Subjective Well-Being and HIV Prevention: A Cross-Country Descriptive Study Using Multiple Indicator Cluster Survey Data

Janine Foggia, MPH; Anne Sebert Kuhlmann PhD, MPH[†]

Abstract

Subjective well-being (SWB) is positively associated with improved health outcomes and, in particular, preventative behaviors. Yet, the relationship between SWB and HIV prevention is not well understood, especially in the context of developing countries. Furthermore, young females experience a high burden of HIV as well as sociodemographic factors which influence SWB. Therefore, this descriptive study sought to describe the global landscape of three constructs of SWB - happiness, life satisfaction, and life perception - and the following HIV prevention variables: comprehensive HIV knowledge, HIV testing, and condom use among young adult females aged 15-24 years. Descriptive statistics of Multiple Indicator Cluster Survey (MICS) data for 22 geographical areas representing 19 countries were examined. While SWB constructs were relatively high, HIV prevention variables were reportedly low, with considerable variation among country reported percentages. Literacy/educational attainment may be an important factor interacting with SWB and HIV prevention. Future research should seek to model associations of these variables via regression analyses in order to gather additional insights and expand the knowledge base regarding the relationship between SWB, literacy, and HIV prevention.

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Affiliations:

Saint Louis University, Saint Louis, MO (JF, ASK)

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Introduction

HIV continues to be one of the most pressing global public health issues with 36.7 million individuals living with HIV at the end of 2015 (WHO 2016). The global burden of HIV disproportionately affects those in developing countries: 15 countries, the majority of which are located in Sub-Saharan Africa, account for nearly 75% of all people living with HIV (UNAIDS 2014). While new infections decreased by 35% between 2000 and 2015, prevention still remains paramount as new infections continue daily with 2.1 million occurring in 2015 alone (WHO 2016). A critical population presenting an opportunity to reduce such numbers is young people aged 15 - 24 years. In 2010, young people accounted for 42% of new infections in people aged 15 and older (UNAIDS 2012). Furthermore, young women are disproportionately affected as they comprise over 60% of all young people living with

HIV (UNICEF 2011) and present an infection rate twice that of young men (UNAIDS 2012). Top reasons contributing to this discrepancy are gender based violence, lack of access to health care and education, and policies that do not translate into action (UNAIDS 2014).

The Opportunity in Crisis Report calls for addressing primary underlying problems that contribute to young people's risk of HIV. Issues such as lack of opportunity, gender inequality, and poverty speak to not only the larger social determinants contributing to the epidemic, but the interplay between these determinants, well-being, and health outcomes. Subjective well-being (SWB) is defined as "an evaluation or declaration that individuals make about the quality of their lives" (Keyes 2006, p. 2). SWB is comprised of both eudaimonic, "individual's evaluation of their psychological well-being" (Keyes 2006, p. 4), and hedonic, "perceptions of avowed interest in life, happiness, and satisfaction with life, and the balance of positive to negative affect" well-being (Keyes 2006, p. 4). The World Health Organization (WHO) defines health as a complete state of physical, mental, and social well-being, not solely the absence of disease. Extrapolating this definition further, and highlighting the importance of SWB, is the thought that the definition of health should include the "presence of higher levels of subjective well-being" (Keyes 2006, p. 6).

[†]Correspondence To: Anne Sebert Kuhlmann, PhD, MPH
Assistant Professor
Behavioral Sciences & Health Education
College for Public Health & Social Justice
Saint Louis University
3545 Lafayette Ave, Room 309
St. Louis, MO 63103
Phone: 314-977-4029
Email: sebertkuhlmann@slu.edu

While there is documented research on the association between components of SWB and improved health (Cook and Chater 2010; Diener and Chan 2011; Koivumaa-Honkanen et al. 2000; Miret et al. 2014), the association with knowledge and preventative health behaviors is less well understood. Studies have found life dissatisfaction and physical activity to be inversely associated (Schnohr et al. 2005) as well as a positive association between life satisfaction and preventative screenings such as cholesterol tests, mammograms, and prostate exams (Kim, Kubzansky, and Smith 2015). A study examining young adults in 21 countries found life satisfaction to be positively associated with preventative and protective health behaviors such as not smoking, physical exercise, using sun protection, eating fruit, and limiting fat intake (Grant, Wardle, and Steptoe 2009). However, the study sample was comprised of university students from primarily European and Asian countries, limiting its generalizability.

Education and literacy may play a role in the relationship between SWB and health. Higher educational attainment is associated with better health outcomes and engagement in healthy behaviors (Skalamera and Hummer 2016; Sommer and Mmari 2015; Gakidou et al. 2010). Specifically, educational attainment has been linked to HIV prevalence as those who are more highly educated report a lower prevalence of HIV (Hargreaves et al. 2008). These findings may be due to more educated individuals engaging in protective behaviors along the causal pathway (Hargreaves et al. 2008; Hargreaves et al. 2012), such as testing (Singh, Luseno, and Haney 2013) and condom use (Zuilkowski and Jukes 2012). Likewise, high levels of literacy demonstrate an association with better reported health (Smith-Greenaway 2015), increased health knowledge, and positive engagement in health behaviors (DeWalt and Hink 2009). In a preliminary study conducted among US middle school youth, as literacy declined, students reported significantly fewer prevention behaviors (regular dental check-ups and sunscreen use) (Zullig, Ubbes, and Mann 2013).

Thus far, research has primarily focused on adults in developed countries, singular constructs of SWB, and has only minimally explored SWB in relation to HIV/AIDS (Fako 2006; Sabato et al. 2013; Valois et al. 2002; Somlai et al. 2000; Kalichman et al. 1997; Golub et al. 2013). One study exploring this relationship found an association between decreased life satisfaction and increased perceived difficulty to perform HIV/AIDS preventive behaviors (delaying sexual intercourse, sex refusal, condom use) among African American adolescents in the U.S. (Valois et al. 2015). Similar studies examining this association among young women, a vulnerable population who have been left behind in the AIDS response (UNAIDS 2014), in developing countries are needed to further understand the relationship between SWB and HIV, as well as SWB's potential role in preventing HIV infections. This descriptive study aims to describe the global landscape of SWB and HIV prevention among females aged 15-24 years, and how literacy may interact with these.

Methods

Data Source

Secondary aggregated country-level Multiple Indicator Cluster Survey (MICS) data were acquired from publicly available country final reports and/or key finding reports. MICS, a UNICEF initiative, is an international household survey that collects cross-country comparable data on topics related to children's well-being, women, and households through globally standardized questionnaires and survey design (UNICEF, n.d.). While most surveys are representative at a national level, some surveys are carried out only in specific population groups or certain geographical areas within a country.

The secondary aggregated data analyzed here are from survey rounds 4 and 5, conducted between 2011-2014, as life satisfaction questions were not incorporated until round 4 of the survey. The final sample represents 19 countries utilizing 22 surveys, resulting in a study sample size of 22. (Figure 1). All 19 countries are classified as lower middle income countries (LMICs) except for Barbados, which is classified as a high income country (World Bank, n.d.).

Variables

SWB variables include the percentage per country of females age 15-24 years: (1) who are very or somewhat happy, (2) who are very or somewhat satisfied with their life overall, (3) who report both that their life improved during the last year and expect that their life will be better after one year. Overall life satisfaction is the average of responses to specific domains including family life, friendships, school, current job, health, living environment, how they are treated by others, and how they look. Happiness and life satisfaction were measured on a five-point Likert scale from very unsatisfied to very satisfied and very unhappy to very happy, while life perception was measured on a three-point Likert scale from worsened to improved.

The literacy variable represents the percentage of females age 15-24 years who are able to read a short simple statement about everyday life or who attended upper secondary or higher education. Here, literacy refers to both reading ability and educational attainment.

HIV prevention variables include the percentage per country of females age 15-24 years who: (1) correctly identify ways of preventing the sexual transmission of HIV, know that a healthy looking person can have HIV, and who reject major misconceptions about HIV transmission (2) have had sex in the last 12 months, have been tested for HIV in the last 12 months, and know their results (3) report the use of a condom during the last sexual intercourse with a non-marital, non-cohabiting sex partner in the last 12 months.

Regarding the first HIV prevention variable, comprehensive HIV knowledge, correctly identified ways of preventing HIV transmission included having one faithful uninfected partner and using a condom every time. Misconceptions about HIV transmission were country specific with examples including mosquitoes, supernatu-

ral means, and witchcraft (e.g., Belize, Ukraine) (UNICEF 2012; 2013). These items were measured in a series of questions with responses including yes, no, or don't know resulting in a composite score for comprehensive HIV knowledge.

SPSS version 23 was used for descriptive statistical analyses of all variables.

Results

Descriptive Statistics

Among SWB variables, happiness reports the highest mean percentage indicating that among females age 15-24, 87% report being very or somewhat happy (see **Table 1**). Life satisfaction is also relatively high with an overall (n=22) mean percentage of 75%, while life perception ranks the lowest at only 53%. Happiness reports the least amount of variability between country reported percentages with a range of 24%, while life satisfaction and life perception both report a range of 59%. Only 39% of the total sample had comprehensive HIV knowledge and even lower was the 31% who had received an HIV test in the last 12 months. Additionally, HIV testing reported the highest range among the 22 geographical areas explored at 80%. Condom use reports the highest mean percentage among the HIV prevention variables at 52%. Literacy was relatively high at 84%.

Reported percentages for all variables differ widely between individual countries. This variation is demonstrated between countries within the same geographic region as well as within individual countries that have multiple surveys (e.g., Kenya, Bosnia and Herzegovina). **Figure 2** displays the distribution among country reported SWB variables and condom use. Comprehensive HIV knowledge and HIV testing (data not shown) report similar country variation. Condom use represents an actual prevention behavior whereas HIV knowledge does not necessarily ensure that an individual will engage in a particular prevention behavior. Furthermore, given that women often have less power in negotiating condom use (Cook-Lindsay 2013) due to gender power differences and gender sexual expectations, it is important to begin exploring the relationship between SWB, gender, and prevention behaviors like condom use. Literacy was relatively high across countries with 15 of the 22 countries reporting 85% or above (data not shown).

Discussion

Of the SWB variables, happiness and life satisfaction were relatively high while life perception was much lower. People's life circumstances may not change as fast as their aspirations, resulting in an unfavorable outlook on life. Similarly, aspirations may rise faster than individuals' incomes, leading to unfavorable SWB (Diener 2013). Furthermore, life perception differs from the other two measurements in that it adds a time component, particularly one of future orientation, whereas happiness and life satisfaction items are more oriented to the present. Culture, as demonstrated by the wide discrepancy between country reported percentages, plays a particularly important role regarding time orientation, with certain cultures being more future, past, or present oriented. Those that are future oriented are likely to have a higher quan-

tity and quality of information for making future predictions (Lee, Liu, and Hu 2017). A study conducted among U.S. youth demonstrated that those with a higher level of future certainty and positivity were more likely to have greater sexual knowledge and a less permissive sexual attitude (Davis and Niebes-Davis 2010). This relates to fatalism, known as the perception of having no control over events that occur in life which leads to individuals perceiving themselves as powerless, often succumbing to notions of fate (Davis and Niebes-Davis 2010). Those who prescribe to fatalism may not see the value in testing for HIV. Similarly, individuals who are present-oriented may be more likely to engage in risky behavior (Davis and Niebes-Davis 2010) whereas those who are positively future oriented have demonstrated reduced drug use, sexual-risk taking behaviors, and violence involvement as well as improved educational outcomes (Lindstrom Johnson, Blum, and Cheng 2014). Future orientation is based in expectancy value theory in which individuals modify their current behavior based on their assessment of future outcomes (Lindstrom Johnson, Blum, and Cheng 2014).

Mean percentages of HIV outcomes were surprisingly low. Although condom use was somewhat higher than comprehensive HIV knowledge and testing, it was still relatively low. Of particular interest is HIV testing which reported the widest discrepancy between country reported percentages. This may be a reflection of the variable measuring not just whether a person was tested, but also if they knew their results. Individuals may have been tested, but may not have received their results, did not remember receiving their results, or due to stigma, they did not want to report that they received their results for fear that they may be perceived to be HIV positive.

While the United Nations General Assembly Special Session (UNGASS) set targets of 95% (UNICEF 2011) for the following indicators among young people - comprehensive HIV knowledge, condom use at last sex among people reporting multiple partners, and have been tested and received results - they have not been met. Regarding comprehensive HIV knowledge, population-based data from 20 countries during 2005-2009 report a median of 30% for females (UNICEF 2011). Similarly, population-based data from 2005-2010 report condom use among 32% of females in Sub-Saharan Africa and 17% of females in South Asia (UNICEF 2011). Furthermore, population-based data from 2005-2010 report that just 8% of young women in developing countries (excluding China) have been tested for HIV and have received their results (UNICEF 2011). In comparison, results of the study are significantly higher for all three indicators. This is not surprising given the time differential of collected data during which an increase in HIV initiatives may have led to an increase in reported measures. Additionally, differences in selected countries, as demonstrated by the large variation in reported percentages, may influence the comparison. While measures of the study are higher, they are still well below the 95% benchmark set by UNGASS. Reasons for such low numbers may include stigma, social and cultural norms, and national policies that may hinder HIV prevention. Policy greatly influences sexuality education, which in turn influences comprehensive HIV knowledge. In 2007, HIV

Fig. 1 Selection of Sample¹

¹ Current as of April 2016

² Countries and population groups included in the final sample include: Barbados, Belarus, Belize, Benin, Bosnia and Herzegovina, Bosnia and Herzegovina (Roma Settlements), Cameroon, Dominican Republic, Guinea-Bissau, Guyana, Kenya (Bungoma County), Kenya (Kakamega County), Kenya (Turkana County), Kosovo under UNSC res. 1244, Madagascar (South), Malawi, Montenegro, Panama, Republic of Moldova, Sao Tome and Principe, Swaziland, Ukraine

Table 1 Descriptive Statistics of Subjective Well-Being and HIV Prevention Variables among Females aged 15-24 from 22 Geographical Areas

	Total (N=22)	
Subjective Well-Being Variables	<i>M(SD)</i>	Range*
Happiness	87.3 (6.9)	23.6
Life Satisfaction	74.9 (18.1)	59.2
Life Perception	52.6 (14.4)	59.3
HIV Prevention Variables		
Comprehensive HIV Knowledge	39.0 (15.0)	58.6
HIV Test	30.5 (22.3)	80.1
Condom Use	52.1 (17.5)	68.6
Literacy	83.5 (19.4)	56.1

*Range represents the difference between the highest and lowest geographical area percentages

Fig. 2 Subjective Well-Being and Condom Use among Females aged 15-24 by Country

education was included in primary school curriculum in only 88 out of 137 countries (UNICEF 2011). Globally, the prevalence of condom use has increased in recent years with developed countries generally reporting higher rates of condom use compared to developing countries, particularly in women. Even given the increase in condom use, rates continue to remain low, especially in developing countries (Wellings et al. 2006).

Remarkably, literacy was relatively high. This is interesting given that globally, women are at a disadvantage, often receiving limited education and reporting low levels of literacy. While global literacy rates have been increasing over past decades, women continue to represent a disproportionate amount of the illiterate population (UNESCO 2016). A 2015 report by UNESCO cites that around the world women comprise two-thirds of non-literate adults and this has remained unchanged since 2000 (UNESCO 2015). Findings of the study may be reflective of measurement limitations as educational attainment may be a poor predictor in low-income settings where absenteeism is frequent and access to high-quality schools may be limited (Smith-Greenaway 2015). Therefore, future research should explore educational attainment and literacy as separate predictors as the two do not accurately approximate one another (Smith-Greenaway 2015).

Educational attainment has been linked to lower HIV prevalence (Hargreaves et al. 2008; Hargreaves et al. 2012), which may reflect higher HIV prevention knowledge leading to less engagement in risky behaviors. In a meta-analysis examining condom use among more highly educated people, the majority of studies found a protective relationship while none found a negative relationship (Zuilkowski and Jukes 2012). This suggests that more highly educated individuals are more likely to use condoms than those less educated. More highly educated individuals may also have higher self-efficacy regarding condom use and may be more likely to access and afford condoms (Zuilkowski and Jukes 2012). Furthermore, in a study examining 15-24 year old females in Kenya, Zambia, and Zimbabwe, secondary education or higher was significantly associated with ever having been tested as well as having been tested within the last year (Singh, Luseno, and Haney 2013). Additional factors such as access to testing, which may hinder even those who have a high intention to get tested, should be studied.

Future Research Recommendations

This study calls attention to the lack of importance placed on measuring SWB. Out of 93 eligible MICS surveys, only 53% collected SWB data (Figure 1). While SWB research has significantly increased in the past few decades (Diener 2013) there is still relatively limited research in developing countries. This brings attention to the need to lessen the research gap, especially regarding research that begins to explore SWB and its relationship with health indicators.

Future research endeavors should examine MICS raw data, available at the individual level by request, in order to allow for meta-regression analyses to be conducted along with the exploration of covariates, particularly literacy/educational attainment. Inclu-

sion of literacy is particularly relevant to exploring the relationship between SWB and HIV/AIDS as the Opportunity in Crisis Report specifies three underlying problems of young people's HIV risk: lack of opportunity, gender inequality, and poverty (UNICEF 2011), all of which are strongly related to literacy and educational attainment. Other covariates to explore include demographics, such as socioeconomic status, and risky sexual behaviors, such as early sexual debut, sex with a non-marital or non-cohabitating partner, and age-mixing of partners.

References

- Cook, Erica Jane, and Angel M. Chater. 2010. "Are Happier People, Healthier People? The Relationship between Perceived Happiness, Personal Control, BMI and Health Preventive Behaviours." *International Journal of Health Promotion & Education* 48 (2): 58–64.
- Cook-Lindsay, Brian. 2013. "Gender-Based Power Imbalances and Condom-Use Negotiations." *Health Education Monograph Series* 30 (2): 28–33.
- Davis, Matthew, and Allison Niebes-Davis. 2010. "Ethnic Differences and Influence of Perceived Future Certainty on Adolescent and Young Adult Sexual Knowledge and Attitudes." *Health, Risk & Society* 12 (2): 149–167.
- DeWalt, Darren, and Ashley Hink. 2009. "Health Literacy and Child Health Outcomes: A Systematic Review of the Literature." *Pediatrics* 124 (Suppl. 3): S265–S274.
- Diener, Ed. 2013. "The Remarkable Changes In The Science Of Subjective Well-Being." *Perspectives on Psychological Science* 8 (6): 663–666.
- Diener, Ed, and Micaela Chan. 2011. "Happy People Live Longer: Subjective Well-Being Contributes To Health and Longevity." *Applied Psychology: Health & Well-Being* 3 (1): 1–43.
- Fako, Thabo T. 2006. "Social and psychological factors associated with willingness to test for HIV infection among young people in Botswana." *AIDS care* 18 (3): 201–207.
- Gakidou, Emmanuela, Krycia Cowling, Rafael Lozano, and Christopher Murray. 2010. "Increased Educational Attainment and Its Effect on Child Mortality in 175 Countries between 1970 and 2009: A Systematic Analysis." *Lancet* 376 (9745): 959–974.
- Golub, Sarit A, Michael Botsko, Kristi E Gamarel, Jeffrey T Parsons, Mark Brennan, and Stephen E Karpiak. 2013. "Dimensions of psychological well-being predict consistent condom use among older adults living with HIV." *Ageing International* 38 (3): 179–194.
- Grant, Nina, Jane Wardle, and Andrew Steptoe. 2009. "The relationship between life satisfaction and health behavior: a cross-cultural analysis of young adults." *International journal of behavioral medicine* 16 (3): 259–268.

- Hargreaves, James R, Christopher P Bonell, Tania Boler, Delia Boccia, Isolde Birdthistle, Adam Fletcher, Paul M Pronyk, and Judith R Glynn. 2008. "Systematic review exploring time trends in the association between educational attainment and risk of HIV infection in sub-Saharan Africa." *Aids* 22 (3): 403–414.
- Hargreaves, James R, Emma Slaymaker, Elizabeth Fearon, and Laura D Howe. 2012. "Changes over time in sexual behaviour among young people with different levels of educational attainment in Tanzania." *Journal of the International AIDS Society* 15 (Suppl 1).
- UNAIDS (Joint United Nations Programme on HIV/AIDS). 2012. *Fact Sheet: Adolescents, Young People and HIV*. http://file.s.unaids.org/en/media/unaids/contentassets/documents/factsheet/2012/20120417_FS_adolescentsyoungpeoplehiv_en.pdf.
- . 2014. *The Gap Report*. http://files.unaids.org/en/media/unaids/contentassets/documents/unaidspublication/2014/UNAIDS_Gap_report_en.pdf.
- Kalichman, Seth C, Jeffrey A Kelly, Michael Morgan, and David Rompa. 1997. "Fatalism, current life satisfaction, and risk for HIV infection among gay and bisexual men." *Journal of Consulting and Clinical Psychology* 65 (4): 542–546.
- Keyes, Corey LM. 2006. "Subjective well-being in mental health and human development research worldwide: An introduction." *Social indicators research* 77 (1): 1–10.
- Kim, Eric S, Laura D Kubzansky, and Jacqui Smith. 2015. "Life satisfaction and use of preventive health care services." *Health Psychology* 34 (7): 779–782.
- Koivumaa-Honkanen, Heli, Risto Honkanen, Heimo Viinamäki, Kauko Heikkilä, Jaakko Kaprio, and Markku Koskenvuo. 2000. "Self-reported life satisfaction and 20-year mortality in healthy Finnish adults." *American Journal of Epidemiology* 152 (10): 983–991.
- Lee, Sunghee, Mingnan Liu, and Mengyao Hu. 2017. "Relationship Between Future Time Orientation and Item Nonresponse on Subjective Probability Questions: A Cross-Cultural Analysis." *Journal of Cross-Cultural Psychology* 48 (5): 698–717.
- Lindstrom Johnson, Sarah R, Robert W Blum, and Tina L Cheng. 2014. "Future orientation: a construct with implications for adolescent health and wellbeing." *International journal of adolescent medicine and health* 26 (4): 459–468.
- Miret, Marta, Francisco Félix Caballero, Somnath Chatterji, Beatriz Olaya, Beata Tobiasz-Adamczyk, Seppo Koskinen, Matilde Leonardi, Josep Maria Haro, and José Luis Ayuso-Mateos. 2014. "Health and happiness: cross-sectional household surveys in Finland, Poland and Spain." *Bulletin of the World Health Organization* 92 (10): 716–725.
- Sabato, Todd M, Audrey J Burnett, Dianne L Kerr, and Laurie Wagner. 2013. "Examining behavioral and psychosocial predictors of antibody testing among college youth: Implications for HIV prevention education and testing." *American Journal of Sexuality Education* 8 (1-2): 56–72.
- Schnohr, Peter, Tage S. Kristensen, Eva Prescott, and Henrik Scharling. 2005. "Stress and life dissatisfaction are inversely associated with jogging and other types of physical activity in leisure time-the Copenhagen City Heart Study." *Scandinavian journal of medicine & science in sports* 15 (2): 107–112.
- Singh, Kavita, Winnie Luseno, and Erica Haney. 2013. "Gender equality and education: Increasing the uptake of HIV testing among married women in Kenya, Zambia and Zimbabwe." *AIDS care* 25 (11): 1452–1461.
- Skalamera, Julie, and Robert A Hummer. 2016. "Educational attainment and the clustering of health-related behavior among US young adults." *Preventive medicine* 84:83–89.
- Smith-Greenaway, Emily. 2015. "Are literacy skills associated with young adults' health in Africa? Evidence from Malawi." *Social Science & Medicine* 127:124–133.
- Somlai, Anton M, Jeffrey A Kelly, Timothy G Heckman, Kristin Hackl, Lori Runge, and Cassandra Wright. 2000. "Life optimism, substance use, and AIDS-specific attitudes associated with HIV risk behavior among disadvantaged innercity women." *Journal of women's health & gender-based medicine* 9 (10): 1101–1111.
- Sommer, Marni, and Kristin Mmari. 2015. "Addressing structural and environmental factors for adolescent sexual and reproductive health in low-and middle-income countries." *American journal of public health* 105 (10): 1973–1981.
- World Bank (The World Bank). n.d. *Data for Barbados, High Income*. <http://data.worldbank.org/?locations=BB-XD>.
- UNESCO (UNESCO Institute for Lifelong Learning). 2015. *Narrowing the Gender Gap Empowering Women through Literacy Programmes*. <http://unesdoc.unesco.org/images/0024/002432/243299e.pdf>.
- UNESCO (UNESCO Institute for Statistics). 2016. *50th Anniversary of International Literacy Day: Literacy Rates are on the Rise but Millions Remain Illiterate*. <http://uis.unesco.org/sites/default/files/documents/fs38-50th-anniversary-of-international-literacy-day-literacy-rates-are-on-the-rise-but-millions-remain-illiterate-2016-en.pdf>.
- UNICEF (United Nations Children's Fund (UNICEF)). 2011. *Opportunity in Crisis: Preventing HIV from Early Adolescence to Young Adulthood*. https://www.unicef.org/media/files/Opportunity_in_Crisis_LoRes_EN_05182011.pdf.

- UNICEF (United Nations Children's Fund (UNICEF)). 2012. *Belize Multiple Indicator Cluster Survey 2011 Final Report*. https://mics-surveys-prod.s3.amazonaws.com/MICS4/Latin%20America%20and%20Caribbean/Belize/2011/Final/Belize%202011%20MICS_English.pdf.
- . 2013. *Ukraine Multiple Indicator Cluster Survey Final Report: 2012*. https://mics-surveys-prod.s3.amazonaws.com/MICS4/Central%20and%20Eastern%20Europe%20and%20the%20Commonwealth%20of%20Independent%20States/Ukraine/2012/Final/Ukraine%202012%20MICS_English.pdf.
- . n.d. *Multiple Indicator Cluster Surveys, FAQ*. <http://mics.unicef.org/faq#general-information>.
- Valois, Robert F, Jelani C Kerr, Michael Hennessy, Ralph J Di-Clemente, Larry K Brown, Michael P Carey, Peter A Vanable, Naomi B Farber, Laura F Salazar, and Daniel Romer. 2015. "Perceived Difficulty of Performing Selected HIV/AIDS Preventive Behaviors and Life Satisfaction: Is there a Relationship for African American Adolescents?" *AIDS and Behavior* 19 (7): 1288–1297.
- Valois, Robert F, Keith J Zullig, E Scott Huebner, Sandra K Kammermann, and J Wanzer Drane. 2002. "Association between life satisfaction and sexual risk-taking behaviors among adolescents." *Journal of child and family studies* 11 (4): 427–440.
- Wellings, Kaye, Martine Collumbien, Emma Slaymaker, Susheela Singh, Zoé Hodges, Dhaval Patel, and Nathalie Bajos. 2006. "Sexual behaviour in context: a global perspective." *The Lancet* 368 (9548): 1706–1728.
- WHO (World Health Organization). 2016. *Media Centre: HIV/AIDS*. <http://www.who.int/mediacentre/factsheets/fs360/en/>.
- Zuilkowski, Stephanie Simmons, and Matthew CH Jukes. 2012. "The impact of education on sexual behavior in sub-Saharan Africa: a review of the evidence." *AIDS care* 24 (5): 562–576.
- Zullig, Keith J, Valerie A Ubbes, and Michael J Mann. 2013. "Early Adolescent Literacy Influences, Reading Ability, And Preventative Health Behaviors." *American Journal of Health Studies* 28 (3).