made some economic gains, their health outcomes may have followed a different trajectory. Among African Americans born in South Carolina, Georgia, Alabama, Mississippi, and Louisiana in 1916–1932, Black et al. [8] found that migrators had a 10% lower probability of surviving until age 75 compared to Southern non-migrators [8]. In addition, migrating families from Tennessee, South Carolina, and North Carolina who left for Northern states experienced higher rates of infant mortality in 1920 and 1930 by 9 and 5 percentage points, respectively, compared to Southern non-migrating families [9].

Despite evidence documenting the health outcomes among Great Migration movers, there is much less evidence exploring the health of their descendants. This is a noteworthy research gap because an important motivation for African Americans' migration was to improve the lives of their families and ongoing generations [10]. It is possible that children of migrators to the North had better health outcomes compared to the children of Southern non-migrating for two reasons. First, according to the healthy migrant hypothesis, migrators are more likely to be positively selected on health and socioeconomic status compared to non-migrators [11]. This may apply to their children as well. Like their parents who migrated out of the South a generation earlier, children of migrators to the North had higher socioeconomic standing compared to children of Southern stayers [5, 12]. The well-known link between socioeconomic status and health might suggest a health advantage in their descendants.

Second, migrating families were more likely to live in higher socioeconomic opportunity areas relative to the South [6, 13, 14]. Research using US federal tax returns has shown that geographic areas with the lowest opportunity for upward mobility among Black children growing up in the 1980s were disproportionately in the US Southeast [14]. Residing in upwardly mobile areas has been linked to better adult health outcomes, such as reduced risks of mortality, diabetes, and hypertension [15]. For this reason, it is possible that the socioeconomic advantage may have translated into long-term health benefits.

On the other hand, the barriers confronted in the North may have been stressors that elevated the risks of adverse health outcomes. Although migrators faced racial discrimination in the South, they also encountered discrimination pervasively in the North. One notable example of racial discrimination was housing segregation. As the Great Migration unfolded and the African American population among Northern cities grew, racial residential segregation in the North intensified [1, 16]. Containment strategies to limit the areas where residents could live included restrictive covenants, discriminatory mortgage lending, and highway construction separating urban from suburban areas [7, 17, 18]. Black families regularly encountered protests and harassment when they moved into majority White neighborhoods outside cities, paying a cost for being pioneers [18].The impact of these policies can be felt to this day, where racial residential segregation in the North and West has surpassed levels in the South. Popular Great Migration cities like Boston and Scranton became more segregated from 1990 to 2019, whereas Southern cities like Savannah and Mobile desegregated during the same period [19].

To fill in this research gap, we compared the prevalence of mental health disorders among descendants of the Great Migration in their adulthood. We used the National Survey of American Life (NSAL), a national mental health study of 6,199 participants containing an oversampling of Black American adults interviewed between 2001 and 2003 [20]. This dataset was appropriate for the period of the Great Migration. Since the average birth year of African Americans in the NSAL was around 1958, it was likely that first-generation moves out of the South occurred within the Great Migration period [2, 21].

The first objective in this study was to compare the lifetime prevalence of mental health disorders among descendants of the following groups: Southern stayers, migrators to the North, migrators to the South, and Northern stayers. The second objective was to examine the association between migration status and experiences of discrimination. Because of its known relationship to mental health outcomes in past studies within the NSAL [22–24], it is possible that discrimination may contribute to mental health outcomes. We predicted that a protective relationship between migrating Northward and lifetime mental health disorders suggests that economic opportunity outside the South may yield health benefits. On the other hand, a harmful relationship between migrating Northward and lifetime mental health disorders suggests that barriers confronted outside the South had negative health consequences.

Methods

Sample

The NSAL dataset is a cross-sectional survey conducted in the US from February 2001 to March 2003 and is one of the largest studies of the mental health well-being of Black Americans. The study emerged to document the diversity of the US Black population in terms of immigration, and to identify the extent to which social and economic disadvantage, discrimination, and stressors may have contributed to racial health gaps. The NSAL used a

multistage, national probability sampling method of non-institutionalized English-speakers aged 18 and over. Its oversampling of Black Americans resulted in 3570 African Americans, 1623 Caribbean Blacks, and 1006 non-Hispanic Whites. The respondents and the interviewers were race matched. Most interviews were conducted face-to-face using computer-assisted technology, while some (14%) were conducted by telephone [20]. For this study, we restricted the NSAL to only US-born African American people whose mothers were born in the US and who fell into one of the migration groups of interest ($n = 3183$).

Variables

Migration

The primary independent variable was migration status. We included four migration groups: (1) Southern stayers, (2) migrators to the South, (3) migrators to North, and (4) Northern stayers. In this study, "North" included Western, Midwest, and Northeastern US regions. We captured migration groups from two generations using survey questions that asked about the participants' state of birth, their mother's state of birth, and the participant's current state of residence. Southern stayers were children of Southern-born mothers, were Southern-born themselves, and resided in the South at the time of the survey. Migrators to the South were children of Northern-born mothers, were either born in the North or the South, and resided in the South at the time of the survey. Migrators to the North were children of Southern-born mothers, were either born in the North or the South, and resided in the North at the time of the survey. Northern stayers were as children of Northern-born mothers, were born in the North, and resided in the North at the time of the survey. We were unable to capture the year of parental or participants' moves. However, other historical research has noted that the typical age of moving out of the South during the Great Migration from 1950 to 1970 occurred between ages 15 and 29 [2].

Mental health disorders

The outcome was lifetime prevalence of mental health disorders. Mental health disorders followed the DSM-IV criteria and were diagnosed using the World Mental Health Composite International Diagnostic Interview in a series of structured questions in the NSAL [20]. We included four outcome measures. Lifetime prevalence of a mood disorder was defined as ever having a diagnosis of a major depressive disorder or dysthymia. Lifetime prevalence of any anxiety disorder was defined as ever having a diagnosis of a panic disorder, agoraphobia, social phobia, generalized anxiety disorder, or post-traumatic stress disorder. Lifetime substance use disorder was defined as ever having an alcohol or drug use disorder. If the respondent had at least one of the above disorders, they were classified as having any lifetime prevalence of a mental health disorder.

Racial discrimination

The everyday and the major lifetime discrimination scales were also included. The everyday discrimination scale captured the daily occurrences of unfair treatment [25]. The prompt asked: "In your day-to-day life how often have any of the following things happened to you?" and was followed by ten scenarios, such as being called names or insults and being followed around in stores. The everyday discrimination scale used in the NSAL built on the original nine-item scale with an additional question asking the frequency that participants had been followed around in a store [26]. There were six answer options ranging from never (score = 0) to almost daily (score = 5). The highest possible score on this scale was 50. The major lifetime discrimination scale captured discrete events of being treated unfairly. The prompt instructed respondents to list the frequency of nine events that occurred in their lives, such as being unfairly denied a bank loan or being unfairly fired from a job. For each event, respondents received a score ranging from 0 (indicating that they had not experienced the event) to 4 (indicating they experienced the event four or more times for each scenario). The maximum score on this scale was 36. We created binary categories for both discrimination measures: those reporting any event and those reporting none. For both the everyday and major lifetime discrimination scales, the NSAL asked follow-up questions to determine the primary reason for their discrimination experience (e.g., ancestry, ethnicity, race, skin color, gender, sexual orientation, income, age, etc.). We considered discrimination attributed to race (i.e., ancestry, ethnicity, race, and skin color).

Other covariates

Demographic and socioeconomic characteristics were captured to better adjust for potential confounders. The demographic variables were age (< 30, 30–44, 45–49, 60 +), sex (male or female), and marital status (married or partnered; separated, widowed, or divorced; and never married). The socioeconomic variables were income, education, work status, and highest parental education. The five categories of income were < $18,000; $18,000 to $31,999; $32,000 to $54,999; and $55,000 and more. Education was defined as the highest educational attainment at the time of the survey and was divided into less than high school (< 12 years), high school graduate (12 years), some college (13–15 years), and college and above (16 + years). Current work status was grouped into

employed, unemployed, or not in the labor force. Highest parental education was defined as the highest education attained by either parent. It was similarly divided into less than high school, high school graduate, some college, and college and above.

Analyses

The overall analytical strategy was to assess the differences in mental health status by migration group. First, we compared the mental health, discrimination, demographic, and socioeconomic status variables by migration group using survey weights to account for the survey sampling design. Next, we regressed the lifetime report of mental health disorders on migration status where Southern stayers served as the reference group. Finally, we compared the differences in experiences of discrimination among migration groups.

We used log-Poisson regression models to estimate the association between migration and mental health disorders in this study. We found that log-Poisson regression models were appropriate to estimate the risk ratios given the large prevalence of our study outcomes [27]. We ran two weighted regression models. The first model adjusted for the demographic variables and parent's socioeconomic status: age, sex, and parental education. The second model added participants' socioeconomic characteristics: marital status, income, education, and work status. We also used log-Poisson regression to quantify risk ratios of experiencing everyday and major lifetime discrimination by migration status, adjusting for race and sex. We used robust standard errors. All the analyses were performed using R software.

We imputed missing data for income, parental education, and everyday and lifetime discrimination attributed to race. We performed multiple imputation by chain equations using the "mice" R package, assuming that the variables were missing at random [28]. To predict the missing values, we used information from all the variables in this study and additional covariates such as receiving public assistance and financial stress. After imputing 10 datasets, we reduced the missingness to 8% for everyday racial discrimination, 6% for lifetime racial discrimination, 6% for income, and 6% for parental education.

Results

Migrators to the North and Northern stayers had higher risks of any mental health disorder as well as any mood, anxiety, and substance use disorders (Table 1). Approximately 35% of migrators to the North and 40% of Northern stayers had any lifetime mental health disorder compared to 27% of Southern stayers. Compared to 51% of Southern stayers, around 86% of Northern stayers and 62% of migrators to the North had at least one parent who graduated high school. The descriptive results also showed that migrators to the North and Northern stayers reported higher scores on everyday and lifetime discrimination.

The results of the weighted log-Poisson regressions are featured in Table 2. Migrators to the North had higher risks of having any lifetime mental health disorders in Model 2 after adjusting for demographic and socioeconomic characteristics. Compared to Southern stayers, migrators to the North had a risk ratio of 1.38 (95% CI 1.19–1.59) for any mental health disorder, 1.50 (95% CI 1.04–2.17) for any mood disorder, 1.34 (95% CI 1.06–1.69) for any anxiety disorder, and 2.01 (95% CI 1.34–3.01) for any substance use disorder. The same pattern was repeated for Northern stayers. There were increased risk ratios for any mental health disorder compared to Southern stayers. In Model 2, Northern stayers had risk ratios of 1.55 (95% CI 1.30–1.84) for any mental health disorder, 1.69 (95% CI 1.16–2.45) for any mood disorder, 1.47 (95% CI 1.08–2.00) for any anxiety disorder, and 1.83 (95% CI 1.12–2.99) for any substance use disorder. There were no differences between Southern stayers and migrators to the South in mood and anxiety disorders. However, migrators to the South had 1.72 times the risk of having a substance use disorder in their lifetime (95% CI 1.03–2.86) compared to Southern stayers.

In Table 3, we tested the association between migration status on experiences of discrimination. Migrators to the North had higher risks of reporting racial discrimination compared to Southern stayers, with an 18% higher risk of reporting at least one incident of everyday discrimination (RR 1.18 95% CI 1.15–1.21) and a 43% higher risk of reporting one major lifetime occurrence of racial discrimination (RR 1.43 95% CI 1.34–1.54). Northern stayers also had 9% higher risks (RR 1.09 95% CI 1.04–1.14) and 22% higher risk (RR 1.22 95% CI 1.09–1.37) of experiencing everyday and lifetime racial discrimination compared to Southern stayers. These risk ratios might suggest that discrimination could be one pathway exacerbating migration's role on adverse mental health outcomes among African Americans in this sample.

Discussion

This study is one of the first to examine the health outcomes among descendants of Great Migration movers. Using a nationally representative sample of African Americans, we found that descendants of migrators to the North and Northern stayers had a higher risk of any lifetime mental health disorders as well as higher risks of mood, anxiety, and substance use disorders compared to Southern stayers despite having higher lifetime socioeconomic status. We also found that children of migrators to the North and Northern stayers

Table 1 Weighted descriptive statistics by migration status ($n = 3183$)

	Southern stayers			Migrators to the South			Migrators to North			Northern stayers		
	($N = 1763$)			($N = 186$)			($N = 769$)			($N = 465$)		
	Sample *n*	Weighted %	SE	Sample *n*	Weighted %	SE	Sample *n*	Weighted %	SE	Sample *n*	Weighted %	SE
Lifetime mental health disorder												
Any disorder	462	26.7%	1.2%	59	29.3%	3.9%	273	35.2%	2.1%	188	40.1%	2.8%
Any mood disorder	169	9.1%	0.8%	26	11.5%	2.7%	107	14.1%	1.5%	90	18.8%	2.2%
Any anxiety disorder	297	16.9%	1.0%	29	14.3%	3.0%	174	21.6%	1.7%	116	25.5%	2.5%
Substance abuse	138	9.2%	0.8%	27	13.7%	2.9%	116	15.6%	1.6%	57	13.0%	1.9%
Sex												
Male	604	43.4%	1.4%	74	50.8%	4.3%	297	44.8%	2.1%	154	40.4%	2.8%
Female	1159	56.6%	1.4%	112	49.2%	4.3%	472	55.2%	2.1%	311	59.6%	2.8%
Age												
≤29	604	24.4%	1.2%	67	36.6%	4.2%	90	11.9%	1.4%	180	41.2%	2.8%
30–44	394	33.0%	1.3%	71	39.8%	4.3%	265	36.5%	2.1%	175	36.3%	2.7%
45–59	619	24.8%	1.2%	32	13.4%	2.7%	224	28.5%	1.9%	80	16.1%	2.0%
60 +	423	17.8%	1.0%	16	10.1%	2.7%	190	23.1%	1.7%	30	6.4%	1.3%
Marital status												
Married/partnered	634	43.4%	1.4%	65	42.4%	4.3%	256	41.1%	2.1%	153	36.7%	2.8%
Separated, divorced, widowed	582	26.7%	1.1%	42	18.8%	3.3%	299	33.7%	2.0%	107	19.2%	2.1%
Never married	545	29.9%	1.3%	79	38.8%	4.2%	214	25.2%	1.8%	204	44.2%	2.8%
Income												
< 18,000	732	38.8%	1.4%	49	22.2%	3.5%	243	29.6%	1.9%	141	28.4%	2.5%
18,000–31,999	397	24.0%	1.2%	42	23.1%	3.8%	168	21.8%	1.8%	81	18.3%	2.2%
32,000–54,999	317	20.8%	1.2%	47	28.2%	4.0%	161	22.3%	1.8%	110	26.7%	2.6%
55,000 +	213	16.4%	1.1%	37	26.5%	4.1%	159	26.2%	2.0%	98	26.6%	2.8%
Education												
≤11 years	538	30.5%	1.3%	34	18.6%	3.4%	162	19.7%	1.6%	89	20.2%	2.3%
12 years	705	40.0%	1.3%	71	36.1%	4.1%	275	36.3%	2.0%	159	34.3%	2.7%
13–15 years	338	19.6%	1.1%	50	29.1%	4.1%	206	27.0%	1.9%	133	29.3%	2.6%
16 + years	182	9.8%	0.8%	31	16.1%	3.1%	126	16.9%	1.6%	84	16.2%	2.1%
Work status												
Employed	1149	66.0%	1.3%	129	70.7%	3.9%	480	63.8%	2.0%	322	69.9%	2.6%
Unemployed	173	9.9%	0.8%	27	13.7%	2.9%	68	9.2%	1.2%	63	12.6%	1.8%
Not in labor force	441	24.1%	1.2%	30	15.6%	3.1%	221	27.0%	1.9%	80	17.5%	2.1%
Highest parental education												
≤11 years	807	48.7%	1.4%	36	21.0%	3.7%	281	38.2%	2.1%	63	14.0%	1.9%
12 years	565	35.5%	1.4%	68	34.2%	4.1%	289	39.2%	2.1%	184	44.8%	2.9%
13–15 years	133	8.4%	0.8%	38	20.6%	3.4%	84	11.9%	1.5%	103	22.4%	2.4%
16 + years	129	7.4%	0.7%	40	24.2%	3.9%	81	10.7%	1.4%	84	18.8%	2.4%
Racial discrimination												
Everyday racial discrimination sum (mean)		9.1	0.3		9.8	0.9		11.3	0.4		12.0	0.7

Table 1 (continued)

	Southern stayers			Migrators to the South			Migrators to North			Northern stayers		
	(*N* = 1763)			(*N* = 186)			(*N* = 769)			(*N* = 465)		
	Sample *n*	Weighted %	SE	Sample *n*	Weighted %	SE	Sample *n*	Weighted %	SE	Sample *n*	Weighted %	SE
Major lifetime racial discrimination sum (mean)		1.4	0.1		1.5	0.2		3.0	0.2		2.2	0.2

experienced higher frequencies of self-reported racial discrimination. Discrimination may contribute to the relationship between migration status and mental health outcomes.

These findings build upon emerging research on the health outcomes linked to the Great Migration. Previous research has found that moving out of the South may have been harmful for first-generation African American migrators in all-cause mortality and infant mortality [8, 9]. This paper extends these findings and is the first study, to our knowledge, to examine any health outcomes among the descendants of migrators. In addition, the results in this study aligned with literature documenting the mental health of US children of international immigrants. There is a consistent pattern among US Black Caribbean, Latino, and Asian immigrants showing that second generation immigrants have higher risks of mental health disorders compared to recently arrived immigrants [29–32]. One of the potential drivers might be the exposure to racial discrimination in their receiving contexts. Everyday discrimination has been more highly reported in second generation compared to first-generation Black Caribbean and Latino immigrants, which might heighten the development of mental health disorders [33, 34].

In addition to experiencing higher levels of racial discrimination, there are several other potential explanations for findings of worsened mental health outcomes among descendants of migrators compared to descendants of Southern stayers. Moving may itself be stressful for families, disrupting employment, schooling, routines, and participation in social organizations. Relocating may rupture social support systems [35]. African Americans in the NSAL who reported lower social support have been shown to have higher odds of reporting depression in the past year compared to those with high social support [36]. It is possible that fractured social support systems caused by migration may have elevated the risks of having a lifetime mental health disorder in this study population.

At the same time, migrators may have experienced a mismatch between the expectations and the reality of living in the North. This disenchantment has been captured in literature, such as Isabel Wilkerson's The Warmth of Other Suns [4]. Chronicling the journeys of three families moving to Los Angeles, Chicago, and New York, Wilkerson detailed the hostility they faced and resentment they felt towards with their unmoved social position despite working higher paying jobs than in the South. The potential health effects of experiencing a wide gulf between hope and reality are predicted by the theories of relative deprivation and of status inconsistency. Relative deprivation is an awareness of a lower position in the social hierarchy relative to other groups. Status inconsistency is the awareness that one's position in one social domain does not match their position in another, such as having high educational attainment but a low job

Table 2 Risk ratios of lifetime mental health disorders by migration status (compared to Southern stayers) using weighted log-poisson regressions

	Any disorder						Any mood disorder						Any anxiety disorder						Substance abuse disorder					
	Model 1			Model 2			Model 1			Model 2			Model 1			Model 2			Model 1			Model 2		
	RR	95% CI		RR	95% CI		RR	95% CI		RR	95% CI		RR	95% CI		RR	95% CI		RR	95% CI		RR	95% CI	
Migration																								
Southern stayers (ref)																								
Migrators to the South	1.13	0.87	1.46	1.16	0.91	1.49	1.23	0.68	2.23	1.14	0.58	2.23	0.88	0.53	1.46	0.94	0.57	1.55	1.44	0.89	2.33	1.72	1.03	2.86
Migrators to the North	1.35	1.16	1.57	1.38	1.19	1.59	1.60	1.14	2.25	1.50	1.04	2.17	1.32	1.04	1.67	1.34	1.06	1.69	1.70	1.15	2.52	2.01	1.34	3.01
Northern stayers	1.55	1.31	1.82	1.55	1.30	1.84	1.87	1.30	2.68	1.69	1.16	2.45	1.50	1.16	1.95	1.47	1.08	2.00	1.71	1.10	2.67	1.83	1.12	2.99
Age																								
≤29 (ref)																								
30–44	1.08	0.92	1.27	1.07	0.89	1.27	0.86	0.61	1.23	0.81	0.51	1.28	0.90	0.70	1.16	0.90	0.64	1.25	1.37	0.84	2.24	1.54	0.93	2.54
45–59	1.19	1.00	1.42	1.07	0.88	1.31	1.05	0.73	1.52	0.89	0.51	1.57	1.12	0.85	1.47	1.02	0.72	1.46	1.58	0.94	2.65	1.72	0.98	3.02
60 +	0.67	0.52	0.87	0.57	0.41	0.79	1.05	0.20	0.70	0.28	0.13	0.64	0.57	0.39	0.81	0.46	0.29	0.76	0.91	0.46	1.77	0.87	0.33	2.27
Sex (ref = female)																								
	0.99	0.87	1.13	1.09	0.96	1.24	0.68	0.47	0.96	0.73	0.50	1.06	0.61	0.47	0.79	0.69	0.53	0.90	3.04	2.26	4.10	3.72	2.76	5.01
Highest parental education																								
≤11 years (ref)																								
12 years	0.90	0.78	1.04	0.94	0.81	1.08	0.98	0.69	1.39	0.97	0.66	1.42	0.96	0.76	1.17	1.00	0.80	1.25	0.94	0.63	1.40	1.12	0.77	1.62
13–15 years	1.02	0.84	1.22	1.11	0.90	1.36	1.30	0.82	2.08	1.29	0.78	2.11	0.96	0.71	1.30	1.07	0.76	1.51	0.93	0.54	1.61	1.42	0.77	2.64
16 + years	0.79	0.63	1.00	0.89	0.71	1.12	0.77	0.47	1.26	0.75	0.40	1.39	0.75	0.53	1.08	0.88	0.59	1.30	0.85	0.53	1.38	1.24	0.71	2.15
Marital status																								
Married/partnered (ref)																								
Separated, divorced, widowed				1.30	1.10	1.53				1.64	1.06	2.54				1.22	0.92	1.61				1.20	0.78	1.85
Never married				0.98	0.82	1.17				1.15	0.69	1.92				0.98	0.71	1.35				0.85	0.56	1.30
Income																								
< 18,000 (ref)																								
18,000–31,999				0.94	0.81	1.09				0.98	0.69	1.39				0.96	0.74	1.24				0.77	0.53	1.12
32,000–54,999				0.75	0.61	0.91				1.04	0.69	1.56				0.67	0.47	0.96				0.64	0.39	1.03
55,000 +				0.74	0.56	0.98				1.16	0.62	2.15				0.74	0.45	1.20				0.38	0.18	0.79
Education																								
≤11 years (ref)																								
12 years				0.70	0.61	0.81				0.84	0.57	1.25				0.68	0.53	0.87				0.52	0.37	0.73
13–15 years				0.79	0.66	0.95				0.94	0.60	1.48				0.72	0.52	1.00				0.62	0.38	1.01
16 + years				0.83	0.66	1.03				1.12	0.69	1.81				0.80	0.54	1.18				0.30	0.14	0.65
Work status																								
Employed (ref)																								
Unemployed				1.08	0.91	1.27				1.27	0.83	1.96				1.03	0.78	1.36				0.95	0.64	1.41

Table 2 (continued)

	Any disorder				Any mood disorder				Any anxiety disorder				Substance abuse disorder			
	Model 1		Model 2		Model 1		Model 2		Model 1		Model 2		Model 1		Model 2	
	RR	95% CI	RR	95% CI	RR	95% CI	RR	95% CI	RR	95% CI	RR	95% CI	RR	95% CI	RR	95% CI
Not in labor force			0.99	0.84 1.18			1.22	0.86 1.75			1.12	0.85 1.46			0.89	0.57 1.39

status. Both experiences have been shown to induce negative emotions like frustration, hopelessness, and unfairness. Consequently, relative deprivation and status inconsistency have been linked to depression, anxiety, and suicidal ideation [37–39]. We could not explore these experiences in our study. Yet, it is possible that they may be disproportionately felt by migrators to the North, explaining the mental health patterns in the NSAL.

Moreover, it is possible that the higher mental health disorder prevalence among migrators to the North and Northern stayers may suggest that the risks were linked to the places where they resided. Of all the US cities located outside the South, the cities that were more popular destinations during the Great Migration later became places with some of the lowest upward mobility for Black families [40]. Specifically, Black residents who grew up in former Great Migration cities during the 1980s had lower upward income mobility than people in other Northern and Western cities [40]. One reason for this trend may be cities' responses to a changing racial identity. For example, cities with the highest migration rates from the South intensified segregation in housing and education after 1970 as White families fled to the suburban ring and White students withdrew from public schools [40]. These backlash responses may partially explain our findings. Lifetime socioeconomic status, racial discrimination, and neighborhood disadvantage have been documented risk factors for mental health disorders among African Americans in the NSAL [22, 23, 41]. Although we were unable to identify participants' residential cities, it is possible that migrators to the North and Northern stayers in this study experienced these chronic stressors that could have harmed their mental health.

Lastly, the higher risk of lifetime mental health disorders among migrators to the North and Northern stayers may suggest poorer coping with stressors in their receiving environment. Particularly, in response to discrimination, African Americans in the NSAL have been shown to practice high-effort coping defined as a sustained, persistent, and problem-focused strategy to control a stressful situation [42]. This phenomenon is also known as John Henryism based on folklore about an African American steel driver whose victory against a steam-powered machine cost him his life in the process [43]. John Henyrism can take the form of working longer hours, making personal sacrifices, and forgoing time off to achieve upward socioeconomic mobility [42]. However, this may have mental and physical health consequences [42, 44–46]. For instance, a study of 2137 African Americans from the NSAL who were followed up for interviews showed that John Henryism increased the risk of depression [42]. It is possible that migrators to the North and Northern stayers in our study experienced John Henryism and that it contributed to their higher risk of mental health disorders. No study to our knowledge has examined this among African

Table 3 Risk ratios of racial discrimination by migration status (compared to Southern stayers) using weighted log-poisson regressions*

	Everyday racial discrimination			Lifetime racial discrimination		
	RR	95% CI		RR	95% CI	
Migration						
Southern stayers (ref)						
Migrators to the South	1.10	1.04	1.15	1.09	0.95	1.26
Migrators to North	1.18	1.15	1.21	1.43	1.34	1.54
Northern stayers	1.09	1.04	1.14	1.22	1.09	1.37

*Adjusting for age and sex

American internal migrators, but John Henryism may offer a potential explanation.

There are some limitations worth noting while interpreting these study results. A major limitation was our inability to capture the year of the parental or participant's move. Knowing the year of moves would have provided more historical context to the time period within the Great Migration. It would have also indicated the duration of exposure to racial discrimination in the North. Longer exposure to racial discrimination across the life course has been shown to have harmful relationships to psychological distress and depression [47, 48]. Second, our socioeconomic status variables may have acted as mediators on the pathway between migration status and mental health. We only included these variables in our second regression model, but saw little differences in risk ratios compared to the first model. Third, the cross-sectional design did not allow us to assess temporal ordering of migration, discrimination, and mental health. A longitudinal design would facilitate causal mediation analyses to measure the impact of discrimination on mental health [49], though we are unaware of the presence of such datasets. Last, we did not have sufficient data to assess how discrimination varied by city as racial discrimination may not be uniform for participants living outside the South [50].

Nevertheless, this study has notable strengths. One unique study strength is the national representation of African Americans in the NSAL. Unlike other national health surveys, the oversampling of African Americans allowed us to examine differences among US internal migration groups. In addition, we showed the potential for using the NSAL to explore the health outcomes of the Great Migration. This is the first study to our knowledge to use the NSAL in this historical context. The findings encourage research on other mechanisms that may explain the study results. Some potential avenues include the protective role of social support and religious practices as well as the role of John Henryism as a risk factor for mental health disorders [42, 51, 52].

Overall, this study demonstrated that the Great Migration may have important implications for the mental health of African Americans. We found better mental health outcomes among adults who stayed in the South compared to those whose families migrated from the South among this sample. The greater reporting of discrimination among descendants of migrators to the North and Northern stayers raises the possibility that the receiving environment outside of the South might explain the higher prevalence of lifetime mental health disorders. As a next step, future research could examine how these findings apply to other racial groups internally migrating to the US North. Stronger associations between migration and mental health among Black adults may suggest the disproportionate racialized mental health harm. Overall, this paper adds to the small collection of research documenting the health outcomes of people of the Great Migration. This is a noteworthy gap given its significance to African American history and the rapid demographic changes to the African American population during the twentieth century [2, 3, 21]. We demonstrated the potential for using the NSAL to further research on this topic.

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Data availability The dataset is available to member institutions of the Inter-university Consortium for Political and Social Research, available on https://www.icpsr.umich.edu/web/ICPSR/studies/27121.

Declarations

Conflict of interest The authors have no relevant financial or non-financial interests to disclose.

Ethical approval This study used secondary analysis of a de-identified data set. Harvard University has confirmed that no ethics approval was required.

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