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Magnitude and Predictors of Cohabitation among Youth Women in East Africa Leads to HIV: A Recent Demographic and Health Survey Using Multilevel Analysis

Teshome Demis Nimani[1*], Zinabu Bekele Tadese[2], Eyob eshete Tadese[3], Fikadu Wake Butta[4]

[1]*Department of Epidemiology and Biostatistics, Haramaya University, Harar, Ethiopia*

[2]*Department of Health Informatics, Samara University, Samara, Ethiopia*

[3]*Department of Nursing, Mettu University, Mettu, Ethiopia*

[4]*Department of Health Informatics, Mettu University, Mettu, Ethiopia*

ABSTRACT

Introduction: In the second half of the 20th century, cohabitation became highly prevalent, especially among young women between the ages of 15 and 24. Nowadays, college students and young adults in sub-Saharan Africa often have unprotected sex and contract STDs, leading to newest HIV infections. The aim of this study is to assess the magnitude and predictors of cohabitation among young women aged 15-24 years using a recent East African demographic and health survey.

Methods: It is a secondary data analysis from a nationwide community-based survey. The data for this analysis was extracted from recent DHS data. Using STATA version 17, weighted descriptive analysis, percentiles, graphs and frequency tables were used to characterize the study participant. For the determinant factors, a multilevel binary logistic regression model was fitted. In the multivariable multilevel analysis, the Adjusted Odds Ratio (AOR) with 95% CI was used to declare significant determinants of cohabitation.

Results: The magnitude of cohabitation was found to be 44%, with a 95% CI of 43.5 and 44.6%. The independent predictors of cohabitation were women's age (AOR=1.78; 95% CI: 1.758, 1.806). 0.43 (95% CI: 0.389, 0.486) and 0.26 (95% CI: 0.232, 0.297) for primary, secondary and higher education, respectively, among women who can read and write (AOR=0.52; 95% CI: 0.484, 0.568). Women with media access (AOR=0.79, 95% CI: 0.741, 0.839) Women live in Uganda (AOR=1.81, 95% CI: 1.175, 2.776). Women who are protestant follow (AOR=1.81, 95% CI: 1.175, 2.776).

Conclusion: The most important idea is that educational level, access to media, occupational status, wealth index, religion, being a protestant, being Ugandan, age and literacy are the most significant factors for the odds of cohabitation.

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Corrsponding author: Teshome Demis Nimani, Department of Epidemiology and Biostatistics, Haramaya University, Harar, Ethiopia; E-mail: teshomedemis112@gmail.com

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Keywords: Cohabitation; Youth women; Multilevel analysis; East Africa

Abbreviations: AOR: Adjusted Odd Ratio; COR: Crude Ratio; EAs: Enumeration Areas; DHS: Demographic Health Survey; ICC; Intraclass Correlation; WHO: World Health Organization; CI; Confidence Interval

INTRODUCTION

Unmarried couples who live together and are in a relationship are referred to as cohabiting. It applies to people of the opposite sex. Cohabitation is when two people live together as though they were a married pair. Around 1.5 million couples cohabited globally in 1996; 3.6 million couples cohabited globally in 202. Cohabitation became very common in the second part of the 20th century, especially among young women between the ages of 15 and 24, especially in countries like France, Sweden, Denmark, and the United Kingdom [1]. El Salvador (34.2%) and Guatemala had high odds prior to 1960. Beginning in 1960, cohabitation rose, with nations including Colombia (13.5%), Peru (20.9%), Guatemala (37.2%) and Venezuela (44.4 percent). Results using census microdata samples from Latin America obtained from the Integrated Public Use Microdata Series (IPUMS) International show rising trends in cohabitation among women in Latin American nations who are 25 years of age and older. For instance, in Venezuela, the percentage of couples climbed by 15% in ten years, from 37% in 1990 to 52% in 200.

The highest odds of cohabitation (21.7%) and the lowest odds (West Africa) were in Central Africa (6.2 percent). While in East and Southern Africa, the odds of cohabitation were 11.7 and 10.4 percent, respectively. Today, the majority of new HIV infections in sub-Saharan Africa are caused by cohabiting couples. Living together, college students and young people regularly engage in unprotected sex and pick up STDs. Premarital sex is widespread among young adults in Nigeria and the proportion of college students living together is rising [2]. College students who live together regularly engage in unprotected intercourse, increasing their risk of STDs and HIV/AIDS infections. In the 1990's, cohabiting couples made up the bulk of non-marital births due to their tendency to have unauthorized pregnancies and frequently abort their infants, which can cause uterine damage and even death. Women who cohabitate early in their lives are more likely to develop breast cancer. Women who live together die more frequently than women who are married. Moral and religious degeneration, while cohabitation's negative impacts included death, school dropout, poor academic performance and health or social issues [3].

In a study that was conducted in 19 African nations, women made up 18 percent of cohabiting respondents and 54 percent of them had alcohol addictions. Cohabitating women are more likely than married women to die from cardiovascular, respiratory, digestive, alcohol and accident-related causes of death, according to a comparison study. Cohabiting female teens are usually at risk for poor mental health as a result of the relationship's frequent lack of commitment and transience [4,5].

Divorce is the result of cohabitation everywhere. The reason why cohabitation has been linked to higher divorce rates is a topic of debate among academics. On the subject of whether cohabitation and divorce have a longer-term relationship, researchers are divided. Cohabitation has previously been associated with higher divorce odds. The nature of the marriage and the type of cohabitation Compared to married women, who assess their relationships as having the highest quality, cohabiting people without marriage plans report the lowest marital quality [6].

There was evidence that women who lived together were more likely to regularly use marijuana and other substances. Early marriage and teenage cohabitation are both linked to a higher chance of having a kid. Cohabitation threatens African cultural customs and undermines the core principles and expectations of marriage on the continent [7].

The prevalence of cohabitation around the world is high for a variety of reasons. This includes rural residence, which raises, religion being Catholic makes cohabitation more likely. Cohabitation is inversely correlated with wealth. Exposure to the media also discourages cohabitation, cohabitation is less likely to occur as women's educational level rises, The chance of cohabitation rises with occupation. Behavioural element smoking and drinking are other factors that influence cohabitation; a study indicated that smokers and current regular drinkers were all more likely to cohabit [8].

Prior studies, however, neglected to take into account crucial factors including literacy, age, tobacco use, smoking a cigarette and region, and the fact that there is only scant evidence of cohabitation nationwide. Even though the evolution of cohabitation remains to be investigated, the most recent study employed these important criteria along with the findings from the previous one to model it. In order to do this, this study used multilevel analysis to quantify and identify determinants of cohabitation among young women in the most recent east African demographic and health survey [9,10].

MATERIALS AND METHODS

Study Design and Study Area

A community-based cross-sectional survey was conducted, and the study was conducted in East Africa, one of the sub-Saharan African countries where the population is currently 477,195,372 as of Sunday, April 23, 2023, based on the latest United Nations estimates [11].

Study Participants

The study included all young women (15-24 years old) found in the selected clusters at least one night before the data collection period. Taking youth age women (15-24 years) in place of the source population, youth age women living in selected clusters as the study population and the youth age women (15-24 years) found in East African Demographic Health Survey (DHS) enumeration areas at least one night before data collection as per the sample population [12].

Sampling Technique and Sample Size Determination

The DHS sample was selected using a stratified two-stage cluster sampling design, with census Enumeration Areas (EAs) as the sampling units for the first stage. In the second stage, a sample of households was drawn from an updated list of households in each EA [13]. The schematic representation of the sampling procedure shown in **Figure 1**. A total sample size of 32,611 young women from four East African countries was included in this study, as shown in **Table 1**.

Table 1: Sample size for each east Africa countries.

No	Countries	Weighted youth women
1	Ethiopia	6,401
2	Tanzania	53,999
3	Uganda	8,058
4	Kenya	12,753
	Total	32,611

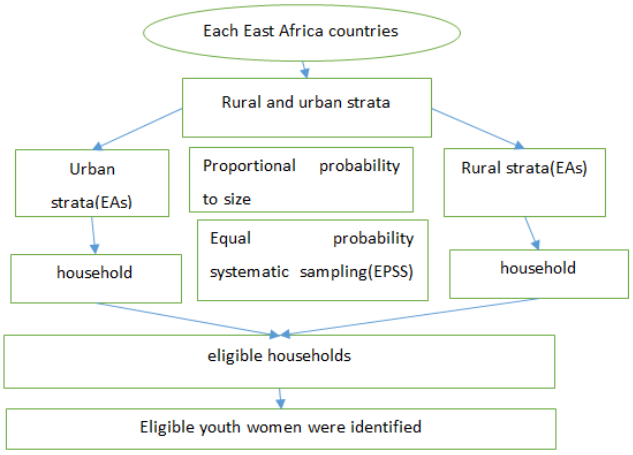

Figure 1: Sampling procedure of magnitude and predictors of cohabitation among east African youth women.

Outcome and Independent Variable

The outcome variable of this study was cohabitation status (yes or no). Socio-demographic factor: Includes place of residence, religion, region and age. Socio-economic factors include the wealth index, media exposure, women's educational status, literacy and employment status [14]. Behavioural factors: Includes alcohol misuse, tobacco use, other smoking and smoking cigarettes. Knowledge-related factor: Ever heard about STDs and ever heard about HIV/AIDS.

Measurement of Variables

Dependent variable, cohabitation status (yes or no). For the purpose of analysis, those women who cohabited had an event code of 1 (success), and those who did not cohabit had a code of 0 (failure). Independent variables. The respondent's education was categorized into no education, primary, secondary and higher education, and no education was taken as a reference [15]. The respondent's occupation is coded as "not working" and has a working reference number of "working." The index was classified as (poor, middle, and rich) by taking the poor as the comparison group. Mass media exposure (yes/no) and literacy coded as "can read and write but cannot read and write tobacco use, smoking cigarettes and smoking other" (yes/no)?

Operational Definition

Media-exposure: The frequency of respondents' newspaper, radio, and television use was questioned. People are regarded as regularly exposed to media if they see one of them at least once each week [16].

Wealth index: The wealth index is a total assessment of the standard of life of a household. The principal components method, a statistical technique, is used to generates data on a household's ownership of specific assets, such as televisions and bicycles, building materials used in housing construction and the types of water access and sanitation facilities in order to calculate the wealth index. The wealth index ranks families according to their relative wealth on a continuous scale. DHS divides all homes it has surveyed into five wealth quintiles in order to compare how wealth affects key demographic, healt and nutrition metrics [17].

Data Quality Control

After all, questionnaires were finalized in English; they were translated into major local languages of the countries and pretested at specific area of the countries. Computer assisted personal interview data collection system was carried out to collect data by trained DHS data collectors and mobile version CSPro software was used for entering and capturing the data Data extraction checklist was prepared and data extracted using STATA version 17.

Data Source

For this study, secondary data from the DHS was used. The data set was downloaded from the website after an approval letter for use had been obtained from the DHS. Variables were extracted from the recent DHS individual women's data set using a data extraction tool [18].

Data Analysis and Procedure

After the data is extracted, cleaned and weighted, both descriptive and analytical statistics are done. Descriptive measures such as percentiles, graphs, and frequency tables are used to characterize the study participants. Before proceeding with bivariable analysis, a null model was fitted, and the measures of variation (random effects) were reported as the Intracluster Correlation Coefficient (ICC), which is the percentage variance explained by the higher-level variables [19]. If the ICC is greater than 5%, we proceed with multi-level analysis, unless otherwise we use the classical regression method. Multilevel bivariable and multilevel binary logistic regression were done to see the association between cohabitation and covariates. In the bivariable analysis, those that had a p-value less than or equal to 0.2 were taken for further analysis for the final model. In the final multilevel multiple logistic regression model, results that had a p-value less than or equal to 0.05 were declared for the significant association between cohabitation and covariates. Both the Crude Odds Ratio (COR) and Adjusted Odds Ratio (AOR) with their 95% confidence interval were reported [20].

RESULTS

East Africa Youth Women Characteristic

A weighted total of 32,611 young women participated in this study. This research report of all young women was interested in the prevalence and predictors of cohabitation. 14,379 (44%) of them lived together, whereas 18,232 (56%) did not until the data collection was complete. Table 2 presents many covariate features. 21,796 (67%) female youths lived in rural areas, while 10,815 (33%) lived in urban areas. A family's wealth index was divided into three categories: low, moderates and high income. According to the data, 212,874 (39 percent), 5,653 (17 percent), and 14,084 (43 percent) of women lived in low, middle-class, and wealthy homes, respectively. 20,257 (62%) of the women, or more than half, are employed. 16,835 (52%) of the total number of women completed secondary school or higher (**Table 2**).

Table 2: Respondents characteristics with their status.

Variables	Categories	Frequency	Cohabitation	
			Yes	No
Place of residence	Urban	10,815 (33%)	4,043 (37%)	6,772 (63%)
	Rural	21,796 (67%)	10,336 (47%)	11,460 (53%)
Religion	Orthodox	1,111 (4%)	485 (44%)	626 (56%)
	Catholic	7,644 (23%)	3,088 (40%)	4,556 (60%)
	Protestant	18,330 (56%)	8,353 (46%)	9,977 (54%)
	Islamic	5,413 (16%)	2,384 (44%)	3,029 (56%)
	Other	113 (1%)	69 (61%)	44 (39%)
Educational status	No education	3,331 (10%)	2,454 (74%)	877 (26%)
	primary education	16,835 (52%)	8,185 (49%)	8,640 (51%)
	Secondary and above	12,445 (38%)	3,740 (30%)	8,705 (70%)
Literacy	Cannot read and write	6,927 (21%)	4,648 (67%)	2,279 (33%)
	Can read and write	25,650 (79%)	9,717 (38%)	15,933 (62%)
Wealth index	Poor	12,874 (39%)	7,012 (54%)	5,862 (46%)
	Middle	5,653 (17%)	2,435 (43%)	3,218 (57%)

	Rich	14,084 (43%)	4,932 (35%)	9,152 (65%)
Smoking cigarettes	No	25,823 (79%)	11,501 (45%)	14,322 (55%)
	Yes	6,788 (21%)	2,878 (42%)	3,910 (58%)
Tobacco use	No	32,571 (99%)	14,348 (44%)	18,223 (56%)
	Yes	40 (1%)	31 (78%)	9 (22%)
Smoking other	No	26,203 (20%)	11,597 (44%)	14,606 (56%)
	Yes	6,400 (38%)	2,782 (43%)	3,624 (57%)
Occupation status	Has no occupation	12,354 (38%)	4,174 (34%)	8,180 (66%)
	Has occupation	20,257 (62%)	10,205 (50%)	10,052 (50%)
Media exposure	Has no media	22,996 (71%)	11,240 (49%)	11,756 (51%)
	Has media	9,615 (29%)	3,139 (33%)	6,476 (67%)

Magnitude of Cohabitation in East Africa

The overall magnitude of cohabitation among East African youth was 44%, with a 95% CI of 43.5 and 44.6% displayed in **Figure 2**.

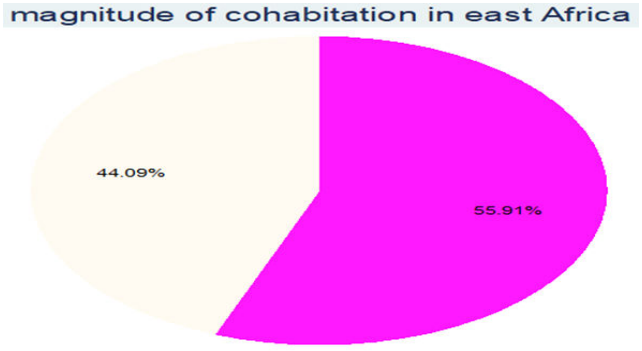

Figure 2: Magnitude of cohabitation in East Africa.

Univariable analysis and checking appropriateness of multilevel analysis for this study: In the null model, the variance of the random factor was 0.2 with a 95% confidence interval of 0.18-0.25, showing heterogeneous areas. Since the variance estimate is greater than zero, it indicates that there are enumeration (cluster) area differences in cohabitation status among youth women, and thus, multilevel analysis should be considered an appropriate approach for further analysis.

The Intra-enumeration area Correlation Coefficient (ICC) indicated that 6% of the total variability in cohabitation status is due to differences across cluster areas, with the remaining unexplained 94% attributable to individual differences displayed below in **Table 3**.

Table 3: Intraclass correlation coefficient.

Level	ICC	Std. err.	95% Conf. interval	
Cluster number	0.059775	0.0047038	0.0511946	0.0696879

Except for smoking other, all variables that had a p-value of 0.2 (place of residence, educational status of the youth, occupational status of women, region, wealth index, literacy, tobacco use, smoking cigarettes, countries and media exposure) in the bivariable analysis were eligible for multivariable analysis.

Multivariable Analysis

In multivariable analysis, **Table 4** displayed the age of youths, educational status, literacy, wealth index, occupational status, countries (Uganda) and media exposure. The p-value was less than 5% and the confidence interval did not cross one. This demonstrated that they play a substantial role in predicting cohabitation in East African countries. As a result, as women age, the risk of cohabitation also increases by 1.78 (AOR=1.78; 95% CI: 1.758, 1.806). Women who have completed at least primary school have decreased the likelihood of cohabitation more than those who have not completed education, with an adjusted odd ratio of 0.43 (95% CI: 0.389, 0.486) and 0.26 (95% CI: 0.232, 0.297) for primary, secondary and above education, respectively. Women being protestant religion followers, the likelihood of cohabitation increased by 1.26 higher than that of orthodox followers (AOR=1.26; 95% CI: 1.091, 1.446). The likelihood of cohabitation for employed women was 1.25 times higher than for unemployed women (AOR=1.25, 95% CI: 1.396, 1.684). For a woman who has media access, the odds of cohabitation decreased by 21% compared with a woman who has no media access

(AOR=0.79, 95% CI: 0.741, 0.839). In Uganda, women's odds of cohabitation increased by 1.81 compared with Kenyan youths. Women being in Uganda, the odds of cohabitation increased by 1.81 compared with Kenyan youths.

Table 4: Multilevel binary logistic analysis result.

Variables	Categories	COR	AOR	p-value	95% CI
Age of youth		1.64	1.78	0.000**	1.758, 1.806
Residence			Urban (ref)		
	Rural	1.54	0.95	0.115	0.888, 1.013
Religion			Orthodox (ref)		
	Catholic	0.9	1.07	0.355	0.926, 1.237
	Protestant	1.09	1.26	0.002**	1.091, 1.446
	Islam	1.01	1.81	0.302	0.587, 5.584
	Other	1.85	1.49	0.076	0.959, 2.307
Educational attainment			No formal education (ref)		
	Primary	0.33	0.43	0.000**	0.389,0.486
	Secondary and above	0.15	0.26	0.000**	0.232,0.297
Literacy			Cannot read and write (ref)		
	Can read and write	0.31	0.52	0.000**	0.484, 0.568
Wealth index			Poor (ref)		
	Middle	0.65	0.86	0.000**	0.799, 0.920
	Rich	0.46	0.75	0.000**	0.703, 0.807
Smoking cigarettes			No (ref)		
	Yes	0.91	1.25	0.07	0.983, 1.32
Tobacco use			No (ref)		
	Yes	4.44	1.73	0.2	0.749,3.975
Occupational status			Have no occupation (ref)		
	Have occupation	1.04	1.25	0.000**	1.396, 1.684
Countries			Kenya (ref)		
	Ethiopia	1.09	1.49	0.067	0.972, 2.270
	Tanzania	1.08	2.51	0.129	0.765, 8.252
	Uganda	1.28	1.81	0.007**	1.175, 2.776
Media exposure			Has no exposure (ref)		
	Has exposure	0.52	0.79	0.000**	0.741, 0.839

Note: **LR test *vs.* logistic model: Chibar 2 (01)=206.09, Prob>=chibar 2=0.0000, Log likelihood=-14277.686, ref=reference categories

DISCUSSION

This study examined the magnitude and predictors of cohabitation among youth women aged 15-24 in east Africa using multilevel analysis. The study revealed that analysis age of youths, educational status, literacy, wealth index, occupational status, religion (protestant) countries (Uganda) and media exposure were the most significant factors. The current study found that the magnitude of cohabitation was 44%, with a 95% CI of 43.5 and 44.6%. This finding is in agreement with the findings from Venezuela 44.4% and Latin America, 42%. But higher than a study conducted in El Salvador (34.2%) and Guatemala (29.7 percent), Colombia (13.5%), Peru (20.9%), and Guatemala (37.2%). This might be due to the high prevalence of sexual intercourse activities in these countries. The other possible justification for this discrepancy might be due to the limited educational opportunities for girls in most sub-Saharan countries, where the majority of the population lives in rural areas, which forces them to get social and financial support.

Women's education and cohabitation were inversely associated in this study. This finding was corroborated with study findings in South Africa, Ethiopia and Bangladesh.

Possible explanations of the inverse association between educational attainment and cohabitation could be due to the fact that enrolling and retaining girls at least up to a secondary level of education probably reduces early marriage and sexual experience and increases awareness of reproductive health issues. Access to mass media was found to have a significant effect on the cohabitation. The findings of this study showed that women who had access to the media had lower odd of cohabitation than those who had no access to the media. This could be because if women are aware of the consequences of cohabitation, they are less likely to engage in it.

The finding shows that the age of the youth is another important covariate for cohabitation. With increasing age, the odd of cohabitation were increasing. This might be due to the fact that age increases gradually to change with marriage this practise also rise. Literacy was found to have a significant effect on the odd cohabitation. Cohabitation odds fell for women who could read and write compared to those who couldn't. The possible justification for this result was that women who can read and write are more aware of the consequences of cohabitation though different media and are less likely to engage in it compared with those who cannot read and write.

The finding revealed that the odds of cohabitation for employed women was higher than for unemployed women. This result is in line with studies conducted in South Africa and Ethiopia. This similarity may be due to most couples' listed reasons, such as spending more time together, convenience-based reasons, and testing their relationships more during cohabitation than non-employment. The results of the study should be understood in the context of its many limitations. First off, because the data used for the analysis were self-reported, it is prone to self-report bias (recall and social desirability bias). For instance, it's possible that the age at first cohabitation is not being reported correctly. The analysis only allowed for background features as predictors. There was a chance that other factors, such as parental education, which were left out of the analysis, would have a substantial impact on how long it took for a couple to get married. Since just the current religion was taken into account in the study, some variables, like religion, are time-varying and cannot predict the outcome. The results highlight certain important characteristics that are expected to be significant drivers and are at a far advanced stage for cohabitation among young women, notwithstanding these restrictions.

CONCLUSION

The main objective of this study was to examine the magnitude and predictors of cohabitation among young women in East Africa using multilevel analysis. The determinant factors considered were residence of women, region, age, educational level of women, religion of women, work status of women, access to mass media, literacy, wealth index of households, tobacco use, other smoking, smoking cigarettes and countries. Based on multivariable analysis, it was shown that educational level of women, age of youths, literacy, wealth index, occupational status, religion (protestant), countries (Uganda) and media exposure were the most significant factors for cohabitation.

Those who have attended at least primary school have decreased the odds of cohabitation more than those who have no education. For women who can read and write, the likelihood of cohabitation was lower compared with women who cannot read and write. As the age of women increases, the likelihood of cohabitation increases. For a woman who has media access, the odds of cohabitation decreased compared with a woman who has no media access.

The ministry of women's and children's affairs will roll out programs that educate the public and enforce the validity of marriage in an effort to lower the magnitude of cohabitation. The ministry of education advised expanding access to rurally dominated areas in order to keep women in school for at least the secondary level and higher. The Ministry of Health should make the most of the media as well by expanding access and emphasizing the negative effects of cohabitation. To more research is required in Uganda; therefore, researchers should carry out studies that take family dynamics into account and look into possible influences on cohabitation among protestant followers.

ETHICAL CONSIDERATION

Ethical clearance was accessed for the DHS dataset by using the DHS website after submitting the proposal title, justification, and objective. The data was handled properly and kept confidential only by giving it to those who are mentioned in the DHS application letter as co-authors.

DECLARATIONS

The written approval letter was obtained from the DHS International Program to use the data for this analysis which authorized for the data-sets.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA AND MATERIALS

The data will be available upon request from the corresponding author through teshomedemis112@gmail.com.

CONFLICT OF INTERESTS

The authors declare that they have no competing interests

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AUTHORS' CONTRIBUTIONS

TD, ZB, EE and FW were involved in conception, design and analysis of the study, TD and ZB interpretation and drafting the manuscript. EE and FW were reviewing the manuscript. All authors read and approved the final manuscript.

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