Original article

Does young people's living arrangement matter in their sexual behaviors? A systematic review and meta-analysis

Dessalegn Wirtu[1], Mesganw Fantahun[1], Fikre Enquselassie[1]

Abstract

Background: Living arrangement of adolescents/young people is one of the avenues where they get healthy sexual socialization from their parents as part of their developmental process but there are inconsistent finings across researches.

Objective: To estimate the pooled summary of association of young people living arrangement with their sexual behaviors in Ethiopia

Methods: Relevant studies and reports related to young people (10-24 years) living arrangement and premarital sexual practice were searched from libraries. Selected search terms related to young peoples' living arrangement and premarital sexual practice were used. Cross sectional, longitudinal or case control study designs were selected based on the prior set selection criteria. The information from the eligible articles was abstracted using a pre-specified abstraction formats. Living with a single parent, living with other relatives and living alone were compared against those who were living with both parents using Meta Easy MS 1.04 statistical software. Cochran's Q test, P-value and the corresponding I^2 were calculated to indicate statistical significance of the homogeneity.

Result: The combined effect size of living with a single parent, living with relatives and living alone were OR=1.48; 95% CI= 1.12 -1.97, OR=2.14; 95% CI=1.67- 2.75 and OR=1.84; 95% CI= 1.32- 2.57; respectively, compared to those who were living with both parents. The effect size of living arrangements were: 0.2183, 0.4202.and 0.4021 for living with a single parent, with relatives and living alone, respectively.

Conclusion and recommendations: Living arrangements were found to be important predictors for adolescents' premarital sexual behaviors. Advocacy works on strengthening parent-young people connectedness are important at both the household and community levels. [*Ethiop. J. Health Dev.* 2012;26(3):208-215]

Introduction

Adolescents' connectedness is the emotional attachment and commitment they make to social relationships in the family, peer group, school, community, or society (1). The quality of a child's bonds to their families and other social domains is an essential element of positive development into a healthy adulthood (1). Because families are the primary sources of norms and are the live role models, the behaviors that are learned within the families' environments are more likely to provide the foundation for subsequent attitudes and behaviors (2). These connectedness concepts may protect youth from potentially harmful behaviors, including sexual risk-taking behaviors (3).

Family influences range from hereditary or biological transmission of potentially important characteristics (e.g., early age of menarche, levels of hormones, and genes) to the contextual and structural features of families (e.g., parent's education, marital status, and sibling composition) to the everyday styles or practices of parenting (e.g., parental support, control, or supervision of teenagers) (4). With this view, living in the family with both parents may imply the availability of support, supervision and behavioral control in many aspects of adolescents' lives (5).

According to the literature on the subject, living with both parents is a protective factor from engagement in premarital sexual practices. A study done in four Sub-Saharan countries showed that compared to females living with neither parents, those who were living with both parents were less likely to be sexually active and more abstinent in all countries except Malawi (6). In Ghana, a national survey data also showed that adolescent females, who lived with both parents, were less likely to have ever had sexual intercourse than females who had other living arrangements (7). Even the presence of one parent was found to have a strong protective effect on adolescent sexual behavior (6).

On the other hand, being raised by a single parent, particularly by a single mother is associated with early onset of sexual activity (8). A study done in the UK also found that adolescent males from single-parent families were 50% more likely than those from two-parent families to have initiated sexual activity before the age of 17 (9). Moreover, a study in the USA showed that children, who have experienced multiple parental marriages and divorces or multiple changes in parental figures, were more likely to engage in sexual intercourse at an early age. Adolescents who lost (did not grow with) their parents were the most likely to be sexually active, followed by adolescents living with a single parent (10).

[1]School of Public Health, Addis Ababa University, Addis Ababa, Ethiopia

Communication is an important dimension of parenting. According to some studies, parent-adolescent communication about sexuality appears to play an important role in reducing the onset of premarital sexual behavior and in increasing contraceptive use among sexually active adolescents (11). However, Somers and Paulson (12) reported that parental communication was not related to sexual behavior; while another study reported that parent-child discussions about sex were not related to timing of sexual intercourse or contraceptive use (13).

Connectedness and communication occur as part of the social contexts in which young people live and together they are expected to promote good behavior as well as lead to attitudinal and behavioral change (14). In addition, Perkins et al have reported that unsupervised time at home is associated with teen sexual activity and maternal monitoring related to less frequent adolescent sexual intercourse and fewer sexual partners (15). On the other hand, different studies provide a conflicting result regarding the association of adolescents' living arrangement and their premarital sexual practice. For example, some studies indicate that adolescent perception of closed communication with parents positively related to daughters' pregnancy status (16) and parent/child discussions about sex were not related to timing of sexual intercourse or contraceptive use (17,18). However, it is expected that when children are living with their parents, they will communicate with their parents and share experiences on sexual and reproductive health that can help them make responsible decision.

Meta-analysis helps bring together a large amount of information from a large body of researches to synthesize them and produce a single representative result (pooled effect) by combining the findings from independent studies that improves the precision and statistical power to resolve conflicts in the different study. Thus, this systematic review and meta-analysis is aimed at assessing the pooled effect of the adolescents' living arrangement on their premarital sexual practice by analyzing the results of cross sectional studies done in Ethiopia from 2001-2009.

Methods

To identify the articles to be included in the meta-analysis, we used the following inclusion criteria: articles included adolescents (aged 10-19 years) or young people (aged 10-24 years), analyzed the association of adolescents /young people's living arrangement and their premarital sexual practice, applied multivariate analyses and having adequate sample size and done in Ethiopia from 2001-2009.

To identify the reports to be included in the meta-analyses, different search terms were used: teen, adolescent, youth, young people and premarital sex, living with both biological parents, living with a single parent, living with relatives, and living alone. Relevant articles were searched and compiled from internet and hand-searched from the library of public health, Addis Ababa University using title index

Sixty seven (67) journal articles were identified from internet and from library. From these, 41 articles were excluded because of not fulfilling one or more of the information listed in the criteria; while 10 articles were dropped as they were reported without analyzing the associations of living arrangements and young people's sexual practice. Other 9 articles reported without indicating the sample size. Initially articles were coded for their methodologies (if quantitative or mixed methods). Then only those quantitative articles fulfilling the selection criteria were included in the analysis. Finally, 7 articles meeting the inclusion criteria (17, 19-24) were categorized and summarized according to living arrangements: living with both parents versus living with a single parent, living with both parents versus living with relatives or living alone. The studies assessed the living arrangement of adolescents by asking. "With whom are you presently living?" "Living most of the time with" and "With whom grew up until age 14?" The given alternative responses were: living with both biological parents, living with a single parent living with relatives and living alone. Three studies included living alone, two of the studies included living with friends while only one study had living with grandparents while other few studies included living with others as an alternative response. The respondents were made to choose one response from the given alternatives.

Different living arrangements were compared with living with both biological parents to determine the effects living arrangements on adolescents' premarital sexual practice using their own self-reports. The outcome of interest was ever having had premarital sex. Findings were coded and the nature of association was protective, risk, or no association, i.e., not statistically significant ($p > .05$)). All the variables included in the original studies were dichotomous ones.

The full texts of all eligible articles were abstracted according to a pre-specified form. Abstracted data included information regarding the authors, specific studies, years of publication, country, study population, design, outcome measures, statistical analyses, and (point) estimates with 95% CI (Table 1).

Heterogeneity Assessment:

The original studies included in this meta analysis were assessed for their level of heterogeneity. Accordingly, the Cochran's Q was ($Q=2.31$, $p=0.8894$) with the corresponding $I^2 = 0.00\%$; indicating statistically significant homogeneity of the articles (25).

Analysis:

The findings from individual studies (numerical values and OR) were combined using MetaEasy MS 1.04 Statistical Software to come up with a single

representative summary result. Analysis was conducted on living arrangement types separately to assess the relative impact of living arrangement on adolescents' premarital sexual practice. The Fixed Effect Model (FEM) statistical test was carried out as the included studies were found to be homogenous. Inverted funnel was used to assess the existence of publication bias. Forest plot, a graphical display was used to illustrate and present the results. The pooled odds ratios and confidence interval were calculated using the formula
$gi = \sqrt{3}/\pi$ [ln OR].

Results

Detailed information about the individual original survey design, sampling technique and data collection method are provided in Table 1.

The results of the original studies included in this meta-analysis, like the prior studies, were inconclusive. Three studies reported that living with relative was found to be significantly associated with premarital sex (20, 23, 24), while one study reported that living with a single parent was associated with premarital sex (23) and another study reported that living with friends and living alone were found to be associated with adolescents' premarital sex (19).

The observed combined mean effect for living with both parents vs. living with single parents was 0.2183, 95% CI: (0.0617-0.375) compared to those who were living with both parents. Cochran's Q test (Q = 8.20, df of 5, P= 0.1454).In this analysis, the df is 5 because one of the studies was removed as it lacks data for a single parent The pooled summary showed that young people who were living with single parent were more likely to have had premarital sexual practice (OR =1.48; 95%CI: 1.12 - 1.97) (Table 2A).

The observed combined mean effect for living with both parents vs. living with relatives was, 0.4202, 95% CI: (*0.2821*-0.5583). Cochran's Q test (Q=2.31, P= 0.889) with the effect size of 0.4202 compared to those who were living with both parents Young people who live with relatives were more likely to have ever had premarital sexual practice (OR=2.14; 95% CI:1.67-2.75), (Table 2B).

The observed combined mean effect for living with both parents vs. living alone was 0.4021, 95% CI :(0.146-0.6580). The Cochran's Q test is (Q = 0.30, df of 5, P= 0.861) with the mean effect of 0.4021, compared to young people living with both biological parents. In the same way, young people who live alone were more likely to have ever had premarital sexual practice (OR=1.84; 95%CI=1.32-2.57). The df was 2 because only three studies were included in this analysis (Table 2C).

As depicted in the forest plots (figures 1-3), the 95% confidence interval of each study was represented with the horizontal line (the wider the CI, the less the confident level) indicating the level of variability in individual studies. The proportion of sample size weights of each study is represented by the size of the squares in the lines.

Table 1: **Abstracted information from the Original articles included in the systematic review, 2011**

Authors	Study design	year	Objective	Sample size	Findings- OR 95%CI (Living with :)
Asrat A, Gail Davey (2009)	comparative cross-sectional	2009	To assess the risk of sexual behaviors of preparatory students to compare with their living arrangement	327	Single parent: 1.33(0.37,4.79) Relative: 0.98(0.24,3.99) Alone: 0.78(0.15,4.17) Friends:1.04(0.24,4.58)
G/yesus D, Fentahun M EJHD	Cross- sectional	2006	To assess the level and factors influencing communication between School students and parents on sexual and RH issues	422	Single parent:1.1(0.5,2.6) Relative : **2.9(1.3,6.3)**
Shiferaw S, Fantahun M.	comparative cross- sectional	2004	To assess factors associated with early and unsafe sexual practice among preparatory students	720	Single parent: 1.19(0.45,3.15) Relatives:**2.52(1.28-4.95)** **Alone : 2.15(1.04--4.46)** Friends : **3.16(1.66,5.0)**
Seifu A., Fantahun M , Worku A. EJHD	A cross-sectional comparative	2001	To assess and compare reproductive health needs of rural and urban out-of-school Adolescents	1001	Single : **2.55 (1.6, 4.1)** Relative : **2.19 (1.33, 7.8)**
Mazenga F, Worku A. EJHD	comparative cross- sectional	2008	To determine the median age at first sexual intercourse and the associated factors of sexual initiation	1294	Single parent: 1.01 (0.66,1.81) Relatives: 1.62 (0.60, 4.12) Grand parent : 1.54 (0.76,1.98)
Seme A, Wirtu D EJHD	Cross-sectional	2006	To assess prevalence of premarital sexual practice and factors contributing to this practice among high school adolescents	672	both parents: 0.67 (0.25, 1.86) Single parent: 1.19 (0.39, 3.68) Relatives: 1.74 (0.61, 5.00)
Tesfaye R, Deyessa N	Crosse-sectional	2009	To determine the magnitude, contribution factors and the health consequences of sexual abuse among male high school students in AA	884	Alone :3.34(1.29-8.62**)** Relatives :1.95(1.15-3.32)

Table 2: **The Result of combined effect size for the three living constructs of the articles included in the review, 2011**

A/ Effect size for living with both parents VS living with Single parents

Studies	Sexually activity		Point estimate	95 % CI	Effect Size	Lower 95% CI	Up 95% CI
	Yes	No					
Seifu A, Fentahu M. Worku A. 2001	452	549	2.55	1.59-4.10	0.5161	0.2567	0.7755
Shiferaw S, Fentahun M. 2004	172	495	1.19	2.21-3.14	0.0959	-0.4405	0.6323
G/yesus D, Fentahun M. 2006	55	356	1.10	2.06-2.50	0.0525	-0.4019	0.50570
Seme A, wirtu D. 2006	145	531	1.2	2.57-3.64	0.0959	-0.5228	0.7146
Mazenga F, worku A. 2008	250	986	1.01	1.16-7.63	0.0055	-0.2726	0.2836
Asrat A, Gail D. 2009	73	241	1.33	2.66-4.69	0.1572	-0.5401	0.8545
Pooled OR, (95% CI)			**1.48**	**1.12-1.976**	**0.2183**	**0.0617**	**0.3749**

B/ Effect size for living with both parents VS living with relatives

Studies	Sexually activity		Point estimate	95 % CI	Effect size	Lower 95% CI	Up 95% CI
	Yes	No					
Seifu A, Fantahu M, Worku A. 2001	542	549	2.19	1.11-1.43	0.4322	-0.0554	0.9198
Shiferaw S, Fantahun M. 2004	172	495	2.52	1.28-4.94	0.5096	0.1367	0.8824
G/yesus D, Fantahun M. 2006	55	357	2.89	1.32-6.34	0.5870	0.1536	1.0204
Seme A, wirtu D. 2006	145	531	2.07	1.46-2.94	0.4016	0.2076	0.5957
Mazenga F, worku A. 2008	250	986	1.62	1.27-4.00	0.2660	-0.2356	0.7576
Asrat A, Gail D. 2009	73	241	6.04	2.68-4.26	-0.0111	-0.8234	0.8011
Tesfay R, Deyessa N. 2009	77	635	2.34	5.79-6.01	0.4687	-0.0540	0.9914
Pooled OR, (95% CI)			**2.14**	**1.67-2.75**	**0.4202**	**0.2821**	**0.5583**

C/ Effect size for living with both parents VS living alone

Studies	Sexually activity		Point estimate	95 % CI	Effect size	Lower 95% CI	Up 95% CI
	Yes	No					
Tesfaye R, Deyessa N. 2009	77	635	1.74	4.64-4.96	0.3054	-0.2736	0.8843
Shiferaw S, Fantahun M. 2004	172	495	2.15	1.04-4.43	0.4222	0.0207	0.8234
Asrat A, Gail D 2009	77	635	2.17	1. 05-4.53	0.4292	0.0241	0.8242
Pooled OR, (95% CI)			1.84	**1.32-2.57**	**0.4021**	**0.146**	**0.6579**

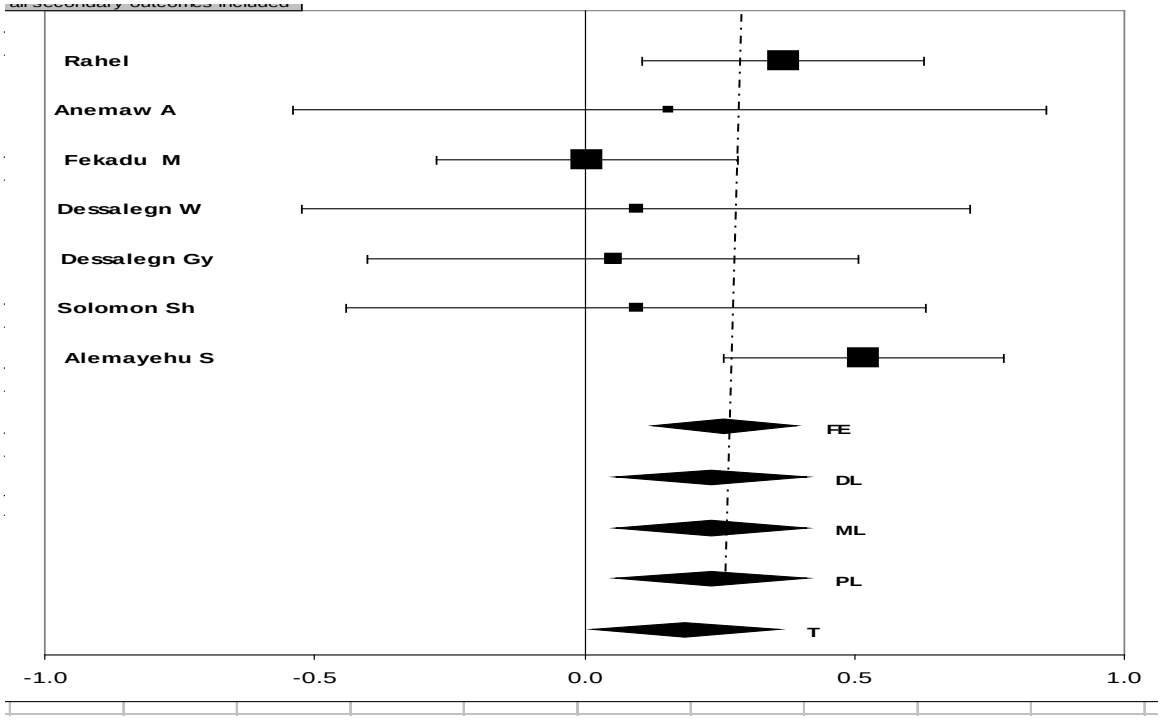

Figure 1: **Forest plot for living with both parents versus single parent, 2011**

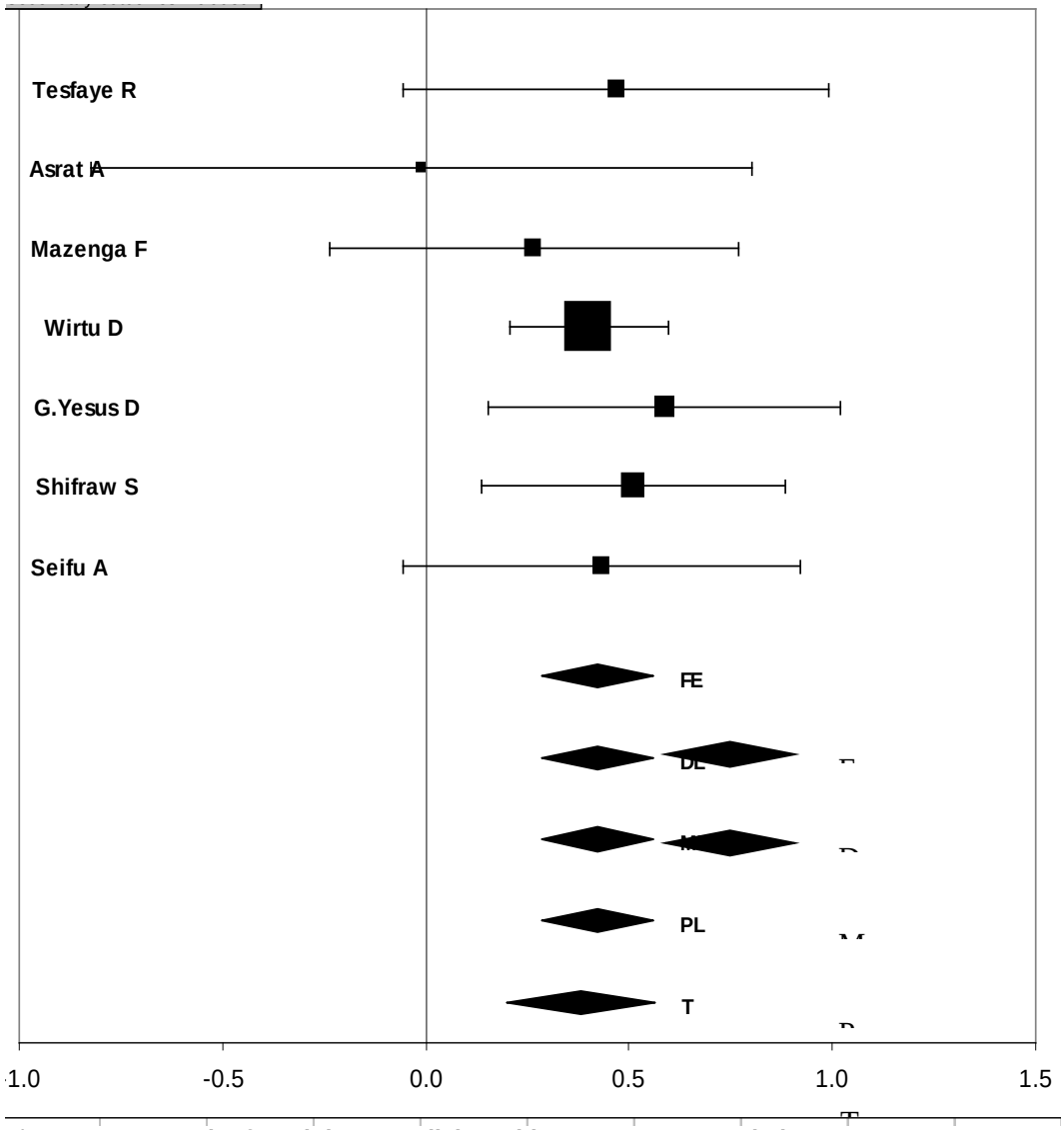

Figure 2: **Forest plot for adolescents living with parents versus relative parents, 2011**

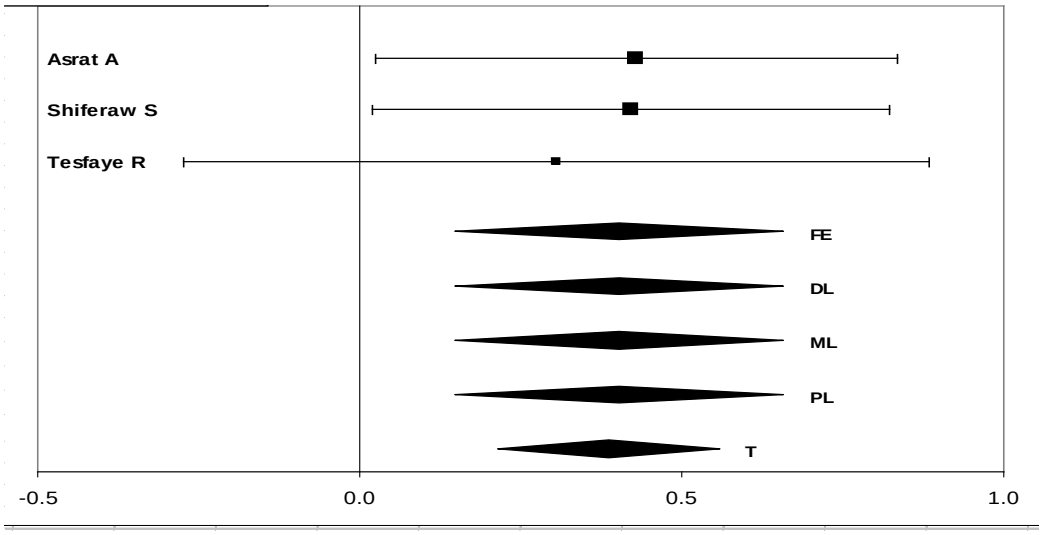

Figure 3: **Forest plot for living with both parents versus living alone, 2011**

Discussion

This meta-analysis was done on seven cross-sectional studies which have analyzed the relationships between adolescents' living arrangement and their premarital sexual practice, but had reported different results. However, the combined result of the meta-analysis demonstrated a significant association of young peoples' premarital sexual practice with their living arrangements. Living with a single parent, with relatives and living alone were more likely to be associated with premarital sexual practice compared to those who were living with both biological parents with OR of 1.48, 2.14 and 1.84 with 95%CI respectively. Prior reviews supported these findings. Samuel Sturgeon has reported that living in a non-closing family is strongly associated with the likelihood of sexual debut before age 15 and has highlighted that the main impact of close family structures is a delay in the onset of sexual activity (5). Another study done on African–American adolescents reported that those who waited until their late teens to engage in sexual activity were significantly more-likely to come from two-parent families when compared to those with early sexual experience (26). This might be attributed to the reason that growing up with a single parent, particularly with a mother, results in poor parenting. As the single parent is the only breadwinner, he/she will not have an adequate time to guide children and is weak in disciplining, or parental disruption may negatively hurt the children's development. Similarly, most of the findings of the original studies included in this meta-analysis were consistent with our findings. On the other hand, in those articles, there was no evidence whether it is the mere presence of both biological parents or parent-adolescent communication that was protective for the adolescents living with both biological parents.

The observed combined mean effect for living with both parents vs. living with single parents, relatives and alone was: 0.2183, 95% CI: (0.0617-0.375), 0.4202, 95% CI: (0.2821-0.5583) and 0.4021, 95% CI: (0.146- 0.6580); respectively. With reference to the cuff points for the effect size recommended by Cohen (25), the effect size is said to be moderate, yet having programmatic importance.

Limitations:

This analysis has a number of limitations: The living arrangement sub-constructs were not uniformly assessed in all the studies. In addition, potential contributing factors, other than living arrangements, were not considered. The other limitation was that as the number of the studies included in the meta-analysis was small, the findings might not be thus representative. Moreover; inter-rater reliability test (Inter Castle- Ottawa scale) was not done.

Furthermore, the original articles included in this review reported inconsistent results, as most other studies examining the influence of parent-adolescent connectedness on adolescent sexual behavior.

Conclusion:

The overall results of this meta-analysis suggest that living with a single parent, living with relatives and living alone as being associated with adolescents' sexual activity. Therefore, living arrangement is an important predicting factor in adolescents' sexual and reproductive behavior, even though whether it is the mere presence of both parents or the parent-adolescents' communication that is protective was not assessed.

Recommendations:

As parents are the primary socializing agents, they should play their roles in providing their children with relevant psychosocial and material support. There should undertake advocacy within the family and the community to improve parent-young people relationship regarding reproductive health issues.

With regard to reproductive health policies and programs, living arrangements should be considered as important variables in the sexual behaviors of adolescents/young people.

References

1. Barber BK, Schluterman JM. Connectedness in the lives of children and adolescents: A call for greater conceptual clarity. *J Adolesc Health* 2008;43:209-16.
2. Ngom P, Magadi M, Owuor T. Parental presence and adolescent reproductive health among the Nairobi urban poor. *J Adolesc Health* 2003;33(5):369-377.
3. Tsala Dimbuene Z, Kuatedefo B. Risky Sexual Behaviors among Unmarried Young People in Cameroon: Another Look at Family Environment. *J Biosoc Sci* 2011;43:129–153.
4. Miller BC, Benson B, Galbraith KA. Family relationships and adolescent pregnancy risk: A research synthesis. Developmental Review, 2001 [cited 2010 July]; Available from: URL: http://www.idealibrary.com.
5. Samuel W S. The relationships between family structure and adolescent sexual activity. Washington DC, 2002 [cited 2010 July]; Available from: URL:http://ww.familyfacts.org.
6. Catalano RF, Lisa Berglund M, Ryan J, Lonczak HS, David Hawkins J. Positive youth development in the United States. Research findings on evaluations of positive youth development programs, 2002.
7. Babalola S, Tambashe BO, Vondrasek C. Parental factors and sexual risk-taking among young people in Côte d'Ivoire. *Afr J Reprod Health* 2005;9(1):49-65.
8. Leigh G, Weddle K, Loewen I. Analysis of the timing of transition to sexual intercourse for black adolescent females. *J Adolesc Research* 1988;3(4):333–334.

9. Miller B, Bingham C. Family configuration in relation to the sexual behavior of female adolescents *Journal of Marr and the Fam* 1989;51(2):499-506.
10. Dillard K. Beginning too soon. Adolescent sexual behavior, pregnancy and parenthood. A review of research and interventions 2002 [cited 2009 March]; Available from: URL: http://aspe.hhs.gov/HOS/cyp/Xsteesex.htm. .
11. Dutra R, Miller K, Forehand R. The process and content of sexual communication with adolescents in two parent families. *Associations with sexual risk-taking behavior* 1999;3(1):59-66.
12. Somers CL, Paulson SE. Student perceptions of parent adolescent closeness and communication about sexuality: relations with sexual knowledge, attitudes, and behaviors. *J Adolesc Health* 2000;23:629-44.
13. Resnick MD, Bearman PS, Blum RW, Bauman KE, Harris KM, Jones J, et al. Protecting adolescents from harm. The findings from the national longitudinal study on adolescent Health. *J Am Med Assoc* 1997; 278(10):823–832
14. Kumi-Kyereme A, Awusabo-Asare K, Biddlecom A, Tangle A. Influence of social connectedness, communication and monitoring on adolescent sexual activity in Ghana. *Rev Afr Santé Reprod* 2007;1(13):133-147.
15. Barnett JK, Papini DR, Gbur E. Familial correlates of sexually active prégnant and non prégnant adolescents. *Adolescence* 1991;26(102):457-472.
16. Markham CH, Lormand D, Gloppen KM, Peskin MF,Flores B, Low B, et al. Connectedness as a predictor of SRH outcomes for youth. Review article 2009. *J Adolesc Health* 2010;46:S23–S41
17. Asrat A. Assessment of sexual risk behaviors of in-school youth and effects of living arrangement of students. West Gojam Zone, Amhara Region, Ethiopia. MPH Thesis: Addis Ababa University, 2009.
18. Podhisita C, Xenos P, Varangrat A. The risk of premarital sex among Thai Youth: Individual and family influences (2001). Working Papers, Population Series, No. 108-5. Honolulu, HI: East-West Center.
19. Shiferaw S. Effect of living arrangement and parental attachment on sexual risk behaviours and psychosocial problems of adolescents in Dessie preparatory school. MPH Thesis: School of Public Health, Addis Ababa University; 2004.
20. G/yesus D. Assessing communication on sexual and reproductive health issues among high school students with their parents, Bullen Woreda, Beneshangul Gumuz Region, North west Ethiopia. MPH thesis: School of Public Health, Addis Ababa University; 2006.
21. Seme A, Wirtu D. Premarital sexual practice among school adolescents in Nekemte Town, East Wollega. *Ethiop J Health Dev* 2008;22(2):167-173.
22. Mazenga F, Worku A. Age at sexual initiation and factors associated with it among youths in North East Ethiopia. *Ethiop J Health Dev* 2009;23(2):154-162.
23. Seifu1 A, Fantahun M, Worku A. Reproductive health needs of out-of-school adolescents among rural and urban areas in North West Ethiopia. *Ethiop J Health Dev* 2006;20(1):10-17.
24. Tesfaye R. Magnitude of sexual abuse among male high school students in Addis Ababa. MPH thesis: School of Public Health, Addis Ababa University; 2009.
25. Iain K, Crombie Huw TO, Davies. What is meta-analysis? University of St. Andrews [cited 2010 November 24]; Available from: URL:http://www.whatisseries.co.uk.
26. Murry VM. "An ecological analysis of coital timing among middle-class African American adolescent females." *J Adolesc Research* 1996;11(2):261-279.