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Impact of environmental health on teen outcomes in rural Kentucky

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Abstract

Understanding the impact of family dynamics on health has become an environmental health priority in the field of adolescent medicine. Family dynamics are much more complex than they were 60 years ago and so are behavioral outcomes. This transformation in the American family has led towards a large array of adolescent living situations. Rural Kentucky is a prime example of an area with a high rate of non-traditional family composition. Poor family dynamics may be associated with increased rates of high risk behaviors among teenagers. Among these behaviors are drug use, sexual activity, and depression. In this study, we evaluated the impact of parenting situation on teen outcomes by assessing risk taking behavior among sixth to ninth graders in a rural Kentucky area. This study suggests poor family dynamics are positively correlated with high risk behaviors in rural Kentucky among teenagers in the school system. Improvement in the familial environment may decrease the prevalence of high risk behaviors among teenagers.

Keywords: High risk adolescent behavior, children living with grandparents, family dynamics, living with step-parents, household composition, early sexual activity

Introduction

Family dynamics and the impact on adolescent health recently has become a particular area of interest in the field of pediatrics. In the 1950's, the typical American family consisted of a father, mother, and several children living under one roof. Currently, statistics show that the notion of the traditional family has faded significantly over the years. The typical American family has shifted from the social norm of previous generations to a wide range of non-traditional family arrangements. Rural Kentucky has a large percentage of these non-traditional families, consisting of divorced families, single parent families, children of incarcerated parents, children placed in

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foster care, and situations where children are raised by grandparents or other relatives. Statistics in the CDC Youth Risk Behavior Surveillance 2011 suggests that there is an elevated prevalence of several high risk behaviors among teenagers in rural Kentucky. Among these behaviors are illicit drug use, sexual activity, and depression (1). Of particular interest, children of incarcerated parents are exposed to factors that place them at risk for delinquency. Studies have shown that families with a history of parental incarceration are associated with delinquent behavior of adolescents and family conflict. These children are at a higher risk of abuse, poverty, aggressive behavior, poor school performance, sleeping problems, and mental health issues (2). Also, when grandparents or other relatives take on the role as primary caregiver to children, they tend to experience stressors that can hinder effective parental functioning. In return, these children are at higher risk of experiencing stress that can have a negative effect on the essential factors of health and psychosocial well-being (3). This high risk behavior has been associated with significant health risks in the rural Kentucky adolescent population. Data has been collected regarding high risk behaviors of children in grades 6-9 from a rural County school system in central Kentucky. Baseline statistics show a high prevalence of drug and alcohol use, suicidal ideations and depression, obesity, poor sleep habits, bullying, and physical violence among those children with poor family dynamics.

Statistics in this particular study focus on children in grades 6-9 who reported feelings of depression, early sexual activity, and drug use. This study looks at adolescents' levels of risk of these particular factors by whether they live with two parents, a single parent, or neither parent. This is further broken down to examine the level of risks in these adolescents by whether they live with two biological parents, a biological parent and step parents, or a biological parent and the parent's significant other. For those adolescents' not living with a biological parent, the levels of risk are stratified based on whether or not they have contact with both biological parents. Several papers have shown that, on average, children who are raised from birth in two-parent families have better behavioral and cognitive outcomes compared with children living in single parent families (4-9). However, one study looking at whether children

benefit from living with two biological parents has shown children do not always profit from this family structure depending on extent of the father's antisocial behavior (4). Other studies show that children had fewer behavioral problems when fathers paid child support, when children felt an emotional connection with fathers, and when fathers took an authoritative parenting role. This finding, however, was not associated with how often children see their fathers, but more suggestive of the quality of the father-child relationship as a predictor of the child's outcomes (4, 10).

Central Kentucky hosts a large range of non-traditional families with a large population of adolescents being raised by non-biological families. According to an earlier study, even after genetic effects were excluded, environmental factors still played a significant role in the high risk behavior and transmission of substance use disorders in adolescents being raised by non-biological parents, including adoptive and step families (1). These statistics suggest environmental factors associated with poor family dynamics are positively correlated with high risk behaviors in these adolescents of rural Kentucky.

Methods

Both cross-sectional and retrospective methods were used to evaluate the effect of family composition on behavioral outcomes among children grades 6-9 registered in the public school system in one county in rural Kentucky. Statistical analyses were performed using the Statistical Package for Social Science, version 22.0 (SPSS, Chicago, IL, USA). Baseline behavioral statistics and family dynamics were obtained through administration of an adapted Perkins Adolescent Risk Screen (11,12). Through this screening process, we were able to obtain data concerning family composition, drug use, alcohol use, suicidal ideations/attempts, pregnancy status, diet and exercise patterns and drop out statistics, with particular attention on drug use, sexual activity, and depression. Differences in level of risk (high, low) for four risk variables (drug use, sexual activity, depression, and the ability to name at least three good qualities about oneself) were evaluated for three sets of groups using Chi-square analysis. One set was with

whom the adolescent lives (adolescent lives with two parents, adolescent lives with a single parent, and adolescent lives with neither parent). In order to have a sufficient n in each cell for Chi-square, adolescents who live with both biological parents either in one household or two (joint custody between mother and father) and who live with a biological parent and step-parent were combined the two parent group. Adolescents who live with a biological single parent or a biological single parent plus a significant other were combined in the single parent group.

Adolescents who live with grandparents, other family member(s), or who are in foster care were combined in the neither parent group. The second set was with what two adults the adolescent resided (biological mother and father, biological parent and step-parent, and biological parent and the parent's significant other). The third other set was whether or not the adolescent has both parents involved in his or her life (adolescent has both biological parents involved and adolescent does not have both biological parents involved).

Table 1. Adolescents' levels of risk by whether they live with two parents, a single parent, or neither parent

		Two	Single	Neither	χ^2	p-Value
		(n=372), n(%)	(n=109), n(%)	(n=41), n(%)		
Drug Use	Low Risk	363 (98)	100 (92)	33 (81)	25.92	< 0.001
	High Risk	9 (2)	9 (8)	8 (19)		
Sexual Activity	Low Risk	363 (98)	96 (88)	32 (78)	34.06	< 0.001
	High Risk	9 (2)	13 (12)	9 (22)		
Depression	Low Risk	338 (91)	83 (77)	29 (71)	23.20	< 0.001
	High Risk	34 (9)	25 (23)	12 (29)		
Good Qualities	Low Risk	323 (87)	68 (62)	29 (71)	34.71	< 0.001
	High Risk	49 (13)	41 (38)	12 (29)		

Results

Of the 522 participants, 372 (71%) reported living with two parents, 109 (21%) reported living with a single parent, and 41 (8%) reported living with neither parent. Adolescents who live with two parents were, in general, were less likely to report high risk for drug use, sexual activity, and depression (see table 1), while adolescents who live with neither parent reported the greatest risk. Adolescents who live with neither parent were more likely to report high risk behaviors for drug use than those who live with a single parent or two parents (Chi-square=25.92, $p<0.001$). Adolescents who live with neither parent were more likely to report high risk behaviors for sexual activity than those who live with a single parent or two parents (Chi-square=34.06, $p<0.001$). Adolescents who live with a single parent were also more likely to report high risk behaviors for sexual activity than those who live with two parents. Adolescents who live with two parents were less

likely to indicate high risk for depression (Chi-square=23.20, $p<0.001$) and had an easier time naming three positive qualities about themselves (Chi-square=34.71, $p<0.001$) than those who live with a single parent or neither parent.

Half of the participants (262) reported living with both biological parents. Sixteen percent (82) reported living with a biological parent and a step-parent and five percent reported living with a biological parent and the parent's significant other. Adolescents who live with both biological parents were less likely to report high risk for drug use, sexual activity, and depression while adolescents who live with a biological parent and significant other were more likely to do so (see table 2). Adolescents who live with a biological parent and a step parent fell in the middle of the two groups in terms of risk behaviors.

Adolescents who live with a parent and the parent's significant other were much more likely to report high risk behaviors for drug use than those who live with a both parents or a parent and step-parent (Chi-square=60.50, $p<0.001$).

Table 2. Adolescents' levels of risk by whether they live with two biological parents, a biological parent and step-parent, or a biological parent and the parent's significant other

		Two Parents	Parent + Step-Parent	Parent + Sig other	χ^2	p-Value
		(n=262), n(%)	(n=82), n(%)	(n=24), n(%)		
Drug Use	Low Risk	261 (99.5)	74 (90)	16 (67)	60.50	< 0.001
	High Risk	1 (0.5)	8 (10)	8 (33)		
Sexual Activity	Low Risk	260 (99.5)	77 (94)	16 (67)	66.53	< 0.001
	High Risk	1 (0.5)	5 (6)	8 (33)		
Depression	Low Risk	251 (96)	64 (78)	12 (50)	59.04	< 0.001
	High Risk	11 (4)	18 (22)	12 (50)		
Good Qualities	Low Risk	227 (87)	60 (73)	9 (38)	37.28	< 0.001
	High Risk	35 (13)	22 (27)	15 (63)		

Adolescents who live with a parent and step-parent were more likely to report high risk in this category than adolescents who live with both parents. Adolescents who live with a parent and the parent's significant other were more likely to report high risk behaviors for sexual activity than those who live with a both parents or a parent and step-parent (Chi-square=66.53, $p < 0.001$). Adolescents who live with a parent and step-parent were somewhat more likely to report high risk in this category than adolescents who live with both parents. With regard to depression, 50% of adolescents who live with a parent and the parent's significant other were at high risk for depression and 63% struggled to name three good qualities about themselves. They were much more likely to report high risk for depression and have

difficulty naming good qualities about themselves than adolescents who live with both parents and a parent and a step-parent (Chi-square=59.04 & 37.28, respectively, $p < 0.001$). Adolescents who live with a parent and a step-parent were also more likely to report high risk in these categories than adolescents who live with both parents. As seen in Table 3, adolescents who reported living with neither parent, but were being raised by grandparents displayed similar risks as those children living with a parent and step-parent as opposed to much higher risks shown for adolescents living with a parent and the parent's significant other.

The majority of participants (408 or 78%) reported both biological parents were involved in their lives.

Table 3. Adolescents' levels of risk by whether they live with two biological parents, a biological parent and step-parent, a biological parent and the parent's significant other, or grandparents

		Two Parents	Parent + Step-Parent	Parent + Sig other	Grand parent(s)	χ^2	p-Value
		(n=262), n(%)	(n=82), n(%)	(n=24), n(%)	(n=28), n(%)		
Drug Use	Low Risk	261 (99.5)	74 (90)	16 (67)	25 (90)	57.60	< 0.001
	High Risk	1 (0.5)	8 (10)	8 (33)	3 (10)		
Sexual Activity	Low Risk	260 (99.5)	77 (94)	16 (67)	24 (86)	62.69	< 0.001
	High Risk	1 (0.5)	5 (6)	8 (33)	4 (14)		
Depression	Low Risk	251 (96)	64 (78)	12 (50)	22 (79)	58.51	< 0.001
	High Risk	11 (4)	18 (22)	12 (50)	6 (21)		
Good Qualities	Low Risk	227 (87)	60 (73)	9 (38)	22 (75)	37.16	< 0.001
	High Risk	35 (13)	22 (27)	15 (63)	7 (25)		

Table 4. Adolescents' levels of risk by whether or not they have contact with both biological parents

		Yes	No	χ^2	p-Value
		(n=408), n(%)	(n=114), n(%)		
Drug Use	Low Risk	400 (98)	96 (84)	36.00	< 0.001
	High Risk	8 (2)	18 (16)		
Sexual Activity	Low Risk	400 (98)	91 (80)	52.92	< 0.001
	High Risk	8 (2)	23 (20)		
Depression	Low Risk	373 (92)	77 (68)	43.95	< 0.001
	High Risk	34 (8)	37 (32)		
Good Qualities	Low Risk	350 (86)	70 (61)	33.70	< 0.001
	High Risk	58 (14)	44 (39)		

As depicted in table 4, adolescents who have involvement with both biological parents were less likely to report high risk for drug use, sexual activity, and depression. The number of adolescents reporting high risk behaviors for drug use was significantly greater for those without both biological parents involved than for those with both biological parents involved (Chi-square=36.00, $p < 0.001$). Adolescents without both biological parents involved were also more likely to report high risk sexual behaviors than those with them involved (chi-square=52.92, $p < 0.001$). Adolescents without both biological parents involved were also more likely to have indicators of depression than those who are involved with their parents. They indicated that they were at higher risk for depression (Chi-square=43.95, $p < 0.001$) and struggled to name three good qualities about themselves (Chi-square=33.70, $p < 0.001$).

Discussion

The majority of adolescents surveyed reported both biological parents involved in their life and living with two parents, which could be both biological parents in the same or separate household or a biological parent and step-parent. These adolescents were much less likely to engage in drug use, engage in high risk sexual behaviors, and experience indicators of depression than those living with a single parent or neither parent. Those living with a single parent also depicted less risk than those living with neither parent for drug use and sexual activity, but not depression. Thus, the results highlight the

importance of having both biological parents involved in an adolescent's life and the importance of an adolescent living under the supervision of two parents for an adolescent's health. However, living with a single parent is better than living with neither parent in terms of risk behaviors.

That being said, adolescents were at the least risk when they lived with both biological parents. They were also at less risk when they lived with a biological parent and a step-parent than a biological parent and the parent's significant other. Thus, it appears to be better to live with another adult when that adult is married to the parent, as opposed to living with the parent who is not married to a significant other. Perhaps the households where the parent is married to the significant other provide a more stable relationship with the second adult for the adolescent. What is striking is that half of adolescents who live with a parent and the parent's significant other presented as high risk for depression and the majority of these adolescents struggled to name positive qualities about themselves. These data suggest that the involvement of more than one parent figure is important for protecting an adolescent from experiencing depression.

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