Journal of Immigrant and Minority Health
https://doi.org/10.1007/s10903-021-01239-y

ORIGINAL PAPER

Migration and the Health of Non-migrant Family: Findings from the Jamaica Return(ed) Migrants Study

Ezinne M. Nwankwo[1] · **Ishtar O. Govia**[2]

Accepted: 12 July 2021

Abstract
Research on the association between migration and health among nonmigrant family in Jamaica is limited. Data from the 2012 Jamaica Return(ed) Migrants Study (N = 621) and weighted regression models were used to investigate the association between migration and health among left-behind women (n = 323) and men (n = 298) in Jamaica. Compared to women whose children lived in Jamaica, women who had a child abroad reported lower odds of good mental health (OR = 0.46, 95% CI 0.21, 0.97). Men in this situation were less satisfied with their lives (b = − 2.370, p = 0.031). Women reported better physical (b = − 2.113, p = 0.010) and mental (b = − 3.119, p = 0.039) health scores when a parent, but not a grandparent, lived abroad. Men with a migrant spouse/partner reported significantly more physical illness symptoms than men whose spouse/partner lived in Jamaica (b = 3.215, p = 0.013). Migration exerts disparate health impacts on left-behind family and may disrupt social relationships.

Keywords Migration · Health · Gender · Social relations · Non-migrants · Jamaica

Introduction

Migration is a central feature of life in Jamaica [1]. At almost all junctures in the nation's history, people have moved to and from the country [1–3]. The transatlantic slave trade, the indentured labor system, and their abolishment, shaped the magnitude and direction of early interregional and international movement [1,2,4,5]. These historical events and the economic, political, and social landscape in Jamaica and globally continue to shape contemporary migration patterns [1–3]. Societal and familial influences that promote immigration as a livelihood strategy and the benefits of remittances also facilitate and encourage migration [1–3,5,6].

These interrelated factors reflect the connection between macro and micro processes and underscore migration's impact on the nation and the social roles and relationships within families [2,3,7–9]. Migration has altered Jamaica's demographic structure and has fundamentally impacted how society functions [1–3,5,7,10]. Although such movement has had profound impacts on the country and has broad implications for migrants, data on Jamaican migration is not systematically collected [1–3,5,7,10–12], and research on the health effects of migration among non-migrant relatives in Jamaica is sparse.

This paper uses the 2012 Jamaica Return(ed) Migrants Study (JRMS) to examine the health impacts of migration on non-migrant relatives and uses stratified regression models to investigate whether these effects differ by the non-migrant's gender. The paper makes three central contributions. First, Jamaican migration is underrepresented in the migration and health literature. Given the country's history of migration and the significant role that such movements play for the region, there is a need to understand how migration shapes the health of non-migrant relatives. Second, with at least one exception that focuses on non-migrant relatives in Mexico [13], studies have generally centered on a limited set of non-migrant family relations, most often children, spouses, and parents. In addition to these relationships, this paper investigates the health impacts of migration when a sibling or grandparent migrates. Third, extant studies have focused on a few health outcomes. By including multiple

✉ Ezinne M. Nwankwo
enwankwo@ucla.edu

[1] Department of Community Health Sciences, UCLA Fielding School of Public Health, 650 Charles E Young Dr. S., Box 951772, Los Angeles, CA 90095, USA

[2] Epidemiology Research Unit, Caribbean Institute for Health Research, The University of the West Indies, Mona Campus, Kingston 7, Jamaica

health (i.e., self-rated physical and mental health, depression, physical illness) and wellbeing (i.e., life satisfaction, happiness) measures, this paper presents a nuanced case of the impacts of migration on non-migrant family in Jamaica.

Background

Contemporary Migration from Jamaica

The number of people that migrate from Jamaica is higher than the number that remain in the country [1,2]. This trend has persisted since the mid-twentieth century [1]. In 2016, the Jamaican-born population abroad (approximately 1.3 million people) was almost half of the country's current population [1,2,14]. People of working age (15–64 years) and persons under 18, most likely students, are more likely to move [1]. The top contemporary destination countries for migrants are the U.S.A. and Canada [1]. Others migrate intra-regionally (to neighboring Caribbean and Latin American countries).

Many Jamaican migrants move to secure better life opportunities and to evade unfavorable economic circumstances [1,2]. These migrants hope to access steady employment, earn higher incomes, and send back remittances [1–3]. In 2014, remittances to Jamaica were USD 2.264 billion and represented about 16.1% of the national GDP in 2015 [1,2]. Other transfers occurred as non-monetary social and cultural exchanges from return migrants [1,15]. Migration from the country is highly selective, as those who are skilled and educated—having completed at least a tertiary degree—are more likely to move.

Gendered Migration Patterns and Family Structures in Jamaica

Most Jamaican households have at least one migrant family member [4]. Although men initially dominated migration flows from the island, women are migrating just as often as men, and in some cases, more frequently [1]. While this pattern may suggest an increase in absent mothers, the extended family and fictive kin provide care and support for non-migrant children [1]. Such household configurations enable family and community support in the absence of a migrant family member.

In many contexts, the family does not only encompass its nuclear members [14,16–18]. In Jamaica, and throughout the Caribbean, specific family structures have evolved to meet the needs and functions of the family and household [18,19]. These kinship networks facilitate the migration of household members (leaving children and other family members behind) who are cognizant of how it contributes to the family's betterment [16,18,20]. However, migration has the potential to disrupt these networks and can adversely impact non-migrant relatives.

In addition, the matrifocal features of Jamaican society ensure that women—often in multigenerational households—play a central caregiving role in the family and that men occupy a secondary position [21,22]. However, this does not discount the hegemonic gender norms that shape how women and men are perceived [21,23]. Women are more likely to engage in unpaid care work, including maintaining the household and caring for children and elderly family members [24]. As a result, their absence may have important implications for the welfare of non-migrant family members, increasing burdens on non-migrant girls and women.

Literature Review

Migration and the Health of Non-migrant Family

This literature review is supplemented by research from multiple countries, as studies on the health effects of migration on non-migrant relatives in Jamaica are limited. The impacts of migration on non-migrant relatives are mixed and may depend on several factors (e.g., age, gender, and socioeconomic status) that shape non-migrants' response and ability to cope when a family member migrates. Although remittances may offset potential economic impacts in some cases, the migration of a family member may be associated with the loss of social networks, stress, depression, and other health challenges that remittances may not resolve [25–27].

These effects are not straightforward. In one study, non-migrant children in Jamaica expressed mixed responses, including joy, sadness, and feelings of abandonment, to their parent's migration [28]. Several other studies have documented the impacts of parent–child separation, citing significant health, behavioral, psychological, and emotional impacts [28–30].

When an adult child migrates, however, leaving the parent in the origin country, this can impact familial ties and wellbeing [31]. Studies in Mexico find that non-migrant parents experience depression, sadness, guilt, and worry when their adult child migrates [13,31,32]. This finding is significant for non-migrant women and for parents whose children are international migrants [13,33]. Adult child separation is also impactful if parents are reliant on that family member for care and support [24,33] or when other adult children have to assume the day-to-day care responsibilities. One study conducted in South Africa found that elderly parents and grandparents must adjust to the new family composition when a child migrates [34]. These parents may also take on new roles which contributes to stress [34,35].

Spousal separation is also consequential. Among non-migrants in Mexico, the migration of a male spouse increased distress but did not significantly increase depressive symptoms [32]. Studies in both China and Nepal find that non-migrant female spouses had higher depression and stress scores and that spousal separation, including a lack of companionship, may be associated with mental health problems [36,37]. Although research on the health impacts of sibling migration is not well developed, one study found that having a migrant sibling was significantly associated with higher depressive symptoms for women, but not men [13]. It is unclear whether this may be associated with gendered roles and responsibilities that the non-migrant female sibling may undertake.

Migration may also result in positive health and wellbeing outcomes. In a study among non-migrants in rural Indonesia, women in households with a migrant relative were less likely to be underweight [38]. Other research has linked children's birthweight, mortality, and preventative care with migration [39,40]. One study assessing newborn health among non-migrants in rural Mexico found that infants born in households with an international migrant were more likely to have lower mortality rates and higher birthweights [39]. However, breastfeeding, child vaccinations, and well-child visits were lower in these households [39], pointing to the complex effects migration may have among non-migrants.

According to one report [40], migration may yield better infant health outcomes even if they live in non-migrant households. Though these benefits may vary over time, as migration becomes more common its benefits are dispersed across families and communities [40]. In countries where migration is normalized, others [25] have argued that non-migrants may be better able to cope with the socioemotional effects of a family member's migration. Pooling responses across different countries, one study found greater wellbeing and positive affect (e.g., happiness, joy), but increased stress and depression among those with relatives abroad [25]. These findings were only significant in settings with lower rates of out-migration.

These papers suggest that migration can disrupt familial ties, social networks, and societal functioning [25,40]. The reported effects among non-migrants depend on a number of factors, including the family member that lives abroad. Given women and men's social roles within their household and society, non-migrants' gender may impact their response and ability to cope with a family member's migration.

Social-Support, Non-migrant Family, and Health

Extant research on social support and health in various settings finds that women and men differ in how they use their networks [41–45]. Although women and men may have social relationships with the same people (e.g., spouse/partner, adult children), the function of these relationships varies [45]. Women and men may also generally employ different coping strategies to contend with absent family members. However, health declines may only be reported if the migrant is the person upon whom they rely for support.

Family kinship networks are more important for men's wellbeing [46]. Men commonly rely on their spouses for emotional support and may be less able to recreate close connections after a spouse migrates [46,47]. On the other hand, women are more likely to seek support from a range of sources and may not be severely impacted by the migration of a spouse or partner [44,46,47]. In some cases, women may seek out other forms of social support in the absence of their migrant spouse [48].

Familial support yields positive health and wellbeing outcomes in parent–child, marital, and sibling relationships [49]. Children in supportive parent–child relationships fare much better than their counterparts without these ties [49]. Spouses provide a wide range of mutual support, which can buffer the negative impacts of stressful life events [49]. Social support in sibling relationships yields increased mental and physical health [49,50]. When familial support is disrupted, as in the case of life transitions (e.g., divorce, death, migration), there are severe impacts on health [30,49,51].

Taken together, these studies point to a need to consider broader family structures and robust health and wellbeing measures to understand the impact of migration on non-migrant relatives. The current study fills several gaps in the literature by focusing on multiple migrant relations (i.e., child, spouse/partner, sibling, parent, or grandparent migrants), varied health and wellbeing outcomes, and differences by gender.

Current Study and Hypotheses

The goal of this study is to examine the association between migration (by children, spouses, siblings, parents, and grandparents) and health among non-migrant family in Jamaica and investigate whether these effects are modified by gender. Drawing on previous studies [30,52,53], we test five hypotheses. Separation from children, for both women and men, will be associated with negative physical and mental health (*hypothesis 1*). Separation from a spouse or partner will yield positive outcomes for women, but men with a migrant spouse or partner will experience negative health and psychological consequences (*hypothesis 2*).

Given the importance of sibling networks for women's migration decision-making and migration arrangements [17], migration of a sibling will have positive effects on women's health and wellbeing, but have no impact on men (*hypothesis 3*). Although evidence regarding the implications of parental separation as a result of migration has generally focused on younger children whose parents live

abroad, and on non-migrant elderly parents [30,52,53], we posit that due to the disruption of kinship networks, having a parent who lives abroad will be associated with negative health impacts among women and men (*hypothesis 4*). Since Jamaican society places high value on grandparents [16,18,54], we reason that the migration of grandparents will yield negative health consequences for women and men (*hypothesis 5*).

Methods

Data Source

This study uses data from the 2012 Jamaica Return(ed) Migrants Study (JRMS). The JRMS was developed to explore the relationship between migration and health and represents the four Jamaican parishes that have a high proportion of return migrants (St. Andrew and Manchester) and non-migrants (St. Ann and Kingston) [55,56]. The survey includes information about respondents' migration history, mental and physical health, and other topics [56]. Trained field staff conducted participant recruitment and interviews, and all protocols were approved by the Ethics Committee at the University Hospital of the West Indies, Mona, Jamaica [56].

A multi-stage cluster and quota sampling strategy was used to select study participants. The sampling procedures included: (1) stratification of the sample frame by deprivation quintiles, a poverty indicator that is based on consumption and basic needs in Jamaica; (2) random selection of two communities within each quintile; (3) determination of respondent quotas and; (4) selection of one adult respondent, aged 18 and older, within households until the response quota for the community was met [55,56]. Details about the JRMS and the sampling design are available online [55,56].

Analytic Sample

A total of 641 respondents, age 18 and older, completed the survey. We excluded respondents (n = 9) who were missing a response to the question "has the respondent ever travelled outside Jamaica?" This variable was necessary to determine whether the respondent was a non-migrant. We then excluded additional respondents (n = 11) who were missing a response for any of the outcome measures. We created a missing income category because close to 20% of the sample were missing a response for currency, frequency of pay, or amount—details needed to construct the income variable. Since < 5% of the sample omitted a response for other covariates (omitted responses: marital status, n = 2; employment status, n = 5; highest education level, n = 6; remittance receiving household, n = 1), we imputed with the mean or mode. This imputation method is useful for resolving a small number of missing cases [57]. The final analytic sample included 621 respondents.

Outcome Measures

Self-rated Mental Health (SRMH)

Respondents were asked, "overall, would you say that your mental health is poor, fair, good, very good, or excellent?" SRMH is a common population health survey question and is correlated with objective measures of mental health [58]. We created a binary health variable where "very good mental health" was coded as 1 and included excellent and very good, and "less than very good mental health" was coded as 0 and included good, fair, and poor. Dichotomizing the variable this way best fit the distribution of our data. We also did not lose important information since the lowest end of the scale was not frequently endorsed by participants. Moreover, women and men have been found to weigh the same health assessments similarly when asked to rate their overall health [59].

Self-rated Physical Health (SRPH)

We used current self-rated physical health, a common measure of health status [60], to operationalize overall health. Respondents were asked, "overall, would you say that your physical health is poor, fair, good, very good, or excellent?" We coded this variable like the SRMH variable.

Physical Illness Symptoms

Participants responded to a total of nine questions assessing their frequency of experiencing physical illness symptoms (i.e., headaches, coughing, shortness of breath, stiff or sore muscles, chest or heart pain, faintness or dizziness, acne or pimples, stomach aches or pains, and runny or stuffy nose) over the past two weeks. Responses, 1 = "Not at all," 2 = "Rarely," 3 = "Occasionally," 4 = "Sometimes," 5 = "Frequently," 6 = "Usually," 7 = "Everyday," were summed to create a total value for each participant. A high score denoted more illness symptoms, and poorer health. The range of possible values was between 9 and 63 and Cronbach's alpha was 0.68 for women and 0.67 for men.

Satisfaction with Life

Life satisfaction was captured with the Satisfaction with Life Scale (SWLS) [61]. This measure has shown validity and reliability in international settings and across cultures and languages [62]. Respondents indicated their agreement with five items that assessed how satisfied they were with

their life. The scale included: (a) "In most ways, my life is close to ideal;" (b) "The conditions of my life are excellent;" (c) "I am satisfied with my life;" (d) "So far, I have gotten the important things I want in life;" and (e) "If I could live my life again, I would change almost nothing." Responses ranged from 1 (strongly disagree) to 7 (strongly agree) and the Cronbach's alpha for life satisfaction was 0.81 for women and 0.84 for men. We created a total score for each participant. A high score (30–35) indicated high satisfaction with life, whereas, a low score (5–9) denoted extreme dissatisfaction [62].

Depressive Symptoms

The Center for Epidemiologic Studies Depression Scale-Revised (CESD-R) is a validated 20-item measure used to assess depression and depressive disorder in the general population [63,64]. Respondents were asked how often (0 = "Not at all," 1 = "1–2 days," 2 = "3–4 days," 3 = "5–7 days," 3 = "Nearly every day"), in the past two weeks, they had experienced feelings of sadness, loss of interest, appetite, sleep, or concentration, feelings of guilt, fatigue and lethargy, and suicidal ideation. Scores for the CESD-R have a range of 0–60 with higher scores denoting greater depression symptoms [63,64]. The Cronbach's alpha for CESD-R was 0.89 for women and 0.90 for men.

Happiness

Respondents were asked: "Taking all things together, how would you say things are these days—would you say that you are very happy, pretty happy, or not too happy these days?" We combined "very happy" and "pretty happy" as "happy" and "not too happy" and "not happy at all" as "not happy."

Predictor Variable(s)

The migrant relative variables were coded as yes or no and were based on where the respondent's relative lived in relation to the respondent. Respondents were asked the following questions about children, spouses, siblings, parents, and grandparents: "where does s/he live? Is it in the same… household, community, parish, country, outside Jamaica?" If the relative in question lived outside of Jamaica, the respondent was coded as having that relative abroad. Responses were coded as no, if the relative lived in the same household, community, or parish or if respondents did not have the relative in question. For example, if respondents had at least one child who lived outside of Jamaica, they were coded as having a child abroad. All variables to denote where the respondent's relative lived at the time of the survey were coded similarly.

Covariates

Moderating Variable

(a) Sex was a binary variable and was reported as male or female.

Migration-Related Predictors

(a) Respondents were asked whether "the respondent's household or any of its members received remittances from a relative or close friend within the past 12 months?" Responses were coded as 0 if "no" and 1 if "yes." (b) Number of trips abroad was based on responses to a series of questions. With the first question, "has the respondent ever travelled outside Jamaica?" "no" was coded as 0 and "yes" as 1. Respondents were then asked about their migration history, which included a series of questions that corresponded to their five most recent trips. If respondents had information about their length of stay for their first trip outside Jamaica and did not respond to subsequent questions about other trips abroad, we coded them as having "1 trip." If they had responses for at least one other trip we coded them as "2 + trips." Those that had not travelled outside of Jamaica were coded as "none."

Personal Experiences

(a) Respondents were asked "have you ever experienced a trauma?" "no" was coded as 0 and "yes" as 1. We adjusted for trauma because trauma is associated with varied physical and mental health outcomes [65,66] and in bivariate analyses, trauma was associated ($p < 0.05$) with all six health and wellbeing outcomes.

Demographic Variables

Age was a continuous variable, marital status was included as married or not married, and parish included Kingston, Manchester, St. Andrew, and St. Ann.

Socioeconomic Variables

We followed methods in the JRMS project report for coding socioeconomic variables [56]. (a) Respondents were asked to select the highest educational institution in which they were previously or were currently enrolled. Education was based on ten categories and grouped as basic/elementary education, secondary education, and higher education. (b) Occupational status was based on thirteen options and was

grouped as working and not working. (c) Income was an open-ended question. Respondents were asked, "on average, what is your weekly, monthly, or annual income?" and asked about the amount and currency of their income. We converted weekly and annual income to a monthly income variable and include income as < $18,000, $18,000–$34,999, $35,000 + , ≥ $35,000, and missing. Foreign currency was converted to Jamaican Dollars (JMD) using the Bank of Jamaica's average foreign exchange counter rates for the data collection period [56,67]; one hundred Jamaican dollars ($100 JMD) is equivalent to $7.20 U.S. Dollars [68].

Statistical Analysis

Descriptive and bivariate analyses were conducted to examine means, frequencies (Table 1), and associations. We fit stratified weighted ordinary least squares and logistic regression models to assess the relationship between having a family member abroad and multiple health and wellbeing outcomes, net of migration, personal, demographic, and socioeconomic covariates. We assessed model fit in unweighted models and all models were well calibrated. We conducted all analyses with Stata version 15 [69] and used the svy, subpop command to account for the complex survey design; statistical significance was set at the $p < 0.05$ level. This study received exemption status from the Institutional Review Board (IRB) at the University of the First Author (IRB #19-001144).

Results

Characteristics of the Study Sample

Table 1 presents the characteristics of the study sample (N = 621, unweighted), including tests for significant differences by gender. There were more women (n = 323, 41%, weighted) than men (n = 298, 59%) in the study. The mean age of participants was 43.69 years (SD = 17.74) and did not significantly differ between women (M = 43.72, SD = 17.97) and men (M = 43.66, SD = 17.51). The majority (78%) of study participants were not married. Although most respondents lived in St. Andrew (45%), there where notable differences in where women and men lived ($p = 0.000$).

There were statistically significant differences between women's and men's employment status ($p = 0.003$) and educational attainment ($p = 0.037$). More than half (59%) of the study sample were working at the time they responded, and had completed secondary education or higher (71%); though more women (38%) than men (31%) had completed higher education. Almost a third (31%) of the respondents earned incomes at or above $35,000 JMD/month. Though women tended to earn more than men, these differences were marginal ($p = 0.095$).

Though more women (52%) than men (45%) reported experiencing trauma, there were no significant gender differences ($p = 0.112$). There were notable differences between women (60%) and men's (55%) receipt of remittances ($p = 0.025$). Seventy-five percent of the sample had taken at least one trip abroad and women and men had travelled at a similar rate (n = 74% and 77%, respectively $p = 0.647$). Of the 73% of study participants who reported having at least one close relative who lived abroad, over 50% reported that relative to be a sibling. Others were more likely to have children (26%) or parents (23%) that lived abroad than grandparents (11%) or spouses/partners (8%). There were no significant gender differences.

There were significant differences between women's and men's self-rated mental ($p = 0.010$) and physical health ($p = 0.001$). Although, more men (59%) than women (51%) reported their mental health as excellent or very good, more women (72%) than men (59%) were in less than excellent or very good physical health. There were also statistically significant differences ($p = 0.002$) in the number of physical illness symptoms that men (M = 14.25, SD = 5.82) and women reported (M = 15.80, SD = 6.59), but no significant differences were noted between men's and women's life satisfaction (M = 21.60, SD = 7.39) and depression scores (M = 8.80, SD = 10.04).

Health and Wellbeing Among Study Participants

Table 2 presents the regression results predicting health and wellbeing among women (see Supplemental Table 1 for results for the full sample). Net of all predictors, women who had a child abroad were less likely to report very good mental health (OR = 0.46, 95% CI 0.21, 0.97), relative to women without a migrant child. Women experienced marginally significant higher odds of very good physical health if they had a spouse or partner who lived abroad (OR = 2.50, 95% CI 0.90, 6.94). Women who had a migrant parent were significantly more likely to have fewer physical illness symptoms (b = − 2.113, $p = 0.010$) and lower depression scores (b = − 3.119, $p = 0.039$) than their counterparts with parents who lived in Jamaica. Having a sibling abroad was not significantly associated with any outcomes. Having a migrant grandparent was statistically significantly associated with lower odds of very good self-rated physical health (OR = 0.20, 95% CI 0.06, 0.68) but was only marginally associated with very good self-rated mental health (OR = 0.38, 95% CI 0.13, 1.07). We also conducted sensitivity analyses, with controls for physical health and mental health in respective models. In these analyses, only self-rated mental health among women changed (i.e., becoming

Table 1 Sample characteristics, Jamaica Return(ed) Migrants Study (N = 621)

Variables	Total sample (N = 621)	Women (n = 323)	Men (n = 298)	p value[a]
	n (%)	n (%)	n (%)	
Demographics				
Age [M (SD)]	43.69 (17.74)	43.72 (17.97)	43.66 (17.51)	0.861
Sex				
Male	298 (59)			
Female	323 (41)			
Marital status				0.091
Not married	465 (78)	251 (79)	214 (77)	
Married	156 (23)	72 (21)	84 (23)	
Parish				0.000
Kingston	208 (35)	127 (23)	81 (43)	
Manchester	184 (17)	68 (17)	116 (17)	
St. Andrew	179 (45)	102 (57)	77 (37)	
St. Ann	50 (3)	26 (3)	24 (4)	
Socioeconomic status				
Employment status				0.003
Working	352 (59)	165 (55)	187 (61)	
Not working	269 (42)	158 (46)	111 (39)	
Highest education level				0.037
Basic/elementary education	230 (30)	106 (28)	124 (31)	
Secondary education	191 (37)	100 (34)	91 (38)	
Higher education	200 (34)	117 (38)	83 (31)	
Family income				0.095
< $18,000 JMD	128 (20)	60 (17)	68 (21)	
$18,000–$34,999 JMD	185 (30)	110 (34)	75 (27)	
$35,000 + JMD	187 (31)	95 (33)	92 (30)	
Missing income	121 (19)	58 (16)	63 (22)	
Personal experiences				
Trauma	304 (48)	168 (52)	136 (45)	0.112
Migration-related				
Remittance receiving household	362 (57)	202 (60)	160 (55)	0.025
Number of trips abroad				0.647
None	146 (25)	80 (27)	66 (24)	
1 Trip	203 (34)	101 (32)	102 (36)	
2 + Trips	272 (41)	142 (42)	130 (41)	
Migrant relative abroad				
Child	183 (26)	89 (23)	94 (29)	0.276
Spouse/partner	44 (8)	23 (8)	21 (8)	0.971
Sibling	355 (56)	186 (57)	169 (55)	0.826
Parent	121 (23)	63 (21)	58 (25)	0.990
Grandparent	61 (11)	29 (9)	32 (12)	0.462
Health and wellbeing outcomes				
Self-rated mental health				0.010
Excellent/very good	327 (56)	154 (51)	125 (59)	
Good/fair/poor	294 (44)	169 (49)	173 (41)	
Self-rated physical health				0.001
Excellent/very good	202 (36)	86 (28)	116 (41)	
Good/fair/poor	419 (64)	237 (72)	182 (59)	
Physical illness symptoms [M (SD)]	15.06 (6.28)	15.8 (6.59)	14.25 (5.82)	0.002

Table 1 (continued)

Variables	Total sample (N = 621)	Women (n = 323)	Men (n = 298)	p value[a]
	n (%)	n (%)	n (%)	
Happiness				0.617
Happy	398 (63)	210 (65)	188 (62)	
Not happy	223 (37)	113 (35)	110 (38)	
SWLS [M (SD)]	21.6 (7.39)	21.67 (7.11)	21.53 (7.7)	0.816
CESDR [M (SD)]	8.8 (10.04)	8.86 (9.75)	8.73 (10.36)	0.873

Weighted percents are presented

Data Source: Jamaica Return(ed) Migrants Study, 2012

M mean; *SD* standard deviation; *SWLS* satisfaction with life; *CESDR* Center for Epidemiologic Studies Depression Scale Revised; *JMD* Jamaican Dollars

[a]Tests for significance were calculated using the chi-square test for proportions and t-test for means

less negative and losing significance) (see Supplemental Table 2).

The regression results predicting health and wellbeing among men are presented in Table 3. Men who had a child abroad experienced lower odds of very good self-rated physical health (OR = 0.46, 95% CI 0.20, 1.06). However, these results were only marginally significant. Men who had a child abroad were more likely to score at least two points lower on the satisfaction with life scale (b = − 2.370, p = 0.031) than men who were not in this situation. Having a migrant spouse was statistically significantly associated with reporting more physical illness symptoms (b = 3.215, p = 0.013) and was marginally associated with happiness (OR = 0.34, 95% CI 0.11, 1.09). Having a sibling, parent, or grandparent abroad was not significantly associated with any outcomes.

Discussion

This study investigated the association between migration and health among non-migrant relatives in Jamaica. Our results reveal that migration not only wields varied impacts on the health and wellbeing of non-migrant kin but that these effects depend on gender and are contingent on family ties. That is, whether the migrant is a child, spouse/partner, sibling, parent, or grandparent. Table 4 summarizes the predicted changes to health and wellbeing when a family member migrates.

We find that having a child abroad is associated with lower odds of very good mental health for mothers and lower life satisfaction for fathers. This result partially supports our *first hypothesis* and is consistent with reports of worsening health and wellbeing outcomes among non-migrant parents [13,30,52,53]. One possible explanation for this finding is that even in settings with formal welfare systems, parents are likely to rely on their adult children to provide varying forms of support [70]. While an adult child who lives abroad might send remittances, providing economic support to non-migrant family members, non-migrant parents may desire their children's physical presence [53,71]. Other studies suggest that having a child abroad is associated with happiness [31,33]. However, we did not find evidence of this. Additional research is needed to understand the circumstances that are associated with wellbeing outcomes among non-migrant parents, especially the differing impacts for women and men.

Our finding that men with a migrant spouse/partner report more physical illness symptoms than women in this situation supports our *second hypothesis* but deviates from extant reports of worsening health outcomes among non-migrant women [48,72–74]. Several factors might explain men's reports of poorer physical health. Importantly, women and men's social roles differ across societies and reflect the contexts in which they live. While some scholars find that migration improves women's autonomy [75], others indicate that it exacerbates gender inequalities [76]. In this context, women's migration may reconfigure the household and disrupt social relations within the family, leaving their spouse/partner without a key source of support. Such support might include, but are not limited to, practical reminders for and management of medical or physical health care, as women in the household are more likely to encourage healthy behaviors [77].

Although we posited that sibling migration would positively affect women's health and wellbeing but have no impact on men in *hypothesis three*, in all specified models, having a migrant sibling did not significantly impact health and wellbeing outcomes. This result diverges from research among non-migrants in Mexico that finds a significant association between sibling migration and higher depressive scores among women and lower scores among men [13]. In a setting like Jamaica, where migration is the norm, it is possible that having a sibling abroad might not impact familial

Table 2 Regression results predicting health and wellbeing among women in Jamaica, Jamaica Return(ed) Migrants Study

Predictor variables	Self-rated mental health		Self-rated physical health		Physical illness symptoms			SWLS			CESDR			Happiness	
	OR	95% CI	OR	95% CI	B	SE	p value	B	SE	p value	B	SE	p value	OR	95% CI
Migrant relative abroad[a]															
Child	0.46*	0.21, 0.97	0.48	0.18, 1.25	1.311	0.882	0.139	0.018	1.111	0.987	0.708	1.510	0.640	0.86	0.40, 1.86
Spouse/partner	0.95	0.35, 2.57	2.50+	0.90, 6.94	− 0.472	1.290	0.715	1.834	1.911	0.339	− 0.322	1.964	0.870	0.97	0.39, 2.38
Sibling	0.80	0.42, 1.52	1.24	0.71, 2.17	0.126	0.754	0.868	− 0.324	0.914	0.724	− 0.831	1.425	0.561	0.66	0.38, 1.17
Parent	1.17	0.58, 2.35	1.91	0.85, 4.33	− 2.113**	0.805	0.010	− 0.550	1.231	0.656	− 3.119*	1.497	0.039	1.35	0.64, 2.83
Grandparent	0.38+	0.13, 1.07	0.20*	0.06, 0.68	2.562+	1.455	0.081	0.832	1.630	0.611	1.535	2.198	0.486	0.84	0.26, 2.68
Migration-related															
Remittances															
No (ref)															
Yes	1.87+	0.97, 3.60	0.87	0.42, 1.82	0.468	0.693	0.500	0.279	0.983	0.777	− 1.747	1.356	0.200	1.74	0.85, 3.57
Number of trips abroad															
None (ref)															
1 Trip	1.43	0.68, 2.99	1.23	0.57, 2.66	− 0.801	1.027	0.437	0.865	1.278	0.500	− 1.229	1.602	0.444	1.90+	0.96, 3.79
2 + Trips	1.20	0.48, 3.02	1.16	0.44, 3.03	0.224	1.145	0.845	0.845	1.147	0.463	− 1.033	1.979	0.603	2.00+	0.94, 4.26
Demographics															
Age (continuous)	0.98	0.96, 1.01	0.98	0.95, 1.01	− 0.080**	0.030	0.008	0.065+	0.035	0.064	− 0.128*	0.052	0.016	1.02	0.99, 1.04
Marital status															
Not married	0.83	0.40, 1.70	1.07	0.50, 2.31	0.817	0.981	0.407	− 1.285	1.124	0.255	2.271+	1.227	0.066	0.65	0.28, 1.50
Married (ref)															
Parish															
Kingston (ref)															
Manchester	1.09	0.50, 2.38	0.90	0.41, 1.96	3.043**	0.946	0.002	2.063+	1.216	0.092	− 0.241	1.357	0.859	1.19	0.60, 2.35
St. Andrew	1.16	0.63, 2.11	0.90	0.45, 1.79	− 0.459	0.724	0.527	1.685+	0.961	0.082	− 0.797	1.315	0.546	1.53	0.85, 2.76
St. Ann	0.86	0.35, 2.14	0.79	0.30, 2.11	2.944	2.180	0.179	0.623	1.230	0.614	1.634	2.708	0.547	0.67	0.28, 1.61
Socioeconomic status															
Employment status															
Working (ref)															
Not working	0.92	0.54, 1.57	1.14	0.62, 2.09	2.035**	0.679	0.003	− 0.175	0.891	0.844	2.400+	1.417	0.093	0.76	0.41, 1.42
Highest education level															
Primary/elementary (ref)															
Secondary education	1.02	0.50, 2.08	1.38	0.56, 3.40	− 1.065	1.006	0.292	1.992+	1.080	0.067	− 0.556	1.856	0.765	1.39	0.66, 2.92
Higher education	0.80	0.36, 1.78	0.68	0.31, 1.46	− 0.596	0.919	0.518	0.241	1.419	0.866	− 0.133	1.727	0.939	0.85	0.38, 1.92
Family income															
< $18,000 JMD	0.85	0.37, 1.91	1.29	0.47, 3.50	0.187	1.057	0.859	− 0.569	1.392	0.684	− 1.274	1.900	0.504	0.49	0.20, 1.23
$18,000–$34,999 JMD	0.44*	0.20, 0.95	0.79	0.37, 1.72	0.727	0.965	0.453	− 1.370	1.089	0.211	3.257*	1.614	0.046	0.31**	0.15, 0.64

Table 2 (continued)

Predictor variables	Self-rated mental health		Self-rated physical health		Physical illness symptoms			SWLS			CESDR			Happiness	
	OR	95% CI	OR	95% CI	B	SE	p value	B	SE	p value	B	SE	p value	OR	95% CI
$35,000 + JMD (ref)															
Missing income	1.07	0.46, 2.49	0.92	0.29, 2.88	− 0.371	1.053	0.725	− 1.554	1.482	0.296	− 1.858	1.707	0.278	0.36*	0.14, 0.90
Personal experiences															
Trauma[a]															
No (ref)															
Yes	0.76	0.45, 1.27	0.88	0.47, 1.66	0.527	0.716	0.463	− 1.295	0.959	0.180	2.883*	1.195	0.017	0.65	0.35, 1.21
Constant	3.18+	0.99, 10.22	0.78	0.15, 3.98	16.657***	2.132	0.000	18.685***	2.380	0.000	12.569***	2.878	0.000	1.63	0.39, 6.75
R-squared					0.143			0.076+			0.130				
N. of cases	337		337		337			337			337			337	

Results are based on weighted estimates

Data Source: Jamaica Return(ed) Migrants Study, 2012

SWLS satisfaction with life; *CESDR* Center for Epidemiologic Studies Depression Scale Revised; *OR* odds ratio; *CI* confidence interval

+p < 0.10

*p < 0.05

**p < 0.01

***p < 0.001

[a]Migrant relative predictors (0 = No; 1 = Yes)

Table 3 Regression results predicting health and wellbeing among men in Jamaica, Jamaica Return(ed) Migrants Study

Predictor variables	Self-rated mental health		Self-rated physical health		Physical illness symptoms			SWLS			CESDR			Happiness	
	OR	95% CI	OR	95% CI	B	SE	p value	B	SE	p value	B	SE	p value	OR	95% CI
Migrant relative abroad[a]															
Child	1.14	0.54, 2.41	0.46+	0.20, 1.06	− 0.848	0.724	0.244	− 2.370*	1.086	0.031	− 0.185	1.615	0.909	1.28	0.53, 3.10
Spouse/partner	0.43	0.14, 1.28	0.50	0.11, 2.30	3.215*	1.272	0.013	− 0.223	1.972	0.910	5.323	3.409	0.121	0.34+	0.11, 1.09
Sibling	1.05	0.54, 2.03	0.69	0.38, 1.26	0.234	0.780	0.764	− 0.361	0.913	0.693	− 0.353	1.354	0.795	1.20	0.63, 2.29
Parent	1.97	0.84, 4.62	1.07	0.48, 2.38	− 0.327	0.820	0.691	− 0.280	1.344	0.835	− 0.700	1.406	0.620	0.78	0.33, 1.89
Grandparent	1.04	0.35, 3.03	1.82	0.63, 5.21	− 0.055	0.936	0.953	0.328	1.486	0.826	− 1.629	2.037	0.426	1.05	0.35, 3.13
Migration-related															
Remittances															
Yes	1.32	0.67, 2.58	1.03	0.57, 1.84	− 0.046	0.691	0.947	1.921+	1.051	0.070	− 0.05	1.412	0.972	1.01	0.47, 2.20
Number of trips abroad															
None (ref)															
1 Trip	0.44*	0.20, 0.97	1.10	0.48, 2.55	− 1.193	0.869	0.173	1.744	1.382	0.209	− 0.693	1.537	0.653	0.77	0.33, 1.77
2 + Trips	0.41*	0.19, 0.87	1.35	0.62, 2.93	0.394	0.922	0.669	0.711	1.346	0.598	0.393	1.661	0.813	1.29	0.60, 2.78
Demographics															
Age (continuous)	1.01	0.99, 1.04	1.00	0.98, 1.03	− 0.007	0.028	0.817	− 0.011	0.039	0.778	− 0.043	0.051	0.398	1.01	0.98, 1.04
Marital status															
Not married	0.76	0.41, 1.42	1.17	0.55, 2.52	1.949*	0.761	0.012	− 4.413***	1.093	0.000	2.423+	1.351	0.076	0.84	0.40, 1.74
Married (ref)															
Parish															
Kingston (ref)															
Manchester	1.12	0.61, 2.05	0.70	0.36, 1.37	2.069*	0.814	0.012	0.685	1.242	0.582	4.722**	1.786	0.009	1.12	0.47, 2.63
St. Andrew	1.95+	0.94, 4.06	0.51+	0.24, 1.09	− 0.451	0.720	0.532	− 0.826	1.180	0.485	1.458	1.644	0.377	1.12	0.50, 2.52
St. Ann	2.96+	0.97, 8.96	1.09	0.27, 4.40	− 0.818	1.073	0.447	− 1.922	1.233	0.122	3.069	2.935	0.298	0.55	0.17, 1.75
Socioeconomic status															
Employment status															
Working (ref)															
Not working	1.29	0.69, 2.42	1.28	0.61, 2.66	0.854	0.677	0.210	0.676	1.229	0.583	4.312**	1.547	0.006	0.98	0.53, 1.82
Highest education level															
Primary/elementary (ref)															
Secondary education	1.24	0.54, 2.83	1.14	0.53, 2.46	− 0.581	0.917	0.528	− 1.288	1.501	0.393	− 2.504	1.537	0.106	1.18	0.41, 3.37
Higher education	1.67	0.68, 4.09	0.83	0.39, 1.80	− 0.345	0.877	0.694	0.962	1.394	0.492	− 3.294*	1.658	0.050	1.63	0.61, 4.36
Family income															
< $18,000 JMD	0.74	0.30, 1.83	0.40+	0.15, 1.06	− 0.091	1.043	0.931	− 1.810	1.624	0.268	− 3.160	2.088	0.133	0.89	0.37, 2.10
$18,000–$34,999 JMD	0.58	0.25, 1.34	0.44*	0.20, 0.95	− 0.649	0.791	0.413	− 0.769	1.568	0.625	− 3.328*	1.659	0.047	3.11*	1.23, 7.87
$35,000 + JMD (ref)															

Table 3 (continued)

Predictor variables	Self-rated mental health		Self-rated physical health		Physical illness symptoms			SWLS			CESDR			Happiness	
	OR	95% CI	OR	95% CI	B	SE	p value	B	SE	p value	B	SE	p value	OR	95% CI
Missing income	0.94	0.38, 2.36	0.88	0.38, 2.02	− 1.625+	0.825	0.051	− 1.27	1.400	0.366	− 1.582	1.951	0.419	0.77	0.30, 1.95
Personal experiences															
Trauma[a]															
No (ref)															
Yes	0.68	0.37, 1.26	0.66	0.36, 1.19	1.058	0.652	0.108	− 1.820+	0.984	0.067	4.719***	1.362	0.001	0.56+	0.29, 1.07
Constant	1.22	0.26, 5.77	1.46	0.28, 7.72	12.661***	2.045	0.000	25.690***	2.803	0.000	6.611**	2.285	0.005	0.96	0.13, 7.38
R-squared					0.099			0.133			0.156				
N. of cases	304		304		304			304			304			304	

Results are based on weighted estimates

Data Source: Jamaica Return(ed) Migrants Study, 2010

SWLS satisfaction with life; *CESDR* Center for Epidemiologic Studies Depression Scale Revised; *OR* odds ratio; *CI* confidence interval

+p < 0.10

*p < 0.05

**p < 0.01

***p < 0.001

[a]Migrant relative predictors (0 = No; 1 = Yes)

Table 4 Summary of results predicting the association between migration and health and wellbeing among adults in Jamaica, Jamaica Return(ed) Migrants Study

Migrant relative abroad[a]	Women							Men						
	Self-rated mental health	Self-rated physical health	Physical illness symptoms	SWLS	CESDR	Happiness	Self-rated mental health	Self-rated physical health	Physical illness symptoms	SWLS	CESDR	Happiness
Child	*	–	–	–	–	–	–	+	–	*	–	–
Spouse/partner	–	+	–	–	–	–	–	–	*	–	–	+
Sibling	–	–	–	–	–	–	–	–	–	–	–	–
Parent	–	–	**	–	*	–	–	–	–	–	–	–
Grandparent	+	*	+	–	–	–	–	–	–	–	–	–

Results are based on weighted estimates after adjusting for covariates

Data Source: Jamaica Return(ed) Migrants Study, 2012

SWLS satisfaction with life; *CESDR* Center for Epidemiologic Studies Depression Scale Revised; *OR* odds ratio; *CI* confidence interval

+$p < 0.10$

*$p < 0.05$

**$p < 0.01$,

–Not significantly associated with the outcome

[a]Migrant relative predictors (0 = No; 1 = Yes)

relations or that siblings are not significant contributors to non-migrants' health. Migrants rely on kinship networks in deciding to migrate and may work in concert with non-migrant siblings to make such decisions or to facilitate the care of non-migrant relatives in their absence. Furthermore, in families with multiple siblings, there are varying degrees of closeness, such that the migrant sibling may not be the one to whom the non-migrant sibling feels closest.

We hypothesized (*hypothesis four*) negative health impacts among women and men who had migrant parents but found that women reported health benefits that included significantly fewer physical illness symptoms and lower depression scores. This result may point to the greater role that women play in this context and the strains that unpaid care work places on non-migrant women when parents live in the same country [24]. However, in partial support of our *fifth hypothesis*, having a grandparent abroad resulted in a lower likelihood of very good physical health, but only among women. Throughout the Caribbean, grandparents contribute to caring for their grandchildren, supporting their upbringing, and supporting family members [16]. The presence of grandparents who are available to care for grandchildren likely enables parents, especially women, to migrate [53]. Such moves become less likely if the grandparent lives abroad.

In this study, women were more likely to report more significant and marginally significant changes to their health and wellbeing when family members lived abroad. This was not the case for men who only reported such changes when a child or spouse/partner lived abroad. Although the impacts of migration may be mitigated by the transnational ties (e.g. visits, phone calls, social media connections) that migrants maintain [78], the benefit of these linkages may depend on the reason for migration, the frequency and strength of contact, and the extent to which migrants maintain their obligations (e.g., sending remittances) to non-migrant relatives [79]. Future research may consider how transnational ties buffer the health impacts of migration among non-migrant relatives and consider how the roles that women and men play in familial responsibilities impact the association between migration and health among non-migrants.

Limitations

There are some limitations to consider when interpreting these findings. These results might be a distinctive case and may not represent the situation in other countries. Moreover, we used cross-sectional quantitative data and such studies preclude causal claims and limit capturing the complexity of family dynamics that vary over time and day-to-day. We relied on self-reported measures for our health outcomes. While these measures have utility in varying contexts, they are also prone to biases such as the respondent's willingness

to be honest, their ability to be introspective, and their interpretation of the questions that constitute the measures. Although assessing the content or quality of these relationships was not the aim of this study, unmeasured variables like one's relationship with the migrating family member, or if non-migrants visited a family member during trips abroad, may influence these outcomes. Future studies should consider the structural and functional dimensions of migrants' networks and support relationships with respect to diverse health measures.

Paradoxically, while some migrants move to contend with conditions in their home country, their migration may worsen health outcomes for non-migrant family members. Future studies may aim to disentangle these relationships. Finally, whether observed effects are short-or long-term consequences deserve some attention. Changes and disadvantages as a result of migration occur over time and future research would do well to employ longitudinal studies that capture non-migrant family members' health before migrants depart, during their stay in the destination country, and after they return [30,48]. Considering factors like age, especially for children who live abroad, reason for migration, frequency of contact with the migrant relative, and care responsibilities within a family could further clarify these findings.

This paper extends the literature on migration and the health of non-migrants by centering on Jamaican migration, a less examined case. In focusing on the typical relations often investigated in the migration literature and those that are less common, we provide evidence that the impact of migration on non-migrants' health and wellbeing depends on gender and the migrant relative. This clarification is important in settings where the household composition extends beyond the nuclear family. By examining multiple outcome measures, we present a robust picture of the impacts on subjective health and wellbeing. Generalizing these impacts would only be partially accurate, as migration is associated with different physical and psychological responses among non-migrant women and men.

Conclusions

Overall, we provide evidence of disparate health and wellbeing outcomes by gender and consider the ways migration may affect familial relationships in Jamaica. There are non-material costs associated with a relative's migration and such moves may disrupt social relationships and consequently impact health. Although governments often center on migrants' economic and social remittances for the country's development, they have a role to play to ensure the health of their non-migrant population.

Non-migrants are a part of the migration continuum and should be included in migration and health policies. Since migration may impact the social relationships that migrants and their families rely upon and may contribute to disparate health outcomes among women and men, gender-sensitive policies and programs are crucial. Support programs that assist non-migrant relatives may help safeguard the health of families and communities in Jamaica. Such approaches must also reflect the dynamic nature of movement throughout the region.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s10903-021-01239-y.

Acknowledgements Ezinne Nwankwo was supported by the UCLA Graduate Research Mentorship award, and the Robert Wood Johnson Foundation's Health Policy Research Scholars program. Ishtar Govia received support for data collection from a University of the West Indies Mona Principal's New Initiative Grant and a Society for Community Research and Action Mini-Grant. The content is solely the responsibility of the authors and does not represent the official views of any of the funders. We thank Jennifer K. McGee-Avila, Shannon Frattaroli, and the anonymous reviewers whose feedback helped improve this manuscript.

References

1. Thomas-Hope E, Martin-Johnson S, Lawrence Z. Migration in Jamaica: a country profile 2018. 2018. https://caribbeanmigration.org/sites/default/files/repository/migration_in_jamaica_-_profile_2018.pdf. Accessed 28 Jan 2019.
2. International Organization for Migration. Migration in the Caribbean: current trends, opportunities and challenges. Working Papers on Migration. 2017. https://reliefweb.int/report/haiti/migration-caribbean-current-trends-opportunities-and-challenges. Accessed 11 Jan 2020.
3. Thomas-Hope EM. Freedom and constraint in Caribbean migration and diaspora. Miami, FL: Ian Randle Publishers; 2009.
4. Glennie A, Chappell L. Jamaica: from diverse beginning to diaspora in the developed world. 2010. https://www.migrationpolicy.org/article/jamaica-diverse-beginning-diaspora-developed-world. Accessed 19 Oct 2019.
5. Thomas-Hope E, Kirton C, Knight P, Mortley N, Urquhart M. Development on the move: measuring and optimising migration's economic and social impacts. A study of migration's impacts on development in Jamaica and how policy might respond. 2009. https://www.ippr.org/files/images/media/files/publication/2011/05/dotm_jamaica_1699.pdf. Accessed 27 Jan 2019.
6. Stark O, Bloom DE. The new economics of labor migration. Am Econ Rev. 1985;75(2):173–8.
7. Murphy GT, MacKenzie A, Waysome B, Guy-Walker J, Palmer R, Rose AE, Rigby J, Labonté R, Bourgeault IL. A mixed-methods study of health worker migration from Jamaica. Hum Resour Health. 2016;14(1):36.
8. Smith A, Lalonde RN, Johnson S. Serial migration and its implications for the parent-child relationship: a retrospective analysis of the experiences of the children of Caribbean immigrants. Cult Divers Ethn Minor Psychol. 2004;10(2):107.
9. Lashley M. The unrecognized social stressors of migration and reunification in Caribbean families. Transcult Psychiatry. 2000;37(2):203–17.
10. Thomas-Hope E. Return migration to Jamaica and its development potential. Int Migr. 1999;37(1):183–207.

11 Castañeda H, Holmes SM, Madrigal DS, Young M-ED, Beyeler N, Quesada J. Immigration as a social determinant of health. Annu Rev Public Health. 2015;36:375–92.
12. Davies AA, Basten A, Frattini C. Migration: a social determinant of the health of migrants. Eurohealth. 2009;16(1):10–2.
13. Silver A. Families across borders: the emotional impacts of migration on origin families. Int Migr. 2014;52(3):194–220.
14 Vickerman M, Jamaicans in the United States. Encyclopedia of diasporas: immigrant and refugee cultures around the world. New York: Springer; 2005. p. 894–907.
15. Levitt P. Social remittances: migration driven local-level forms of cultural diffusion. Int Migr Rev. 1998;32(4):926–48.
16. Chamberlain M. Rethinking Caribbean families: extending the links. Community Work Fam. 2003;6(1):63–76.
17. Ryan L. 'I had a sister in England': family-led migration, social networks and Irish nurses. J Ethn Migr Stud. 2008;34(3):453–70.
18. Olwig KF. Narratives of the children left behind: home and identity in globalised Caribbean families. J Ethn Migr Stud. 1999;25(2):267–84.
19. Miner DC. Jamaican families. Holist Nurs Pract. 2003;17(1):27–35.
20. Sørensen NN, Vammen IM. Who cares? Transnational families in debates on migration and development. New Divers. 2014;16(2):89–108.
21. Mulot S. Caribbean matrifocality is not a Creole mirage. L'Homme. 2013;3:159–91.
22. Crawford C. The continuity of global crossing: African-Caribbean women and transnational motherhood. J Mother Initiat Res Community Involv. 2011;2(2):9.
23. Sacramento O, Silva PG, Gonçalves H. Women's burdens: exploratory analysis on matrifocality, (re)production and social protection in Douro Region, Portugal. Procedia-Soc Behav Sci. 2014;161:156–62.
24. Caribbean Policy Research Institute (CaPRI). Low labour productivity and unpaid care work. 2018. https://www.capricaribbean.org/content/low-labour-productivity-and-unpaid-care-work. Accessed 13 Feb 2021.
25 Ivlevs A, Nikolova M, Graham C. Emigration, remittances, and the subjective well-being of those staying behind. J Popul Econ. 2019;32:113–51.
26. Gibson J, McKenzie D, Stillman S. The impacts of international migration on remaining household members: omnibus results from a migration lottery program. Rev Econ Stat. 2011;93(4):1297–318.
27. Lu Y, Hu P, Treiman DJ. Migration and depressive symptoms in migrant-sending areas: findings from the survey of internal migration and health in China. Int J Public Health. 2012;57(4):691–8.
28. Pottinger AM. Children's experience of loss by parental migration in inner-city Jamaica. Am J Orthopsychiatry. 2005;75(4):485–96.
29. Gibson J, McKenzie D, Stillman S. What happens to diet and child health when migration splits households? Evidence from a migration lottery program. Food Policy. 2011;36(1):7–15.
30 Antman FM. The impact of migration on family left behind. In: Constant AF, Zimmermann KF, editors. International handbook on the economics of migration. Cheltenham: Edward Elgar Publishing; 2013. p. 293.
31. Fuller HR. The emotional toll of out-migration on mothers and fathers left behind in Mexico. Int Migr. 2017;55(3):156–72.
32. Nobles J, Rubalcava L, Teruel G. After spouses depart: emotional wellbeing among nonmigrant Mexican mothers. Soc Sci Med. 2015;132:236–44.
33. Yahirun JJ, Arenas E. Offspring migration and parents' emotional and psychological well-being in Mexico. J Marriage Fam. 2018;80(4):975–91.
34. Marchetti-Mercer MC, Swartz L, Jithoo V, Mabandla N, Briguglio A, Wolfe M. South African international migration and its impact on older family members. Fam Process. 2020;59(4):1737–54.
35. Dreby J, Adkins T. Inequalities in transnational families. Sociol Compass. 2010;4(8):673–89.
36. Yi J, Zhong B, Yao S. Health-related quality of life and influencing factors among rural left-behind wives in Liuyang, China. BMC Women's Health. 2014;14(1):1–6.
37. Aryal N, Regmi PR, van Teijlingen E, Trenoweth S, Adhikary P, Simkhada P. The impact of spousal migration on the mental health of nepali women: a cross-sectional study. Int J Environ Res Public Health. 2020;17(4):1–10.
38. Lu Y. Household migration, remittances and their impact on health in Indonesia 1. Int Migr. 2013;51:e202–15.
39 Hildebrandt N, McKenzie DJ. The effects of migration on child health in Mexico. Washington, DC: The World Bank; 2005.
40. Kanaiaupuni SM, Donato KM. Migradollars and mortality: the effects of migration on infant survival in Mexico. Demography. 1999;36(3):339–53.
41. Umberson D, Crosnoe R, Reczek C. Social relationships and health behavior across the life course. Annu Rev Sociol. 2010;36:139–57.
42. Heaney CA, Israel BA. Social networks and social support. In: Glanz K, Rimer B, Viswanath K, editors. Health behavior and health education: theory, research, and practice. San Francisco, CA: Jossey Bass; 2008. p. 189–210.
43. Almquist YB, Landstedt E, Hammarström A. Associations between social support and depressive symptoms: social causation or social selection—or both? Eur J Public Health. 2017;27(1):84–9.
44. Fuhrer R, Stansfeld SA. How gender affects patterns of social relations and their impact on health: a comparison of one or multiple sources of support from "close persons." Soc Sci Med. 2002;54(5):811–25.
45. Antonucci TC. Social relations an examination of social networks, social support. In: Birren JE, Schaie KW, editors. Handbook of the psychology of aging, vol. 3. Ann Arbor: University of Michigan; 2001. p. 427.
46. Cable N, Bartley M, Chandola T, Sacker A. Friends are equally important to men and women, but family matters more for men's well-being. J Epidemiol Community Health. 2013;67(2):166–71.
47. Liao J, McMunn A, Mejía ST, Brunner EJ. Gendered trajectories of support from close relationships from middle to late life. Ageing Soc. 2018;38(4):746–65.
48. Frank R. International migration and infant health in Mexico. J Immigr Health. 2005;7(1):11–22.
49. Gardner KA, Cutrona CE. Social support communication in families. In: Vangelisti AL, editor. Handbook of family communication. Mahwah: Lawrence Erlbaum Associates Publishers; 2004.
50. Dorrance Hall E, Shebib SJ. Interdependent siblings: associations between closest and least close sibling social support and sibling relationship satisfaction. Commun Stud. 2020;71(4):612–32.
51. Gariepy G, Honkaniemi H, Quesnel-Vallee A. Social support and protection from depression: systematic review of current findings in Western countries. Brit J Psychiatry. 2016;209(4):286–95.
52. Kuhn RS. A longitudinal analysis of health and mortality in a migrant-sending region of Bangladesh. 1 ed. Migration and health in Asia, ed. Jatrana S, Toyota M, Yeoh BSA. London, UK: Routledge; 2005. p. 177–208.
53. Melde S. Transnational families and the social and gender impact of mobility in ACP countries. 2012. https://publications.iom.int/system/files/pdf/transnational_families.pdf. Accessed 6 Dec 2019.

54. Plaza D. Transnational grannies: the changing family responsibilities of elderly African Caribbean-born women resident in Britain. Soc Indic Res. 2000;51(1):75–105.
55. Govia IO. Caribbean migrations—the Jamaica return migrants study: design and rationale. Wadabagei J Caribb Diaspora. 2014;15(1):107–22.
56. Govia IO. Caribbean migrations: Jamaica returned migrants study, 2010–2012, in Project report. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor]; 2018.
57. Tsikriktsis N. A review of techniques for treating missing data in OM survey research. J Oper Manag. 2005;24(1):53–62.
58. McAlpine DD, McCreedy E, Alang S. The meaning and predictive value of self-rated mental health among persons with a mental health problem. J Health Soc Behav. 2018;59(2):200–14.
59. Zajacova A, Huzurbazar S, Todd M. Gender and the structure of self-rated health across the adult life span. Soc Sci Med. 2017;187:58–66.
60. Manor O, Matthews S, Power C. Dichotomous or categorical response? Analysing self-rated health and lifetime social class. Int J Epidemiol. 2000;29(1):149–57.
61. Diener E, Emmons R, Larsen R, Griffin S. The satisfaction with life scale. J Pers Assess. 1985;49:71–5.
62. Pavot W, Diener E. The satisfaction with life scale and the emerging construct of life satisfaction. J Posit Psychol. 2008;3(2):137–52.
63. Eaton WW, Smith C, Ybarra M, Muntaner C, Tien A. Center for epidemiologic studies depression scale: review and revision (CESD and CESD-R). In: Maruish ME, editor. The use of psychological testing for treatment planning and outcomes assessment: instruments for adults. Mahwah, NJ: LEA Publishers; 2004. p. 363–77.
64. The Center for Innovative Public Health Research. CESD-R. n.d. https://cesd-r.com/. Accessed 1 Feb 2018.
65. Ray WJ. Abnormal psychology. Thousand Oaks: SAGE Publications; 2019.
66. Wamser-Nanney R, Howell KH, Schwartz LE, Hasselle AJ. The moderating role of trauma type on the relationship between event centrality of the traumatic experience and mental health outcomes. Psychol Trauma Theory Res Pract Policy. 2018;10(5):499.
67. The Bank of Jamaica. Counter rates. 2010. http://boj.org.jm/foreign_exchange/fx_crates.php. Accessed 1 Aug 2019.
68. Exchangerates.org. Convert Jamaican Dollars (JMD) to US Dollars (USD). 2020. https://www.exchange-rates.org/Rate/JMD/USD. Accessed 26 Jun 2020.
69. StataCorp. Stata Statistical Software: Release 15. College Station, TX: StataCorp LLC; 2017.
70. Quashie N, Zimmer Z. Residential proximity of nearest child and older adults' receipts of informal support transfers in Barbados. Ageing Soc. 2013;33(2):320.
71. Yi F, Liu C, Xu Z. Identifying the effects of migration on parental health: evidence from left-behind elders in China. China Econ Rev. 2019;54:218–36.
72. Ye J, Wu H, Rao J, Ding B, Zhang K. Left-behind women: gender exclusion and inequality in rural-urban migration in China. J Peasant Stud. 2016;43(4):910–41.
73. Lu Y. Household migration, social support, and psychosocial health: the perspective from migrant-sending areas. Soc Sci Med. 2012;74(2):135–42.
74. Wilkerson JA, Yamawaki N, Downs SD. Effects of husbands' migration on mental health and gender role ideology of rural Mexican women. Health Care Women Int. 2009;30(7):612–26.
75. Yabiku ST, Agadjanian V, Sevoyan A. Husbands' labour migration and wives' autonomy. Popul Stud. 2010;64(3):293–306.
76. Menjívar C, Agadjanian V. Men's migration and women's lives: views from rural Armenia and Guatemala. Soc Sci Q. 2007;88(5):1243–62.
77. Ministry of Health & Wellness Jamaica. Jamaica health and lifestyle survey III (2016–2017), preliminary key findings. 2018. https://www.moh.gov.jm/wp-content/uploads/2018/09/Jamaica-Health-and-Lifestyle-Survey-III-2016-2017.pdf. Accessed 13 Feb 2021.
78 Waldinger R. The cross-border connection: immigrants, emigrants, and their homelands. London: Harvard University Press; 2015.
79. Zentgraf KM, Chinchilla NS. Transnational family separation: a framework for analysis. J Ethn Migr Stud. 2012;38(2):345–66.