

UCSF

UC San Francisco Previously Published Works

Title

Presence of Older Adolescents in the Household is Associated with Depressive Symptoms Among Women Living with HIV in Kenya

Permalink

<https://escholarship.org/uc/item/7n89t66x>

Journal

AIDS and Behavior, 24(12)

ISSN

1090-7165

Authors

Nagata, Jason M

Anicete, Lynhea M

Cohen, Craig R

et al.

Publication Date

2020-12-01

DOI

10.1007/s10461-020-02942-x

Peer reviewed



Published in final edited form as:

AIDS Behav. 2020 December ; 24(12): 3574–3578. doi:10.1007/s10461-020-02942-x.

Presence of older adolescents in the household is associated with depressive symptoms among women living with HIV in Kenya

Jason M. Nagata^{1,2}, Lynhea Anicete², Craig R. Cohen³, Edward A. Frongillo⁴, Rachel Burger⁵, Pauline Wekesa⁶, Elly Weke⁶, Sheri D. Weiser⁷, Elizabeth A. Bukusi⁸

¹Division of Adolescent and Young Adult Medicine, Department of Pediatrics, University of California, San Francisco, San Francisco, CA, USA.

²Institute for Global Health Sciences, University of California, San Francisco, San Francisco, CA, USA.

³Department of Obstetrics, Gynecology & Reproductive Sciences, University of California, San Francisco, San Francisco, CA, USA.

⁴Department of Health Promotion, Education, and Behavior, University of South Carolina, Columbia, SC, USA.

⁵Bixby Center for Global Reproductive Health, University of California, San Francisco, San Francisco, CA, USA.

⁶Family AIDS Care and Education Services, Kenya.

⁷Division of HIV, ID and Global Medicine, Department of Medicine, University of California San Francisco, San Francisco, CA, USA.

⁸Center for Microbiology Research, Kenya Medical Research Institute, Kisumu, Kenya.

Abstract

The objective of this study was to determine the association between the number of adolescents in a household and depressive symptoms among adult caregivers living with HIV. We examined cross-sectional baseline data among adults enrolled in the *Shamba Maisha* multisectoral agricultural intervention (n=705) in the Nyanza region of Kenya (NCT02815579). Each additional adolescent 15–19 years in a household was associated with a 1.35 (95% CI 1.06–1.71) higher odds of depressive symptoms among women, but not men, adjusting for potential confounders.

Corresponding Author: Jason M. Nagata, 550 16th Street, 4th Floor, Box 0110, San Francisco, California 94158, jason.nagata@ucsf.edu.

Author Contributions: JN: Conceptualized research question, conducted analysis, drafted the manuscript, reviewed and edited the manuscript. LA: Conceptualized research question, drafted the manuscript, reviewed and edited the manuscript. CC, EF, SW, EB designed original study, obtained funding, lead data collection, and reviewed and edited the manuscript. RB, PW, EW coordinated data collection, reviewed and edited the manuscript. All authors read and approved the final submitted manuscript.

Publisher's Disclaimer: This Author Accepted Manuscript is a PDF file of an unedited peer-reviewed manuscript that has been accepted for publication but has not been copyedited or corrected. The official version of record that is published in the journal is kept up to date and so may therefore differ from this version.

Conflict of interest: The authors declare that they have no competing interests

Interventions to support the mental health of adults living with HIV may target women caring for dependent adolescents 15–19 years old.

Resumen

El objetivo de este estudio fue determinar la asociación entre el número de adolescentes en un hogar y síntomas depresivos en cuidadores adultos que viven con VIH. Examinamos datos transversales en adultos inscritos en la intervención agrícola multisectorial *Shamba Maisha* (n = 705) en la región de Nyanza de Kenia (NCT02815579). Cada adolescente adicional de 15–19 años en un hogar fue asociado con una probabilidad mayor de 1,35 (CI 95%: 1,06–1,71) de síntomas depresivos entre las mujeres pero no entre los hombres, ajustando los posibles factores de confusión. Las intervenciones en salud mental para adultos que viven con VIH pueden orientarse a mujeres al cuidado de adolescentes de 15 a 19 años.

Keywords

Adolescent; parents; depression; human immunodeficiency virus; Kenya

Palabras Clave

Adolescente; padres; depresión; virus de inmunodeficiencia humana; Kenia

Introduction

Mental health disorders are common comorbidities among people living with HIV. Globally, an estimated 38.0% of people living with HIV experience comorbid depression (1). Depression affects nearly half of people living with HIV in sub-Saharan Africa, where approximately two-thirds of people living with HIV reside (1). Adults with HIV may be required to serve as caregivers for dependent children and adolescents.

The presence of dependent adolescents may be associated with psychosocial stressors for adults. Adolescence is a transitional period associated with psychosocial stressors, a high mental health burden, and parent-child conflict, particularly in older adolescents 15–19 years (2). Studies in middle- and high-income countries have found that adolescent-parent conflict is associated with poorer parent mental health (2,3) and that parents or caregivers of adolescents with depression (4) and other mental health diagnoses have poorer mental health. In sub-Saharan Africa, studies of caregiver mental health have mostly focused on caregivers of children with HIV using qualitative methods (5–7), but have not focused on caregivers of adolescents using quantitative methods. The relationship between the presence of dependent adolescents in the household and adult mental health has been unexplored in low-income settings, particularly in sub-Saharan Africa and among adults living with HIV.

The objective of this study was, therefore, to determine the association between the number of dependent adolescents in a household and depressive symptoms among adults living with HIV. We tested the hypothesis that a greater number of older adolescents would be associated with higher parent depressive symptoms.

Methods

Participants and study design

This was a secondary data analysis of cross-sectional baseline data from the *Shamba Maisha* agricultural intervention for food security and HIV health outcomes in Nyanza, Kenya (NCT02815579). Inclusion criteria for the larger study included adults living with HIV between the ages of 18–60 years old who were enrolled in HIV care and receiving antiretroviral therapy, who experienced food insecurity and/or malnutrition (BMI<18.5) with access to farming land and surface water, and who had a down payment for a loan for farming commodities. A matched-pair cluster randomized control trial ensued which enrolled residents of the Nyanza region of Kenya from July 2016 to July 2017. On average, 47 participants from separate households were enrolled from each of eight matched pairs of clinical facilities (total N=746, including 720 who met inclusion criteria for the study and 26 who were subsequently deemed ineligible). We excluded 41 participants who had missing data for any of the variables analyzed in this study, thus N=705 were included for the analysis. All participants provided written informed consent. Ethical approval was provided by the University of California, San Francisco and Kenya Medical Research Institute Institutional Review Boards.

Measures

Adult participants in both control and interventional arms were surveyed at baseline using a comprehensive set of questionnaires on demographics, household composition, mental health, and other topics.

Independent variable: Number of dependent adolescents.—Adolescence is defined as ages 10–19 years, with early adolescence encompassing 10–14 years and older adolescence encompassing 15–19 years (8). Adult participants were asked to list all members of their household and their ages. Based on this, we created a variable for the number of adolescents 10–14 years and the number of adolescents 15–19 years.

Dependent variable: Depressive symptoms.—The presence of depressive symptoms was determined using the Hopkins Symptom Checklist for Depression (HSCL), a 15-item scale that has been validated in sub-Saharan Africa (9–11). Questions were answered on a scale from ‘never’ (1) to ‘often’ (5) and then averaged. Prior studies have classified an averaged scale of <1.75 as asymptomatic, 1.75–2 to be moderate symptomatology, and >2 to be high symptomatology (12). For the purposes of this study, the averaged scale was dichotomized into 1) depressive symptoms (average score ≥ 1.75) or 2) no depressive symptoms (average score <1.75). Higher scores are indicative of higher depressive symptoms, though not necessarily a diagnosis of depression.

Covariates.—Adult participants’ age, gender, highest education, and marital status were based on self-report. Education was dichotomized into some primary or less versus secondary or more. A modification of the Demographic and Health Surveys (DHS) Wealth Index was calculated using data on a household’s ownership of selected assets (such as

televisions and bicycles, materials used for housing construction, and types of water access) and was divided into quintiles. CD4 was tested at baseline using BD FACSCount.

Statistical Analysis

Data analysis was performed using Stata 15.0 (StataCorp, College Station, TX). We used multiple logistic regression analysis to determine associations between the number of adolescents in a household (independent variable) and adult depressive symptoms (dependent variable), adjusting for age, marital status, education, CD4 count, and wealth index. We stratified analyses by sex given sex differences in rates of depression among people living with HIV and caregiving roles for adolescents (2–3). Given the secondary analysis of baseline data which occurred prior to the parent study intervention, we analyzed the entire sample without differentiating intervention versus control arms.

Results

Of the 705 adults living with HIV included in the analysis, 55.3% were female, 73.3% were married, 27.1% had some secondary education or more, and 68.2% were the head of household. Mean age was 40.4 ± 9.1 years. The mean household size was 6.4 ± 2.6 , range 1–22 people and the mean number of adolescents per household was 1.1 ± 1.1 , range 0–8 (10–14 years) and 0.8 ± 1.0 , range 0–8 (15–19 years). Overall, 45.4% of women and 28.9% of men experienced depressive symptoms. Each additional adolescent 15–19 years in a household was associated with a 1.35, 95% confidence interval (CI) 1.06–1.71 higher odds of depressive symptoms among women ($p = 0.014$), controlling for age, marital status, education, CD4 count, and wealth (Table 1). Among men, each additional adolescent 15–19 years in a household was not associated with the odds of depressive symptoms (OR 1.13, 95% CI 0.89–1.45). Presence of adolescents 10–14 years in a household and age of the adult participant were not associated with depressive symptoms in men or women. Sensitivity analyses excluding households with >4 adolescents 15–19 years had similar findings.

Discussion

The number of adolescents 15–19 years old in a household was associated with depressive symptoms among women living with HIV in the Nyanza Region of Kenya. In contrast, the number of younger adolescents 10–14 years old was not associated with adult depressive symptoms, and the number of older adolescents 15–19 years was not associated with depressive symptoms in men.

Several potential mechanisms may explain the association between the presence of older adolescents in the household and depressive symptoms in women. Adolescence is a period of psychosocial stressors, and these may diffuse throughout the family unit (2–4). Parent-adolescent conflict is associated with poorer parent mental health (3,13). Adolescent depression and other mental health problems are associated with adult depression. One randomized controlled trial demonstrated that when adolescent depression was treated, parent mental health subsequently improved (4). The same trial found that adolescent depressive symptoms were significantly associated with depression, anxiety, insomnia, and social dysregulation in mothers, but not fathers (4). Female caregivers' mental health may be

particularly affected given that mothers may worry more about their adolescents' health than fathers (4). Mothers are also more involved in adolescent parenting (such as schoolwork and school functions) and may have different parenting styles (more responsiveness) than fathers (14). One qualitative study found that women's self-care and HIV treatment retention, more so than men, are motivated by caring for their children (15). Among fathers, employment status was the strongest predictor of depressive symptoms but not adolescent depression (4,15).

The presence of dependent adolescents may lead to additional economic burden to the household, especially for households supporting multiple adolescents 15–19 years. In a sensitivity analysis excluding households with >4 adolescents 15–19 years, our findings were similar, meaning that even a narrow range of the number of adolescents in the household can contribute to female caregivers' mental health. Growing adolescents have greater nutritional needs than younger children or adults (16). For instance, boys have peak energy and protein requirements at ages 15–18 years and, thus, having to provide adequate nutrition for even one additional older adolescent may translate to a significant burden for a household (16). One qualitative study found that if crop yields were low and the family did not have enough food, rather than stealing food, the family would sleep hungry (5). Mothers with major depression or anxiety have higher mental health burdens with increasing food insecurity (5,17). This relationship may be particularly relevant in this sample of households that used food insecurity as part of the inclusion criteria and given the high prevalence of food insecurity among households affected by HIV in the region (18,19). Food insecurity is associated with both maternal depression and child behavior problems (17,20). Persistent food insecurity can create challenges within the household, conflict between parents, and harsher disciplinary strategies on children (5,17).

Secondary school may be associated with school tuition or related fees for school supplies. Parents and caregivers who were unable to pay tuition or school fees felt demotivated, anxious, and stressed (5,13). Men, in particular, felt guilt and shame for not being able to fulfill their 'masculine' roles (13). In some situations, reducing expenditure on school-aged children's education was one way to address food insecurity (21). The mental health of parents may suffer if they feel there are no or few work or educational opportunities to provide for their adolescents, or if opportunities for education are created but are largely ignored by the adolescent (13). Although the presence of older adolescents may be associated with psychosocial family stressors, conversely, the presence of adolescents could improve adult mental health through social support, bonding, and self-worth (13). Also, adult depression can affect adolescents' mental health, and, thus, the relationship could be bidirectional (4). In this study, however, the predictor variable (number of adolescents in the household) likely temporally preceded the study's baseline measurement of adult depressive symptoms score.

Given that this study used a cross-sectional secondary analysis, the direction of causality of the associations is unknown. Although we adjusted for wealth and other potential confounders, unmeasured confounders may remain for which we did not adjust. Although adult participants were asked to list all household members for the household census, some data were missing and this variable may not have accounted for all adolescents in the

household. The parent study was a randomized controlled trial for people living with HIV and food insecurity. Given the age range of adult participants, it is possible some adults were grandparents or other caregivers of the dependent adolescents in the household. Although this specific population may not be generalizable to all of Kenya or sub-Saharan Africa, it does represent vulnerable and marginalized populations who may be at greatest risk for mental health burdens. Strengths thus include a relatively large sample of a hard-to-reach under-researched population, the use of measures that have been validated in sub-Saharan Africa (HSCL for depressive symptoms), and the ability to differentiate between the number of older versus younger adolescents in a household.

This research has potential public health and clinical implications. Interventions for mental health among adults living with HIV may target mothers caring for dependent older adolescents. Mothers of adolescents may be particularly at risk for depressive symptoms. Future research could incorporate a longitudinal research design to better understand characteristics (mental health, parent-adolescent conflict) that are associated with adult mental health. Dyadic analyses of parent-adolescent pairs could be employed. In addition, future research could prospectively examine possible mediators explaining the association between older adolescents and caregiver depression, such as food insecurity. Furthermore, parenting interventions could be developed to support and help parents of older adolescents (22).

In conclusion, the presence of older adolescents in a household is associated with depressive symptoms among women living with HIV. Interventions for mental health support may target parents, especially mothers, of older adolescents.

Acknowledgements:

We thank A. Rain Mocello and Lila Sheira for their assistance with baseline data. We thank the Kenyan women and men who generously gave their time to participate in the study. We acknowledge the important support of the Kenyan Medical Research Institute (KEMRI), the University of California, San Francisco (UCSF), and Global Programs for Research and Training (GPRT). We would also like to recognize the Director of KEMRI, the Director of KEMRI's Centre for Microbiology Research, and the Kisumu, Homa Bay, and Migori County Ministries of Health for their support in conducting this research. We acknowledge the content expertise and support received from the UC Global Health Institute's Center of Expertise in Women's Health and Empowerment. We also thank Bernard Rono, Brian Polo, Phoebe Olugo, Sylvia Atieno, Maureen Nyaura, Sylvia Akoko, Titus Arunga, Belinda Odhiambo, Richard Omondi, Elly Bwana, Emmanuel Otieno, Julie Omoro, Doreen Otieno, Rose Ngwengi, Amos Onyango, Sharon Owour, Pius Atonga, Fredrick Ouko, Nicholas Ambira, George Kennedy, Geoffery Ojuok, Risper Omollo, Eliza Mbaja, Valiant Odhiambo, Peter Obando, and Julius Odhacha for their important contributions to this research.

Funding: This research was funded by the National Institutes of Health (R01 MH107330 and R21 HD095739) as well as the Mt. Zion Health Fund.

References

1. Ayano G, Solomon M, Abraha M. A systematic review and meta-analysis of epidemiology of depression in people living with HIV in east Africa. *BMC Psychiatry*. 2018 8;18(1):254. [PubMed: 30111300]
2. Ozdemir Y Parent-Adolescent Conflict and Depression Symptoms of Adolescents: Mediator Role of Self-Esteem. *Dü ünen Adam J Psychiatry Neurol Sci* 2014;27:211–20.
3. Silverberg SB, Steinberg L. Adolescent autonomy, parent-adolescent conflict, and parental well-being. *J Youth Adolesc* 1987 6;16(3):293–312. [PubMed: 24277374]

4. Wilkinson PO, Harris C, Kelvin R, Dubicka B, Goodyer IM. Associations between adolescent depression and parental mental health, before and after treatment of adolescent depression. *Eur Child Adolesc Psychiatry*. 2013;22(1):3–11. [PubMed: 22836732]
5. Murray SM, Familiar I, Nakasujja N, Winch P, Gallo J, Opoka R, et al. Caregiver mental health and HIV-infected child wellness: perspectives from Ugandan caregivers. *AIDS Care*. 2017;29(6):793–9. [PubMed: 27951734]
6. Gichane MW, Sullivan KA, Shayo AM, Mmbaga BT, O'Donnell K, Cunningham CK, et al. Caregiver role in HIV medication adherence among HIV-infected orphans in Tanzania. *AIDS Care*. 2018 6 3;30(6):701–5. [PubMed: 29058461]
7. Osafo J, Loa Knizek B, Mugisha J, Kinyanda E. The experiences of caregivers of children living with HIV and AIDS in Uganda: a qualitative study. *Glob Heal* 2017;13(1):72.
8. Sawyer SM, Azzopardi PS, Wickremarathne D, Patton GC. The age of adolescence. *Lancet Child Adolesc Health*. 2018 3 1;2(3):223–8. [PubMed: 30169257]
9. Bolton P, Wilk C, Ndogoni L. Assessment of depression prevalence in rural Uganda using symptom and function criteria. *Soc Psychiatry Psychiatr Epidemiol* 2004 6;39(6):442–7. [PubMed: 15205728]
10. Hatcher AM, Tsai AC, Kumbakumba E, Dworkin SL, Hunt PW, Martin JN, et al. Sexual Relationship Power and Depression among HIV-Infected Women in Rural Uganda. *PLoS One*. 2012;7(12):e49821. [PubMed: 23300519]
11. Derogatis LR, Lipman RS, Rickels K, Uhlenhuth EH, Covi L. The Hopkins Symptom Checklist (HSCL): A self-report symptom inventory. *Behav Sci* 1974 1;19(1):1–15. [PubMed: 4808738]
12. Winokur A, Winokur DF, Rickels K, Cox DS. Symptoms of emotional distress in a family planning service: Stability over a four-week period. *Br J Psychiatry* 1984;144(4):395–9. [PubMed: 6722401]
13. Nalugya R, Russell S, Zalwango F, Seeley J. The role of children in their HIV-positive parents' management of antiretroviral therapy in Uganda. *African J AIDS Res* 2018;17(1):37–46.
14. Paulson SE, Sputa CL. Patterns of parenting during adolescence: Perceptions of adolescents and parents. *Adolescence*. 1996 6;31(122):368–81.
15. Skovdal M, Maswera R, Kadzura N, Nyamukapa C, Rhead R, Wringe A, et al. Parental obligations, care and HIV treatment: How care for others motivates self-care in Zimbabwe. *J Health Psychol* 2018;1–10.
16. Das JK, Salam RA, Thornburg KL, Prentice AM, Campisi S, Lassi ZS, et al. Nutrition in adolescents: physiology, metabolism, and nutritional needs. *Ann NY Acad Sci* 2017;1393(1):21–33. [PubMed: 28436102]
17. Johnson AD, Markowitz AJ. Food Insecurity and Family Well-Being Outcomes among Households with Young Children. *J Pediatr* 2018;196:275–82. [PubMed: 29703363]
18. Nagata JM, Magerenge RO, Young SL, Oguta JO, Weiser SD, Cohen CR. Social determinants, lived experiences, and consequences of household food insecurity among persons living with HIV/AIDS on the shore of Lake Victoria, Kenya. *AIDS Care*. 2012 6 1;24(6):728–36. [PubMed: 22150119]
19. Nagata JM, Fiorella KJ, Salmen CR, Hickey MD, Mattah B, Magerenge R, et al. Around the Table: Food Insecurity, Socioeconomic Status, and Instrumental Social Support among Women Living in a Rural Kenyan Island Community. *Ecol Food Nutr* 2015 7 4;54(4):358–69. [PubMed: 25680030]
20. Nagata JM, Gomberg S, Hagan MJ, Heyman MB, Wojcicki JM. Food insecurity is associated with maternal depression and child pervasive developmental symptoms in low-income Latino households. *J Hunger Env Nutr* 2019;14(4):526–39. [PubMed: 31673300]
21. Shariff ZM, Khor GL. Household food insecurity and coping strategies in a poor rural community in Malaysia. *Nutr Res Pract* 2008;2(1):26. [PubMed: 20126362]
22. Nagata JM, Ferguson BJ, Ross DA. Research Priorities for Eight Areas of Adolescent Health in Low- and Middle-Income Countries. *J Adolesc Health*. 2016 7 1;59(1):50–60. [PubMed: 27235375]

Table 1

Associations between number of adolescents in household and adult depressive symptoms after adjusting for confounders, by sex (N=705)

	Depressive Symptoms			
	Men		Women	
	OR (95% CI)	P	OR (95% CI)	P
Number of Adolescents 10–14 years in household	1.15 (0.94–1.41)	0.17	0.86 (0.68–1.07)	0.17
Age	0.98 (0.94–1.01)	0.13	1.02 (1.00–1.05)	0.06
Married ^a	0.92 (0.39–2.20)	0.86	1.14 (0.73–1.77)	0.58
Education ^b	0.62 (0.36–1.08)	0.09	1.41 (0.83–2.39)	0.20
CD4 count	1.00 (1.00–1.00)	0.96	1.00 (1.00–1.00)	0.10
Wealth Index	0.91 (0.76–1.09)	0.31	0.88 (0.76–1.01)	0.08
Number of Adolescents 15–19 years in household	1.13 (0.89–1.44)	0.32	1.35 (1.06–1.71)	0.01
Age	0.97 (0.94–1.00)	0.11	1.02 (0.99–1.04)	0.18
Married ^a	1.03 (0.44–2.41)	0.95	1.18 (0.76–1.84)	0.47
Education ^b	0.64 (0.36–1.11)	0.11	1.53 (0.90–2.61)	0.12
CD4 count	1.00 (1.00–1.00)	0.87	1.00 (1.00–1.00)	0.08
Wealth Index	0.89 (0.74–1.08)	0.24	0.86 (0.74–0.99)	0.04

All models adjusted for parent age, gender, marital status, and socio-economic status.

^aMarried versus not married.

^bSome secondary or greater versus primary and below.