

The “kaleidoscope” of factors influencing urban adolescent pregnancy in Baltimore, Maryland

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Amanda E. Tanner, Alice Ma, Katherine A. Roof, Caryn R.R. Rodgers, Durryle N. Brooks & Pat Paluzzi (2015): The “kaleidoscope” of factors influencing urban adolescent pregnancy in Baltimore, Maryland, *Vulnerable Children and Youth Studies: An International Interdisciplinary Journal for Research, Policy and Care*, 10(3). DOI: 10.1080/17450128.2015.1046534

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This is an Accepted Manuscript of an article published by Taylor & Francis in *Vulnerable Children and Youth Studies: An International Interdisciplinary Journal for Research, Policy and Care* on May 14, 2015, available online:

<http://www.tandfonline.com/10.1080/17450128.2015.1046534>

Abstract:

Existing intervention and prevention efforts for adolescent pregnancy focus primarily on individual-level approaches; however, there is an emerging expectation to include a more contextually based social-ecological approach. This approach is salient in urban communities like Baltimore, Maryland, with one of the nation’s highest adolescent pregnancy and birth rates. Poverty, community violence, and compromised school systems further complicate the precursors and consequences of adolescent pregnancy. In this mixed methods study, we conducted interviews with key informants ($n = 16$) from community-based organizations, health departments, foundations, the public school system, clinics, and the faith community who worked with youth in Baltimore to gain a more comprehensive perspective on factors affecting adolescent pregnancy. Interviews were digitally recorded, transcribed verbatim, and analyzed using the constant comparative method. Geographic maps of select socio-demographic variables were created to examine the community context. Results highlighted contributing multi-level factors that emerged across the social-ecological model. Key informants described community- (e.g., environment, community norms, public policy; “Teen pregnancy is norm in many communities”), interpersonal- (e.g., peer social norms; “If you don’t perceive that you have a whole lot of options, you might just kind-of do what everybody else does”), and intrapersonal-level (e.g., specific developmental phase, self-esteem; “You need somebody to love and somebody to love you back”) influences on adolescent pregnancy and birth. GIS maps further illustrated disparities in adolescent birth rates, poverty level, and available community resources. Key informants recommended institutional and structural changes in the community, such as improving sexuality education and school-based health centers and increasing inter-organizational collaboration. These findings underscore the importance of considering creative

community partnerships that address key social determinants of reproductive health in developing interventions to address adolescent pregnancy.

Keywords: adolescent | pregnancy prevention | urban | qualitative | GIS mapping

Article:

Adolescent pregnancy in the United States (US) is a significant public health issue due to its potential consequences for adolescents (particularly young women), children born to adolescents, local communities, and the nation. Adolescent parents are less likely to graduate from high school or earn their GED by age 30 and likely to earn about \$3500 less per year than if childbearing occurred in their 20s (U.S. Department of Health & Human Services [U.S. DHHS], 2014). Children born to adolescent parents are at increased risk for behavioral problems, incarceration, and adolescent parenthood themselves (Meade, Kershaw, & Ickovics, 2008; U.S. DHHS, 2014). Society also bears an economic burden as adolescent pregnancy costs taxpayers approximately \$9.4 billion annually (National Campaign to Prevent Teen and Unplanned Pregnancy, 2013).

The negative effects associated with adolescent pregnancy and birth are particularly felt in urban centers, like Baltimore, where a substantial number of youth face a myriad of health disparities (e.g., obesity, substance use/abuse) (Baltimore City Health Department, 2014a, 2014b; Baltimore Neighborhood Indicator Alliance, 2014). Areas with high adolescent pregnancy rates frequently have a correspondingly high poverty concentration with diminished social capital, highlighting the connection between social determinants of health and health disparities (Braveman, Egerter, & Williams, 2011; Crosby & Holtgrave, 2006; Harding, 2003).

Given the sequelae of adolescent pregnancy and the tremendous developmental changes occurring in adolescence (Committee on Adolescent Health Care Services and Models of Care for Treatment, Prevention, and Healthy Development, 2009; Crosby, Santelli, & DiClemente, 2009; Mulye et al., 2009), an integrated understanding of contributing factors is essential to develop more effective interventions. Although research has historically focused on individual-level models that emphasized the demographic and behavioral factors influencing sexual behaviors and outcomes (Ellen, Aral, & Madger, 1998; Raneri & Wiemann, 2007), adolescent pregnancy is also affected by interpersonal and community factors. The interpersonal processes within and between families, friends, and peers shape social identity and norms that may affect adolescent pregnancy (McLeroy, Bibeau, Steckler, & Glanz, 1988).

Community-level factors can influence youths' sexual behaviors and attitudes toward adolescent pregnancy through formal and informal social standards (Cubbin, Santelli, Brindis, & Braveman, 2005; Ellen, Jennings, Meyers, Chung, & Taylor, 2004; Jennings, Curriero, Celentano, & Ellen, 2005, 2008; McLeroy et al., 1988; National Center for Health Statistics, 2003). The social-ecological model positions higher risk sexual behaviors (e.g., multiple sexual partners, substance use with sexual activity, inconsistent condom use) as a result of the interactional relations between micro-level (self, family) and macro-level (cultural, economic, societal) systems (Cavazos-Rehg et al., 2010; Kirby & Lepore, 2007), providing a useful framework for understanding how contextual factors affect adolescents' sexual health.

Accordingly, this study examined the context of adolescent pregnancy in Baltimore through key community informants' perspectives and GIS mapping strategies.

Methods

Sample and setting

Semi-structured qualitative interviews were conducted with 16 female key informants who worked with youth, including from: community-based organizations (n = 4), health departments (n = 4), foundations (n = 3), the public school system (n = 2), clinics (e.g., healthcare providers) (n = 2), and the faith community (n = 1) in Baltimore, Maryland. Inclusion criteria for key informants included: works in some capacity around youth development or sexual and reproductive health issues in Baltimore; speaks English; and at least 18 years of age at the time of interview.

Baltimore has one of the nation's highest adolescent birth rates: 22.1 births per 1000 young women (Maryland Department of Health and Mental Hygiene, 2013). Baltimore has a 25% poverty level with 33.4% of youth living below the poverty line, compared to 14.1% statewide and 23% nationally (Kids Count Data Center, 2014). Higher levels of poverty are concentrated in certain neighborhoods (e.g., Jonestown, Cherry Hill) (Baltimore City Health Department, 2014a, 2014b). The total population of Baltimore (621,342) is 63.6% African American/Black, 30.2% Caucasian/White, and 4.4% Hispanic/Latino with adolescents ages 10–19 comprising 11.8% of the total population (U.S. Census Bureau, 2013).

Study procedures

Key informant interviews were conducted by two trained researchers by phone or in-person, depending on participants' preference. Each interview lasted approximately 60 minutes (range: 30–80 minutes). No incentives were used for the study. The Institutional Review Board at the Johns Hopkins Medical Institutions approved study protocols.

After obtaining informed consent, interviews explored Baltimore-specific factors affecting adolescent pregnancy (e.g., What do you think are contributing factors associated with, or causes of, adolescent pregnancy rates?), including existing programs (e.g., What are some of the programs/resources that address adolescent pregnancy?), challenges to implementing and sustaining coordinated efforts (e.g., What are the obstacles/facilitators of adolescent pregnancy efforts?), as well as recommendations for addressing these issues (e.g., What are your suggestions for developing a city-wide strategy for reducing adolescent pregnancy?). Field notes were written following each interview, then reviewed and discussed to maximize reliability (Patton, 1987).

Maps of Baltimore were created to illustrate geographic differences in health outcomes and community resources on the census tract level. The socio-demographic variables mapped included adolescent birth rate and percentage of families in poverty. The maps also included the location of pregnancy prevention resources (e.g., health services, programs).

Data analysis

Interviews were digitally recorded, transcribed verbatim, and managed using Atlas.ti 6.2 (Scientific Software Development GmbH, Berlin). Interview transcripts and field notes were analyzed using the constant comparative method (Glaser & Strauss, 1967). A coding dictionary was created based on the literature. A trained researcher coded all transcripts, and analytical memos were written to summarize the codes. Transcripts were searched for negative cases to identify exceptions to the initial themes; codes were modified as needed (Glaser & Strauss, 1967). Coding discrepancies were resolved by discussion. The quotations presented reflect main themes from the informants.

Results

Key informants identified a variety of factors as salient for adolescent pregnancy in Baltimore across the social-ecological model. Table 1 presents quotes that summarize specific issues and strategies for addressing them. Overall, participants agreed that addressing adolescent pregnancy is complex:

Table 1. Illustrative quotations on issues and strategies salient for adolescent pregnancy in Baltimore, MD.

Factor	Issue	Strategy
<i>Community</i>		
Environment	These are neighborhoods that are in very dire straits. It isn't just about pregnancy ... It's neighborhoods that are really struggling to have effective schooling, and there's a lot of violence ... So it seems to me that a lot of these things are just sort of inextricably linked. [Participant (P)-05/06, health department]	... How do we create opportunities and make them really accessible ... so that young people are engaged in activities that build them as human beings as opposed to activities that take away from them as human beings ... [P-01, community organization]
Community Norms	I think ... teen pregnancy is norm in many communities. It's understood as a reliable and affirmed option for young women as they come into adulthood. They are accepted as whole members of their community ... [P-15/16, foundation]	... Providing teens other opportunities, having something interesting and fun to do after school ... To have expectations that they could go on to something better for themselves. ... I think to focus only on [sexuality education and contraceptives] misses the big picture. [P-15/16, foundation]
Public Policy	If you're only talking about abstinence, what about the young people that are already engaged [in sexual activities], are they going to get any other messages? ... That's not what their interest is, they're already sexually active, so what other messages should we be giving them, and we have not been doing that. [P-02, schools]	... [Adolescent pregnancy is] a much broader public health issue and so you can't just call in all the teen pregnancy provider programs. You need churches to come in, you need the school system ... It just needs to be a much bigger conversation, and not a series of conversations versus one. [P-15/16, foundation]
<i>Interpersonal</i>		
Peer Social Norms	... If you don't perceive that you have a whole lot of options, you might just kind of do what everybody else does, whether it's people in your family or in your community. [P-04, health department]	... So having someone to talk to ... or a place where they can go and be around other peers who are positive ... in a structured environment where they can go, 'Ok, there's a lot of talent that I have and a lot of things I could be doing with my life, and who believes in me?' [P-04, health department]
<i>Intrapersonal</i>		
Perceptions of Self	I'm thinking that some of this pregnancy may be due to poor self-esteem. Not feeling good about yourself, so having a baby, you think, will change that ... You need somebody to love and somebody to love you back. [P-13, community organization]	The power of reaching kids and empowering them to be leaders and them to actually hold the information themselves is really incredible. [P-09, community organization]
Self-Esteem Issues	We love to be important, every one of us, all through life maybe. But in children it's a developmental issue ... It doesn't have to be a parent or an aunt ... Even a teacher has to make you feel [better] or possibly the school system. [P-11, provider]	

We tend to think that we're focusing in like we're using a telescope or a microscope, but actually [adolescent pregnancy prevention] is more like a kaleidoscope. It has all these moving parts and pieces to it, and it's just so much broader and bigger. [Participant (P)-09]

Individual and community context were viewed as important for youth development and sexual behavior decision-making, highlighted in the GIS maps (see Figures 1 and 2).

Intrapersonal- and interpersonal-level factors and strategies

Participants discussed developmental issues (e.g., puberty) that influenced sexual behavior and pregnancy, including: self-esteem issues, lowered ability to consider future consequences of sexual behavior decisions, and perceived invincibility. These issues were discussed as contributing to a decreased likelihood of condom use, placing them at increased risk for adolescent pregnancy and sexually transmitted infections (STIs).

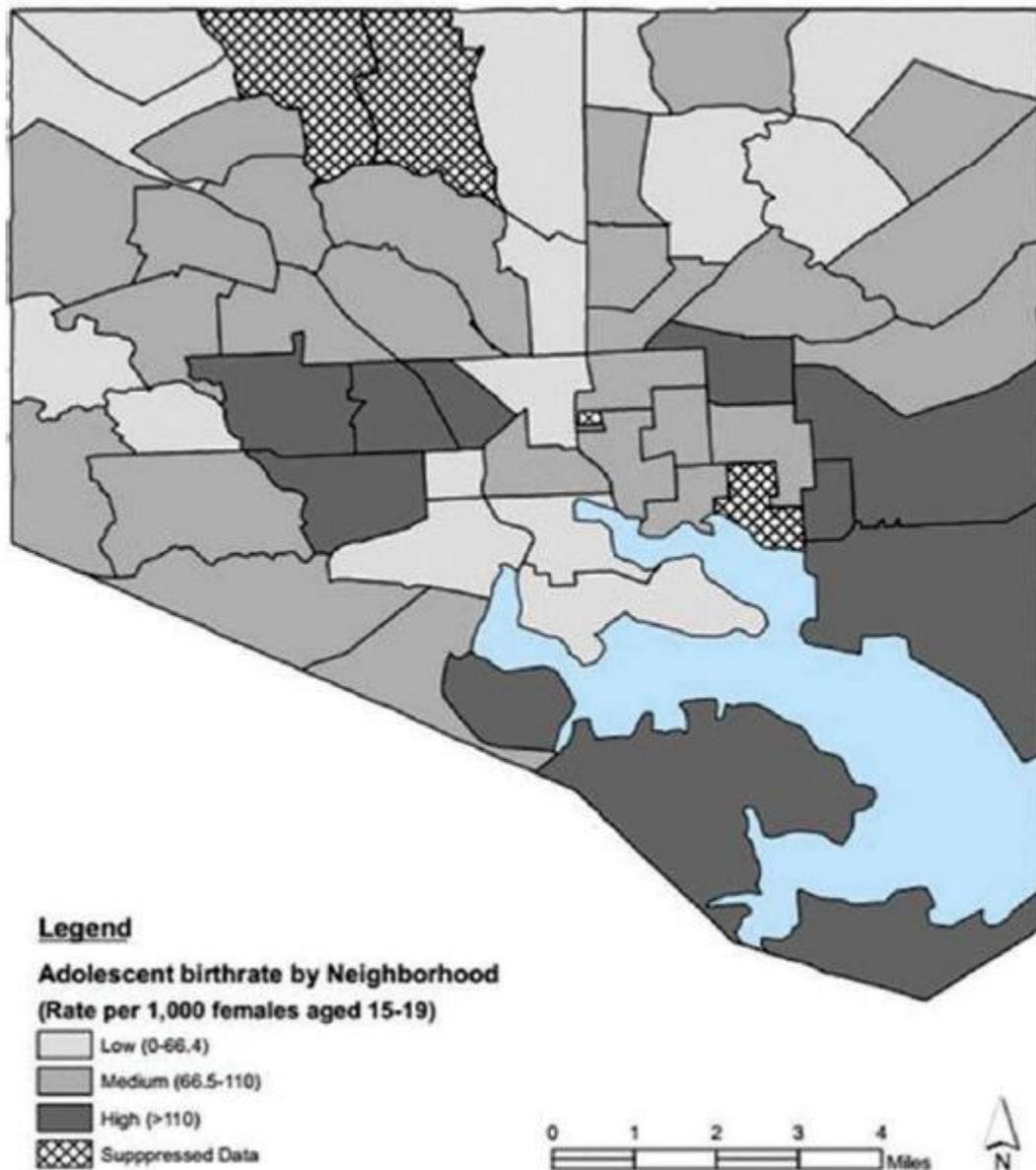


Figure 1. Adolescent birth rate by neighborhood in Baltimore, MD (2007).

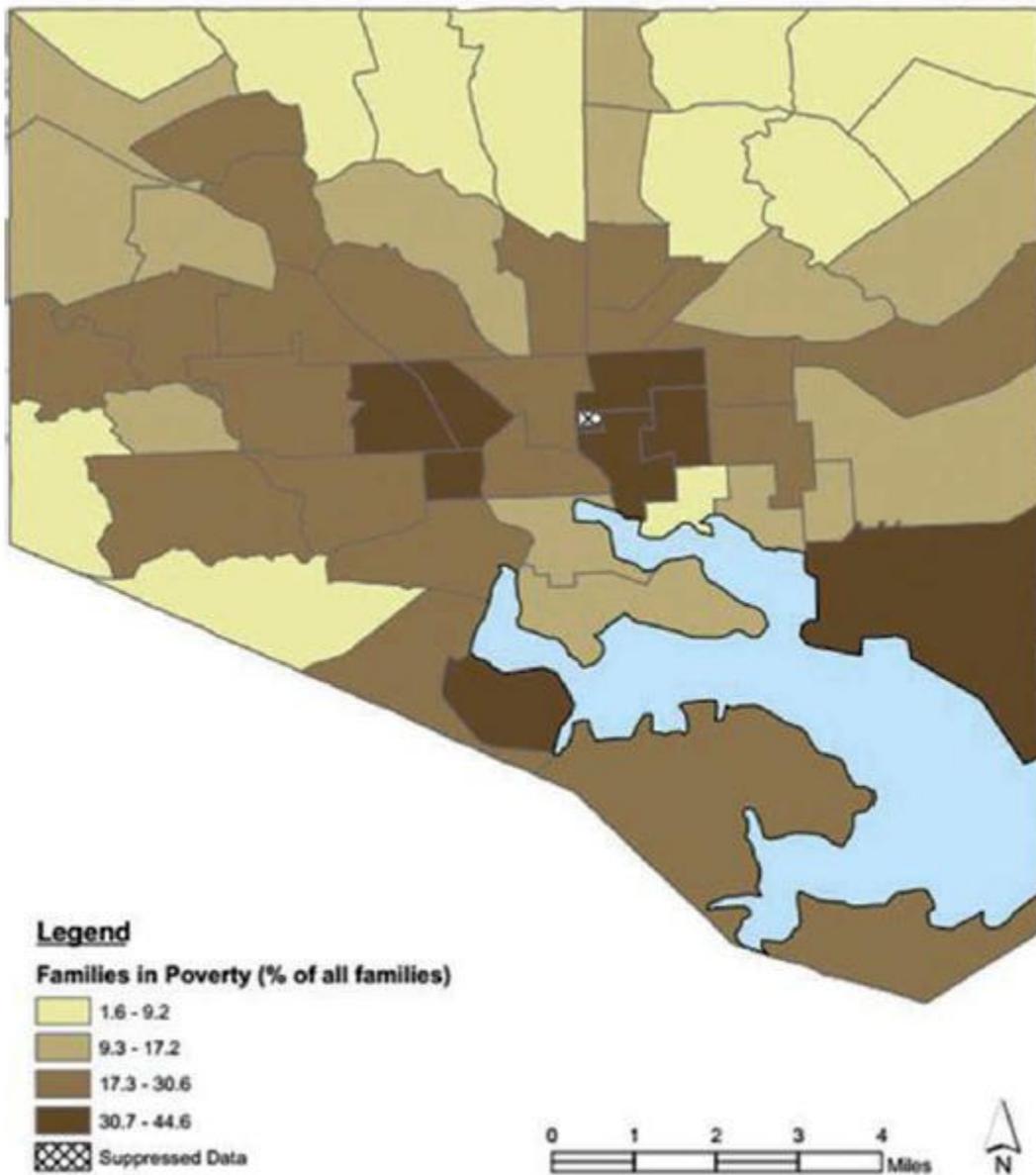


Figure 2. Percentage of families in poverty by neighborhood in Baltimore, MD (2007).

Further, peers' experiences were discussed as shaping sexuality-related social norms. Several participants suggested peer training and advocacy as effective strategies to address these intrapersonal and interpersonal issues. They also reported that within the adolescent-specific developmental context, youth need but are often lacking adult mentors. Having a person to discuss sexual health and other concerns was an important asset during a developmental period when adolescents need support and information:

...Really take into account what [adolescents are] going through, what they're dealing with, or just the fact that adolescence is a really vital time in terms of development, and figure out who

they are. If they don't have access to . . . accurate information or people who care about them, that really sit down and talk to them and in a loving way and respectful way, it's like, 'Whoa, you missed a huge opportunity.' [P-05/06]

Participants emphasized that having a connection with adults and positive peers is helpful in keeping youth involved in healthy activities and important for adolescent pregnancy prevention.

Community-level factors

In addition to individual and interpersonal issues, much of the interviews focused on community-specific issues, including environmental, community norms, and public policy factors.

Environmental factors

Many adolescents are growing up in under-resourced settings (see Figures 1 and 2), highlighting a unique challenge for adolescent pregnancy prevention efforts. As a participant noted: "Poverty is a societal disease in every community, and we've become indifferent because we can't face it every day" [P-11]. Many informants discussed the social determinants of health, explaining that poverty, violence, and adolescent pregnancy are "inextricably linked" [P-05/06], thus must be considered for a macro-level understanding of the context of adolescent pregnancy in specific neighborhoods.

Despite an abundance of youth-specific organizations, participants noted that the concentration of poverty in some parts of the city created a dearth of resources in these neighborhoods and may be one factor in neighborhood disparities in adolescent pregnancy rates. Thus, participants discussed the importance of youth-specific community activities, including safe and healthy outlets with possibilities for mentorship that empower youth and support healthy sexual decision-making.

The existing resources were often unknown to adolescents, emphasizing the need for better advertising, particularly of sexual and reproductive health programs:

I think we can do a better job of getting the information out there . . . marketing what's out there differently. But I have not seen too many places around communities that may speak to where these kids could go to get help or assistance or information. [P-14]

Community norms

Participants highlighted the importance and challenges of a comprehensive approach that diverts from the individual-level and takes a more systems-level approach:

The kids are easy . . . then they've got to get back in the same environment. So you really do have to change that environment that they're coming out of. So how do you do that? . . . How do you change that environment? [P-12]

Community and social norms influenced adolescents' sexual behavior decision-making. Rationalizations for childbearing were made in the absence of perceived options for the future or in the presence of oppressive environmental stressors. In Baltimore, some adolescents face multiple risk factors that increase the likelihood of pregnancy. For example, one participant described: "A sense of hopelessness that seems to be very prevalent these days . . . and children bring some kind of ray of hope in what is otherwise a relatively bleak situation" [P-05/06]. Adolescent pregnancy was sometimes viewed as an expectation and valued life-choice as youth transitioned to adulthood.

Public policy factors

Lastly, participants described policy-level factors contributing to adolescent pregnancy, including educational policy and the funding environment. Schools were identified as critical locales for reaching adolescents through educational and clinical efforts (e.g., school-based health centers). Despite its almost universal identification as an essential medium by informants, sex education in public schools was described as "fragmented" [P-03] in both content and consistency.

The specific limitations of programming within the school setting highlighted barriers to changing educational policy and teaching comprehensive sex education (e.g., condom demonstrations). Some of these educational limitations were perpetuated by federal policies and historical funding priorities that supported abstinence-only education and provided only limited messages and strategies for healthy sexual behaviors to adolescents. Participants recommended that any programmatic efforts in schools be tailored to the specific needs of adolescents and include gender-specific strategies and messages to both adolescent females and males:

. . . Connect [young women] to a parenting group, and if they choose to terminate their pregnancy, also be there supporting that decision-making . . . On the male flip of the coin ... 'Okay, do you know your status? You have a choice to become a father' ... It's getting them to own up to and take responsibility and accept that they have a large part in this other than just the feel good part. [P-14]

Participants noted that sex education, even individualized education with gender-specific messaging, was inadequate, and they reiterated the importance of extracurricular activities that include exposure to alternative life trajectories (e.g., college) to empower youth.

All participants acknowledged that lack of funding and resources was a considerable barrier to comprehensively address adolescent pregnancy at a local level. They also identified fragmentation of services and low levels of cross-organizational collaboration as challenges. Funding issues, causing competition for limited resources, exacerbated the lack of collaboration among service providers rather than cooperation as explained by one participant: ". . . Everybody's fighting for the same little pot of money, being selfish. So unless you address the whole process of collaboration, it's not going to happen . . . It takes work to [collaborate]" [P-08].

Participants identified coalitions and partnerships as invaluable (albeit challenging) to mitigating funding issues. Coalition development and sustainability was considered essential given the complexity of adolescent pregnancy prevention and that, “There’s no one organization that can do everything that needs to be done to address the needs of youth” [P-08]. Additionally, participants noted that collaborations need strong leadership to impact adolescent pregnancy prevention. This leadership needs to influence policy and other structural- level changes, while also providing the infrastructure for cross-organizational collaboration:

. . . Structural changes in a lot of our community research . . . has been a way that we’ve tried to implement change, affect change. When you think about the hierarchy of things, the higher up you can get with that structural change . . . the more impact it will have . . . We’ve got to really start trying to impact change at the top with regard to policy. [P-12]

Discussion

The study results are consistent with previous work that has framed adolescent pregnancy as a multi-systemic, multi-level issue (Catania & Dolcini, 2012; Cavazos-Rehg et al., 2010; Pedrosa, Pires, Carvalho, Canavarro, & Dattilio, 2011). The different social-ecological influences in Baltimore that affect adolescent pregnancy underscore the importance of considering the larger social context of adolescents’ lives (Tanner et al., 2013). Geographical mapping is a tool that can support understanding of the contextual variables (e.g., poverty) related to adolescent pregnancy (Blake & Bentov, 2001; Kegler, Rodine, Marshall, Oman, & McLeroy, 2003). Indeed, participants acknowledged that community-specific characteristics and norms directly contribute to adolescent pregnancy. They noted the inextricable links and complex relationships among individual- and interpersonal-level factors and social determinants of health such as poverty, neighborhood violence, insufficient resources, and cultural and social norms around adolescent pregnancy (Braveman et al., 2011; Fletcher, Harden, Brunton, Oakley, & Bonell, 2008; Raneri & Wiemann, 2007).

At the individual and interpersonal levels, key informants emphasized adolescent-specific issues that affected adolescent pregnancy in Baltimore, including lack of self-esteem, low sense of self-worth, and peer norms. This is consistent with general adolescent development (e.g., sense of invulnerability) (Greene et al., 2000; Pharo, Sim, Graham, Gross, & Hayne, 2011). Perceived peer behaviors and attitudes (Buhi & Goodson, 2007), actual peer behaviors and attitudes (Miller, Forehand, & Kotchick, 2000), and indicators of higher risk sexual behavior among peers (e.g., pregnancy or STIs) (Ali & Dwyer, 2011) have been linked to adolescent sexual behaviors.

Lack of adult and peer mentorship was cited as problematic for Baltimore’s youth. Adult mentors (including parents) are desired and often effective in promoting healthy sexual behaviors among adolescents (Beier, Rosenfeld, Spitalny, Zansky, & Bontempo, 2000; Dancy, Crittenden, & Talashek, 2006; Tanner, Secor-Turner, Garwick, Sieving, & Rush, 2012), in part because adolescents tend to listen to adults when discussions occur about objective topics such as birth control or STIs (Markham et al., 2010; Whitaker & Miller, 2000). Consistent with the Healthy People 2020 adolescent health objectives (U.S. Department of Health and Human Services, 2014), participants recommended having invested adults as a consistent presence in adolescents’ lives, particularly in structured extracurricular activities. Additionally, peer

mentorship is important to address the normative social influences that contribute to adolescents' value systems and is an integral component of evidence-based educational programs designed to reduce unintended pregnancy and STIs (Coyle et al., 2001; Sieving et al., 2012).

Participants recommended several institutional and structural changes in the community. Education and schools were identified as important but insufficient for preventing adolescent pregnancy. While sexuality education and school-based health centers were considered indispensable components of improving prevention efforts, participants noted that addressing the social determinants of health (e.g., poverty) is crucial, yet extremely challenging, for affecting adolescent pregnancy prevention (Fletcher et al., 2008).

Participants noted that the interconnections among the content and quality of sexual health education programming, the limitations of funding and federal/state policies, and the inherent difficulties with community collaboration delayed significant declines in adolescent pregnancy rates. Recommended changes included the need to allocate sufficient resources to prevention efforts and create authentic collaborations for higher-level changes. Community coalitions have been useful in creating a supportive environment for HIV prevention and care for adolescents (Straub et al., 2007) and could be helpful for adolescent pregnancy prevention and youth development for young women and men.

Strengths and limitations

This study was unique in incorporating GIS mapping techniques and the voices of a variety of key informants across the Baltimore community, including healthcare providers, educational personnel, and faith community leaders. Utilizing the perspectives of individuals working with adolescents within specific community contexts can provide valuable insights into developing culturally appropriate interventions. However, the sample was small and all female, which is not reflective of the whole of Baltimore (although many youth-serving organizations are staffed with a majority of women). While this study component did not talk directly to adolescents, adolescent voices were incorporated into the larger project (Tanner et al., 2013). Larger studies should work to elucidate and apply specific strategies to improve reproductive health outcomes among youth in Baltimore and other urban locales.

Conclusions

This study provides insights into the multi-level factors affecting adolescent pregnancy in Baltimore and highlights the importance of a united, community approach that addresses key social determinants of health. Future investigations, interventions, and prevention efforts to address adolescent pregnancy in urban areas similar to Baltimore would be enhanced by the inclusion of key components recommended by participants in this study (e.g., mentorship programs, policies supporting comprehensive sex education, allocation of resources, inter-organizational collaboration). Careful assessment of programs, especially those seeking to address structural factors, will be invaluable to the acquisition of funding from federal sources and sustained buy-in of local leaders and policy-makers. The factors identified for Baltimore's context (e.g., poverty structure, community resource disparities) will be useful for addressing

adolescent pregnancy and other co-occurring health issues in other urban locales and highlight the importance of conducting community-specific needs assessments.

Acknowledgment

The authors thank E. Turnquist for her editorial assistance.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

The W.K. Kellogg Community Health Scholars Program (A.E. Tanner) supported this study. During manuscript preparation, A.E. Tanner was supported, in part, by the TRIAD Center for Health Disparities (NIMHD/NIH) [P20MD002289]; PI: D.C. Wallace.

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