Rural Adolescents' Perspectives on Contextual Influences of Sexual Risk Behavior

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Abstract— **Persistent health disparities in HIV on racial and ethnic minorities are evident in recent national reports of HIV rates. Furthermore, high rates of other sexually transmitted infections among minority adolescents point to the need for risk reduction interventions. Research in disproportionately affected rural communities in the Southern United States suggests that sexual risk reduction interventions targeting these communities should address contextual factors that perpetuate health disparities. In this article, we report findings on a formative study that was conducted to identify rural adolescent perspectives on sociocontextual influences on sexual risk behaviors. Thirty eight rural adolescents ages 12-16 participated in initial and follow-up focus group sessions that were segmented by age group (12-14, 14-16) and gender (male, female). A comprehensive theoretical model addressing the complex interplay of multi-level factors associated with risk behavior guided the study. Qualitative content analyses were used to analyze transcribed audiotapes of focus group sessions and observation notes. Emergent themes supported the theoretical model and revealed modifiable contextual and decision-making factors; and related consequences that can be used in risk reduction interventions. Collaborating with target population provided relevant input for a user-centric approach to intervention development aimed at reducing sexual risk behaviors.**

Keywords- adolescent sexual health, sexual risks, HIV prevention, rural south, health disparities

I. INTRODUCTION

Increasing disparities in HIV risks among adolescents are evident in recent national data in which one third (35%) of all new HIV infections occurred among young people age 13-29 [1]. AA (ages 13-19) represent 15% of the U.S. adolescent population, they accounted for 67% of new HIV infections in 2013 and 66% of new AIDS diagnoses among adolescents in 2011 [2]. In addition, regardless of geographical setting, African American adolescents report initiating sexual intercourse at earlier ages [3] and have higher rates of sexually transmitted diseases (STDs) than adolescents from other ethnic groups [1,4]. Recent data also indicate that progress in reducing HIV-related risk behaviors among high school students has not been evident in the past decade [5]. This lack of progress has prompted calls for renewed prevention efforts that seek to delay onset of sexual activity, and increase condom use among those who are sexually active [5]. The estimated rate of diagnoses of HIV infection in adolescents aged 13 to 19 years in 2010 in the South was significantly higher than national average rate [1]. Furthermore, high rates of other STDs and unintended pregnancies among minority adolescents in this region (CDC) point to the need for more effective risk reduction interventions tailored to this population [6].

II. BACKGROUND

Recent research in disproportionately affected rural communities in the South suggests that HIV prevention interventions targeting these communities need to address contextual factors that perpetuate health disparities [7]. In addition, a review of constructs associated with behavior change in randomized trials of HIV prevention interventions revealed that environmental conditions and perceived norms are strongly associated with sexual risk behavior among African American youth [8]. Based on these and other related findings [e.g., 9, 10], ecological frameworks, that consider environmental factors that influence behavior are emerging as important tools in interventions focusing on HIV prevention among African American adolescents.

To inform the development of a theory-based contextually relevant and individually tailored HIV prevention intervention for African American adolescents residing in the rural areas of the Southeastern U.S., we conducted a qualitative study using focus groups. The study was guided by the principles of community-based participatory research [11] and involved community members in all phases of the research project as participants and as a part of the research team. The staff at our community collaborating community agency and other community members were involved in designing the study, development of the focus group guide, and interpretation of findings. This approach is a useful tool in intervention development as it involves the target population throughout the process of intervention development, resulting in an intervention that is more likely to be appealing, salient, and reflective of the daily lives of the target population [2, 6, 12]. The purpose of the study was to identify perceived sociocontextual factors associated with HIV risk among rural adolescents and HIV prevention needs that could inform the development of prevention interventions. Findings of this research contributed to the development of the content for an electronic gaming intervention focused on the prevention of sexually risky behaviors.

The conceptual model that provided the foundation for exploring how adolescents engage in sexually risky behaviors

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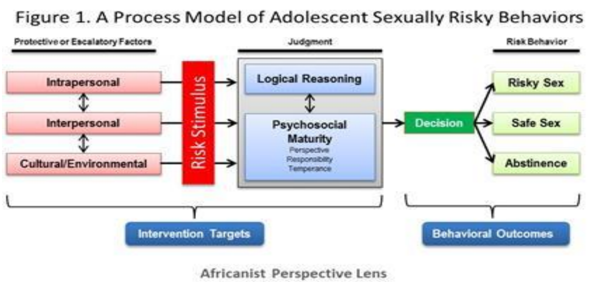
was the Model of Adolescent Sexual Risk Behaviors (MASRB), a modified version of Keeler and Kaiser's [13] research-based process model of how adolescents engage in risky behaviors. This model was chosen because of its comprehensive nature; incorporation of a variety of personal, interpersonal, and environmental factors; and because it is amenable to studying multiple target populations. It is also suitable for addressing the complexity of multilevel factors linked to risk behaviors [6, 13]. In addition, the model also lends itself to understanding context specific situations and the interaction of multiple factors [13]. The MASRB integrates multiple existing theories (Social Cognitive Theory, Problem Behavior Theory, and Bronfenbrenner's Ecological Theory) and places them within a broader framework to organize current research on health risk behavior.

In the model (Figure1), the following concepts are considered: judgment, risk stimulus, protective factors and escalatory factors. Judgment is conceptualized as meditational between antecedent (protective or escalatory) factors and health behavior outcomes. Protective factors are conceptualized as intrapersonal, interpersonal, and environmental factors that discourage engagement in adolescent risk behaviors. Conversely, escalatory factors are conceptualized as intrapersonal, interpersonal, and environmental factors that encourage engagement in risk behaviors in adolescents. Judgment reflects the complex interactions among protective (e.g., long-term goal orientation, parental monitoring, and community connectedness) and escalatory factors (e.g., low self-esteem, poor parent-adolescent communication, and lack of community recreational activities) to influence risk taking behavior. Interventions can potentially focus on antecedent factors, risk stimuli, decision making and consequences. Based on this framework, escalatory/protective factors (intrapersonal [use of leisure time; sexuality knowledge], interpersonal, cultural, and environmental), in a specific risk stimulus situation (opportunity to have sex) have a direct influence on judgment or decision making (logical reasoning and psychosocial maturity), which in turn determines different levels of sexual risk taking behaviors. Research findings on adolescent risk behavior support the framework [e.g., 14, 15].

Cultural perspectives relevant to the study's target population were also incorporated into this framework and used to guide focus group discussions. Examples of concepts relevant to HIV prevention that have been explored using these perspectives include communal behavior, self-image and self-concepts, racial identity, ethnic pride, adaptive coping, and health promotion [16, 17, 18]. In support of including African American perspectives in prevention programs, others have argued that the inclusion of values associated with such perspectives make interventions more effective and relevant to the target population [19, 20]. The study framework guided questions in the focus group guide used in the study as well as served as the preliminary coding schema for data analysis.



III. METHODS

Qualitative research methods were used to explore the perceptions of adolescents living in the rural South about contextual factors that influence sexual behavior risks. In 2011, a total of four initial and four follow up focus groups were conducted with African American adolescents from three rural counties in Alabama. The first set of focus groups focused on exploring contextual contributors to HIV risk behavior among adolescents and the second set of focus group were used for member checking and for gathering additional information on HIV prevention needs. Data were collected using a qualitative approach of descriptive inquiry, which involves the description of a phenomenon of interest in a manner that gives voice to the experiences of participants [21]. This approach is particularly appropriate for this study since the data gathered from participants was to be used to understand the HIV prevention needs in the context of the lives of rural adolescents. The primary method of data collection was focus groups as these types of interviews allow for simultaneous elicitation of data from a number of participants while encouraging continual evaluations of group norms, attitudes and values [22]. In this interactive process, insights can be ascertained on the origins of such shared beliefs and opinions as well as variations on such beliefs [7, 21]. Broad open-ended questions were used to collect data to capture the elements that combine to influence sexual risk and HIV prevention needs. Interview questions were designed to enable study participants to describe HIV preventions needs of adolescents their age to facilitate understanding of their context and experiences.

A. *Setting*

A purposeful sample of two subgroups of adolescents, ages 12-14 and 15-16, was recruited to participate in four initial and four follow-up focus group sessions. The perspectives of male and female adolescents from both subgroups had been suggested by our community partners as essential to increasing our understanding of contextual influences on sexual behavior risk among young African American adolescents in the area. Access to participants was obtained through a community-based HIV service organization that serves eight rural counties in Alabama. This is the only HIV service organization in the area and the investigators' university has long-standing research collaborations with this service organization. This service area is characterized by poverty, a high proportion of African Americans, and a poor health infrastructure [23]. Focus groups were formed by age group (12-14, 15-16) and gender (boys, girls). Participants met the following inclusion criteria: 1) African American adolescent; 2) age 12-16; and 3)

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able to read and write English. A total of 38 participants, out of 50 potential participants, who met the study criteria, participated in the study. Participant provided both written assent and written parental consent. Participants also received a $20 cash incentive to participate in the study and were provided with snacks during each focus group session. Participants also completed a 10-item HIV knowledge questionnaire adapted from the HIV-KQ AG questionnaire [24]. The questionnaire was adapted with the help of adolescent health experts from the community. The original questionnaire had demonstrated internal consistency across samples (.75-.89). In this sample the modified version's internal consistency (KR) was .61.

B. Procedures

The study was approved by the investigators' university institutional review board for the ethical conduct of research with human participants. Staff at the collaborating agency served as intermediaries in participant recruitment by distributing brochures and flyers that introduced the study to potential participants and their parents. Once potential participants were identified, screened in person, and completed the written informed consent and assent, they were assigned to a focus group. Focus groups sessions were approximately 90 minutes long. Focus groups were scheduled at collaborating agencies in private conference rooms. Focus group sessions were audio recorded and recordings were transcribed verbatim without any identifying information. Once transcribed, audiotapes were destroyed. A sociodemographic form elicited information about age, highest educational level of members of the household, household socioeconomic status, and family structure. A research assistant with expertise in qualitative and minority health moderated the focus groups using a focus group implementation guide developed by the research team. A second research team member made observation notes during all the focus group sessions. The focus group guide was based on concepts from MASRB theoretical framework and African American cultural perspectives. The guide included a script for implementing the discussion with specific questions. Discussion questions were derived from the MASRB and focused on addressing the research questions. An example of discussion questions included: "Who do teenagers your age consider at risk for HIV and STDs?" and "What role do parents play in reducing sexual behavior risk in their teenagers?" Probes were used to assist participants in providing details about their perspectives and clarify their responses to questions (e.g., "could you tell us more about that?"). Participants received $20 cash for their participation in the focus group.

C. Data Analysis

Verbatim transcripts of the audiotapes, observation notes, and demographic data were the primary data for analysis. Descriptive statistics were used to analyze the sociodemographic characteristics of participants. Qualitative content analysis, the analysis of choice for qualitative descriptive studies [21, 25] was used to analyze the qualitative data. Transcribed focus group discussions and observation notes were merged into a single word processing file for data coding and analysis. The qualitative research software, QSR N-Vivo®, was used in coding and sorting data into categories. Deductive content analysis procedures were used [26]. Data from focus groups was collectively analyzed and then analyzed by focus group to determine whether groups differed with regard to major themes. Despite differences in age and sex across all four groups, participants' descriptions of their perceptions were similar. The only category of responses that was not consistently discussed in all four groups was what would most likely happen when adolescents were presented with an opportunity to have sex. Three out of four groups endorsed the likelihood of not having sex as one of the potential outcomes. Only one group (15-16 year old males) maintained that having sex would be the only outcome. The general approach to analyzing the content of the transcripts and associated observation noted was to read each transcript to discern a general nature of the themes contained within it. The content was then re-examined to determine which of the deductive themes found in the conceptual framework and research objectives were represented as well as the presence of new themes. Initially, two investigators with qualitative research experience independently coded the data from the first focus group and met to validate the coding schema and reconcile differences in coding. The resulting schema was then used to analyze all of the focus group data with the two investigators meeting frequently to check for consistency and reconcile differences.

IV. FINDINGS

A. Sample Characteristics

A total of 38 rural adolescents participated in four initial and four follow up focus group discussions. The size of focus groups ranged from 6 to 11 participants. Approximately 55% of the participants were girls and the mean age of participants was 14.2 (+1.5) years. Slightly more than half of the participants (52%) lived with both parents and about 42% lived in households headed by their mothers. Most parents/guardians completed high school and about 54% of parents/guardians had some college preparation. Reported wage earners in the household were predominantly mothers (54%) and fathers (24%), with only 16% indicating that both parents were wage earners. Consistent with census data, most participants (76%) reported household incomes at or below $30,000 per year. A summary of demographic characteristics of participants is presented in Table 1. Many participants (36.8%) indicated that their parents/guardians were their primary source of HIV prevention information.

B. HIV Prevention Knowledge

Only 13.5% of participants provided responses that were completely accurate on HIV prevention knowledge questions. The mean of correct responses was 70%. Knowledge areas where participants scored lowest included the manifestation of HIV immediately after infection (66%), mother-to-child transmission (55%), and the availability of a vaccine for HIV prevention (57%). Accuracy of knowledge questions increased slightly with age, but age and knowledge were not significantly correlated. A summary of responses to knowledge questions is presented in Table 2. Responses to the questions were examined by focus group (age and gender) and found to be similar across groups. Mean scores by focus groups are also included in Table 2. Also, no significant difference in HIV prevention knowledge was found between

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the younger (12-14) and older 15-16) age groups (t =1.38, alpha = 0.18).

Table 1. Frequency and Percentages of Demographic Information (*N* = 38)

Characteristic	Frequency	Percentage
Age		
12-14 years	21	55
15-16 years	17	45
Gender		
Boys	17	45
Girls	21	55
Living with		
Both parents	19	50
Mother	16	42
Other relative/guardian	3	7.8
Highest Household Educational Level (parents/guardians)		
Did not complete high school	1	2.6
High school	6	15.8
Some college	10	26.3
Completed college	21	54.1
Household Primary Wage Earner		
None	1	2.6
Father	9	23.7
Mother	20	52.6
Both parents	6	15.8
Other relative/guardian	2	5.3

Table 2. Percentages of Correct Responses on HIV Prevention Knowledge Items (*N*=38)

HIV Prevention Knowledge Item	Frequency	Percentage
Transmission by sharing a glass of water	28	73.4
Signs and symptoms immediately after infection	25	65.8
Mother to Child Transmission	21	55.3
Transmission through anal sex	32	84.2
Transmission when taking Antibiotics	28	73.7
Transmission through oral sex	32	84.2
Transmission in hot tub or swimming pool	34	89.5
Transmission during monthly period in females	33	86.8
Availability of a Vaccine for adult	22	57.9
Transmission through coughing and sneezing	26	68.4

Mean knowledge scores by focus group	N	Mean	SD
Younger girls (12-14)	11	7.2	1.4
Older girls (15-16)	10	7.9	1.3
Younger boys (12-14)	10	8.2	1.1
Older boys (15-16)	7	7.6	1.6

C. *Thematic Overview*

Data collected from the four initial and four follow up focus group sessions and observation notes taken during the sessions were combined for analyses. Major categories of perceived contextual influences on sexual risk behaviors included: individual influences, interpersonal influences, environmental/societal influences, and situational influences. Table 3 illustrates categories of adolescent perceptions which resulted in the subthemes and themes listed in the corresponding row. The table also includes examples of participants' quotes for each theme. Participants perceived that rural adolescent sexual risk behaviors reflected their situational struggles to balance often conflicting beliefs shaped by individual motivations, perceived nature of interpersonal relationships, and environmental conditions

Individual Influences: Across all focus groups, participants identified several areas of individual influences on risk. Motivation (personal aspirations), future goal orientation (goals to make a better future for themselves), and self-worth were perceived by most participants as critical to shaping individual adolescent responses to norms and barriers to safer sex behaviors. The influence of an external locus of motivation is exemplified in the words of a 16-year-old male, who noted that,

"The person that ah, experienced it [sex] earlier they'll probably easy to be persuaded and the person that is doing it [sex] later, they probably have a mind of their own. Think for their self." Goal orientation was observed to be important by a 16-year-old male athlete who said, "Because the ones that's waiting [until they are older] they try to think about their future and the ones that's not [waiting until they are older] they really don't care. They just want to do it to fit in with everybody."

Participants (15-16) in both male and female focus groups spoke about the priority adolescent females place on relationships over their personal aspirations, which lead them to defer their needs for the benefit of their boyfriends. A 15 year old female's comments embody this lack of self -worth sentiment:

"They can be the sweetest girl in the whole world but when they meet that one boy and he starts telling her that he love them and everything, and they are going to leave everything behind just for that one boy"

Interpersonal Influences: The nature of interpersonal relationships with parents and peers were identified by participants to be important in influencing choices to engage or not to engage in sexual risk behavior. The level of parental monitoring, nature of parent-child relationships, perceived expectations from parents and peers, as well as perceived values of parents were identified by participants as important in shaping adolescent sexual risk behaviors. Participants maintained that the nature of parental relationships could either contribute to reducing or increasing risks behaviors. A 14 year old female indicated that parental monitoring played a role when faced with opportunities to engage in sexual behaviors when she said,

"…you know some guys don't have and some girls don't have the time and the opportunity. You know their parents might be more on them, like not let them out of house, you know what I'm saying…"

In another example, a 14 year old participant pointed to the importance of the nature of relationships with a parent when she said,

"The type of person that would wait [delay engaging in sexual activity] will be the type of person that say, like, the type of person who talks to their momma about it [sex] and talk to somebody about it [sex], and the one that would do it [engage in sex early] are the ones that are around it [exposed to sexual activity]."

Alternative views were also presented by a 16 year old male, who said,

"But like, like some parents, they are more relaxed [about sex] you know what I'm saying, when you just be a little old you know, they don't really mind you know, you have the time and you know the girls have the opportunity, you know they got cars. You can go over there or they can come over here, it's just like that."

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Conversely participants also reported that the fear of parents may also discourage adolescents from engaging in sexual activity. As noted by a female participant,

“Ah, because some parents, they are mean. They’ll be threatening the children and telling them if you do it [have sex], I’m going to take you to the doctor and let him check you. And so that would make them say no [to sex].”

Peer pressure and perceived peer norms was another area that was identified in all focus groups as playing a big role in rural adolescent sexual behaviors. As one 16 year old athlete explained,

“If you’re a dude and you are popular, you know what I’m saying, you probably already gonna be having sex.”

In another focus group session, a 14 year- old female noted that abstinent adolescents may be taunted by their sexually active friends by saying,

“Your friends are going to be asking you what you are waiting for and be encouraging you to get it over with.”

Another female also talked about peer pressure related to early pregnancy,

“They think it’s [having children early] cute. They think just because they got children other girls should go out and have children.”

Environmental/Societal Influences: Participants also identified environmental and societal influences such as the nature of the home environment, neighborhood poverty, living in projects, gangs, unemployment, lack of activities for youth, and single parent households, as contributing to choices and behaviors of young rural adolescents. Low levels of monitoring at school, empty classrooms, and students perceptions that ‘teachers don’t care’ were also identified in focus group sessions as important influences on risky behaviors.

In all focus groups, participants described unique characteristics of rural communities that contributed to sexual behavior risk. One of the most commonly described characteristics were denial and fear of stigma associated with sexually transmitted diseases or HIV. Regarding denial, one participant noted,

“Because at our school they don’t talk about it for real, for real, and when they do talk about it, when somebody comes down to our school to talk about, they’ll just be like, ah man, they (adolescents) just laugh about it and joke around about it. They don’t take stuff serious.”

Another added,

“Ah, some people think it ain’t that serious. Some people just go out and have their self some fun anyway and don’t even think about it in their mind.”

Adolescents were described as engaging in risk behaviors but not perceiving themselves as being at risk for HIV. A 14 year old male noted,

“Most teenagers don’t think that they will catch it. You know they think like, you know, that they are safe or immune for some reason. I don’t know why. But you know the danger is there, I know.”

Perceived stigma and social isolation associated with persons infected with HIV was discussed in all focus group sessions. One female participant noted that if a person in the community was thought to be infected,

“Like, they will be trying to think like ah, isolate you or whatever, like they’ll think if they come into contact with you at all or whatever will make you get the disease or whatever.”

Similar sentiments were echoed in words like,

“They’re going to talk about you. They’re going to laugh at you” and “Ah, they think like, like if you have HIV, like, you probably ain’t like normal to them. Like they feel that you are somebody else like a monster or something.”

In the home, participants described either being role models for younger family members or having role models as strong motivators for choosing healthy behaviors and staying away from risky behaviors. As one 14 year old male noted,

“What makes it easy [to not engage in risky behaviors] is like if you have a younger sister or a younger brother and they want to follow in your footsteps, ... And like, they’re like in their teens, and they decided that they want to have sex because they heard their friends do it, it’s best that you waited so you can tell your sibling what not to do and what to do.”

Participants also identified environmental influences such as transportation issues, lack of recreational activities, and neighborhood characteristics that can influence sexual behaviors. As noted by a 13 year old male,

“The environment will stop people [from practicing safer sex] too. Like the different neighborhoods that you live in. Like I would say, the projects, you know.”

In another group, a 13 year old female remarked,

“The streets, you know what I’m saying. You know everybody got a different mindset. Like most folks like, they just want to be a thug and just be out on the street and stuff. They ain’t like they want to do something with their life. And you know folks want to be like out on the streets they probably got kids by more than one woman. And, you know, their kids grow up probably without a father or whatever.”

Another participant (16 year old male) focused on the lack of recreational activities and job opportunities by stating,

“Well some in this town you know, want just enough to get by. Like they don’t try to, you know what I’m saying, do more... They get comfortable in just what they are doing. Like, you know what I’m saying, like living just on the streets and having kids. You know doing drugs, you know, drinking and stuff, just chillin’ and just partying. Because that’s all there is to do here and they just get caught up in that, instead of wanting to be successful and want to get out and make a life of their own.”

Living in neighborhoods with poverty, limited recreational activities, and limited employment opportunities was reported to stifle ambitions along with intentions to delay sexual activity or have kids at a later age.

Situational influences: Given an opportunity to have sex, participants unanimously maintained that sex was most likely going to happen. Participants viewed sex as normative. The 15 and 16 year old males mostly maintained that opportunities for sexual encounters were to be capitalized on whenever such

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opportunities arise. Participants reported that being sexually active was linked with their social status. They felt that they could not refuse sex for fear of being labeled as scared. As noted by a male participant,

"The attention that you'll get from different females, especially like if they are fine or something like that, and they got that body and stuff... You ain't going to know how to respond to it. You ain't gonna say no because most girls these days probably call you scared or something like that."

Overall, participants across all groups identified attractiveness of potential partners, level of monitoring from parents or authority figures, limited recreational and employment opportunities, perceived peer norms, denial and HIV-related stigma, level of sexual experience, self-worth, and goal orientation as important in determining likelihood and level of risky sexual behaviors.

Table 3 Summary of Findings

Categories	Subthemes	Themes	Examples of Quotes
1. Motivation Self- worth Future – orientation Leader vs. Follower	Personal	Intrapersonal	'They can be the sweetest girl in the whole world but when they meet that one boy, he starts telling her that he that he love them and they are going to leave everything behind for that one boy
2.Parental relationships Parental monitoring Parental expectations Perceived parental values Adult monitoring	Parents and Important adults	Interpersonal	You know some guys don't have and some girls don't have the time and the opportunity. You know their parents might be more on them, like not let them out of house, you know what I'm saying…
3.Perceived peer norms Peer pressure	Peers	Interpersonal	"Your friends are going to be asking you what you are waiting for and be encouraging you to get it[sexual debut] over with."
4.Neighbor-hood poverty Lack of recreational activities	Neigh-borhood	Environmental and societal	The environment will stop people [from practicing safer sex] too. Like the different neighborhoods that you live in. Like I would say, the projects, you know.
5.Denial and Fear	Rural community culture	Environmental and societal	They're going to talk about you. They're going to laugh at you" and "Ah, they think like, like if you have HIV, like, you probably ain't like normal to them. Like they feel that you are somebody else like a monster or something.
6.Level of sexual experiences Fear of loss of status or popularity with potential partners	Opportunity for sex and reaction	Situational	The attention that you'll get from different females, especially like if they are fine or something like that, and they got that body and stuff... You ain't going to know how to respond to it. You ain't gonna say no because most girls these days probably call you scared or something like that."

V. DISCUSSION

The purpose of this study was to gather formative data related to contextual influences on sexual risk in order to develop a contextually relevant intervention. Data from rural communities explicating perceived contextual factors associated with adolescent sexual risk behaviors are limited. Findings from this study include intrapersonal, interpersonal, environmental, and situational influences on sexual risks behaviors of young adolescents in the rural south. In general, initiation of sexual activity in adolescence was reported as normative and that HIV or STD prevention was not always considered a priority. This finding parallels results from another study in which rural African American adolescents reported perceptions of sex as normal and abstinence as unlikely during adolescence; and argued that STD prevention was not a priority in adolescent sexual decision-making [4]. However, findings also indicate that the nature of parental relationships, monitoring of parents or authority figures and correcting sexual health misconceptions may go a long way in reducing risky behaviors. Findings in this study provide multiple targets that can be used to develop interventions focused on reducing risky sexual behaviors.

Equipping adolescents with pragmatic contextually relevant strategies for reducing sexual risk as they go through adolescence can increase chances of adolescents adopting strategies that may help them reduce their individual risks. Emergent themes can be used in the development of an HIV prevention intervention. Similar to other findings in the literature, findings in this study captured complex cognitive, interpersonal and/or social processes that influence sexual risk behavior among adolescents in rural communities [4]. Findings provide insight into social norms where there are high rates of sexual activity and teen pregnancy. In these communities adolescents may perceive that the prevailing social norms favor early adolescent sexual involvement. Finding pragmatic strategies to change such norms is necessary for risk reduction. Findings from this study highlight the importance of addressing perceived peer norms around sexual behavior. Specifically a key message in the intervention will be that perceived peer norms usually overestimate sexual risk behaviors and do not mirror actual healthier norm that are based on self-reports of attitudes and behavior. In addition, a related key message will be that these inaccurate perceptions of peer sexual norms often put pressure on adolescents to acts in ways that may be against their personal values.

The low level of accurate knowledge of HIV transmission modes and manifestations found among adolescents in this study is disturbing. Although knowledge might not be sufficiently protective in and of itself, having accurate information about HIV may benefit adolescents by impacting sexual health-promoting attitudes necessary for behavior change [27]. In addition, although the relationship between knowledge and behavior is not always consistently found in studies, low income African American adolescents who possess accurate knowledge about HIV transmission and prevention are less likely to fear people with HIV, have a better understanding of risk factors, and feel more capable of reducing their risk for contracting HIV [27]. In addition, studies indicate that stigma is more likely to persist in communities where HIV-related misconceptions and half-

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truths exist [1, 28]. Stigma, denial, and misconceptions have been identified as major barriers in delivering HIV/AIDS prevention messages to African American rural communities in the South [29, 30]. Addressing misconceptions, denial, and stigma has been identified as a necessary component of any comprehensive sexual risk reduction effort with adolescents in these rural Southern communities [31]. In light of prevailing misconceptions of HIV transmission found in this study, correcting misconceptions may be a good starting point for such efforts. In addition, research is needed on how to best incorporate environmental conditions and historical influences on minority populations in interventions, and such factors are increasingly being recognized as needed for sustainability of behavior change [9].

The formative work reported in this article will guide the development of intervention components of an electronic HIV prevention game that can be formatted into a smart phone application or a computer game [6]. The goal of the intervention will be to help adolescent identify future goals, identify influences on sexual risk that are under their control, and provide them with skills in a virtual environment that can assist them in negotiating intrapersonal, interpersonal, and environmental issues that can increase risk and derail achievement of their goals. In the electronic game, missions provide a solid foundation for behavior change by enhancing the player's HIV prevention knowledge, and skill mastery in a manner that reflects their lived experience. Specifically, based on findings on knowledge levels and the importance of peer norms, players of the game being developed will have opportunities to obtain and evaluate peer advice, correct misconceptions, and learn accurate information from mentors. The theme of interpersonal influences will be incorporated into the game by creating scenarios in which the player has to make decision about following personal convictions about working hard in school to achieve academic goals or skipping school and going to an unsupervised party to fit in with peers. In addition, the player will face the challenge of making a choice about delaying sexual activity or engaging sexual activity based on pressure from friends who are sexually active. Building on the finding on environmental influences in this study, players of the game will also have opportunities to navigate daily challenges (such as lack of recreational activities) in a virtual environment that mirrors characteristics of the rural communities. In the game the player would then get to experience the consequences of his or her choices and how different choices may influence the achievement of his or her life goals [6].

Findings from this study need to be interpreted with caution in light of the low reliability of the knowledge scale. The low reliability of the knowledge scale in this study could be a result of lack of variability in knowledge scores in the sample and the fact that the scale was administered in the presence of their peers. Also, the focus of the study was on an increased depth of understanding of perceived contextual influences on sexual risk behaviors. The study utilized a single HIV service organization and participants were from three counties. Therefore, findings in this study may not apply to adolescents from other geographical areas or adolescents with different social and demographic characteristics. In addition, findings may only reflect the views of those who chose to participate and may not fully represent the views of all adolescents in these communities. Focus group data may also be susceptible to social desirability bias; however, attempts were made to reduce this bias by emphasizing that there were no correct or wrong responses to focus group questions and by setting focus group rules which included respect for the opinions of all in the group session. Furthermore the advantages of interactive and synergistic nature focus group discussion were ideal in meeting study aims.

VI. IMPLICATIONS FOR RESEARCH AND PRACTICE

Collaborating with target populations can provide specific and relevant input that can support a user-centric approach to intervention development to reduce disparities in sexual risk behaviors. Emergent themes from this study suggest several considerations and targets for community-based interventions to reduce risks among rural adolescents. Healthcare professionals designing HIV prevention interventions should engage target community members early in the process of intervention development. Interventions designed using these approaches are more likely to be informed by people most affected and address context-specific factors that contribute to HIV risks [7]. Clinicians need to expand their sexual risk reduction efforts beyond individual level risk factors to include risk factors arising from the social context. Another important area may involve the integration of case management and other social services into clinical settings, so that the multi-level risk influences can be addressed in a synergistic manner [32]. The format in which sexual risk reduction interventions is presented should also expand beyond the traditional person-delivered interventions to tap into emerging technologies that allow for tailoring to individual and contextual influences [6].

There is growing evidence of the role of community level factors in limiting rational choices of individuals and facilitating high risk behaviors associated with HIV [7, 33, 34]. Most adolescent HIV prevention interventions to date, however, focus on individual-level risk factors [4, 7, 33, 34]. Unfortunately, current behavior change strategies have not resulted in significant decreases in sexual risk among African American youth [9]. Behavior is often the result of complex influences and as such any intervention must therefore be approached as part of a complex multi-step process to behavior change.

CONCLUSIONS

This study focused on the perspectives of adolescents on influences associated sexual risk behaviors of adolescents. The goal of this study was to use the elicited information to enhance our understanding of such influences so that appropriate intervention targets can be identified and used in development of a user-centric electronic game which is currently in progress. A total of 38 rural adolescents from three different counties participated in focus group discussion. The results indicate that participants had low levels of HIV prevention knowledge and perceived that multiple contextual factors contributed to adolescent sexual risk behavior. Findings pointed to the presence of multiple interacting influences, supporting the theoretical model used in the study. Findings also suggest that

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sexual behavior risk reduction intervention strategies should be targeting modifiable contextual factors at the intrapersonal, interpersonal, environmental/cultural and situational levels.

Building on participants' perspectives of contextual influences on their risk behavior will contribute to the development of a contextually and culturally relevant intervention that is predictably effective in reducing health disparities experienced by adolescents. In addition, recognizing individual differences in adolescents and tailoring the content of the intervention to members of the target population would enhance relevance to individual members of this population. Overall, these finding allowed the research team to begin the process of developing an intervention that not only uses evidence based components but is tailored to address identified contextual influences on the sexual risks of adolescents in the rural South.

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