SHORT REPORT

Sexual risk typologies and their relationship with early parenthood and STI outcomes among urban African–American emerging adults: a cross-sectional latent profile analysis

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ABSTRACT

Objectives Identifying sexual risk patterns associated with HIV/sexually transmitted infections (STI) and early parenthood within population subgroups is critical for targeting risk reduction interventions.

Methods Latent Class Analysis (LCA) was used to identify sexual behaviour typologies to predict sexual risk outcomes among 274 (63% female) unmarried, sexually active African–American emerging adults (M age=19.31 years) living in disadvantaged urban neighbourhoods. Participants were enrolled in a larger cross-sectional observational study of risk and protective behaviours. LCA defined membership into discrete risk classes based on reported sex risk behaviours.

Results Three groups were identified: The ‘low contraception use’ risk class (32%) had low rates of condom or other birth control use, moderate rates of sexual initiation before age 16 years, and the highest pregnancy/early parenthood and STI rates. The predominately male ‘early sex’ risk class (32%) had higher rates of early initiation and multiple partners, risks that were countered by higher contraception and condom use. Both these risk groups showed higher probability to use substances before sex relative to the ‘low sex risk’ class (36%), which showed low rates on all risk behaviours.

Conclusions LCA identified distinct risk clusters that predicted sexual health outcomes and can inform targeted interventions for a minority youth population disproportionately affected by HIV, other STIs, and early parenthood.

INTRODUCTION

Emerging adulthood is a distinct lifestyle spanning adolescence to young adulthood that is frequently marked with heightened risk-taking.1 African–Americans from disadvantaged circumstances have additional challenges transitioning to adulthood, and have disproportionately higher rates of unsafe sexual behaviours (eg, early sexual initiation, unprotected intercourse, multiple partners).2 Despite increased focus on HIV prevention within communities of colour, new HIV/AIDS cases among African–Americans continue increasing, particularly in the southeastern USA, where HIV rates are increasing faster than in other regions, where rates are stable or declining.2,3 Numerous sexual risk and protective behaviours interact to create identifiable risk patterns or profiles that can be targeted for prevention. Effective strategies to reduce HIV/sexually transmitted infections (STI) and unintended pregnancy among risk groups, such as African–American emerging adults, are urgently needed. Latent class analysis (LCA) is a unique data analytic approach that captures similarities in participant behaviours and identifies subgroups based on otherwise undetected heterogeneity across multiple indicators.4 This study aimed to identify clusters of behaviour patterns forming distinct sexual risk profiles within African–American emerging adults living in urban, disadvantaged southern communities.

METHODS

Participants and recruitment

Data were drawn from the Community Influences Transitions of Youth (CITY) Health project, which investigated risk and protective factors for sexual and other health risk behaviours in African–American emerging adults.

Participants were recruited using Respondent Driven Sampling (RDS), a chain referral method that corrects limitations of snowball sampling, while maintaining the benefit of peer-driven access to hard-to-reach groups, and yields samples that often compare favourably with probability sampling after 5–6 waves of peer recruitment. RDS started with recruiting ‘seeds’ who met study eligibility criteria: African–American, aged 15–25 years, resident in the metropolitan area, intent to remain in residence for at least 6 months, no felony convictions, and daily telephone access. Seeds were interviewed and trained to recruit up to three peers ‘like them,’ who then recruited up to three peers, and so forth in successive waves, until the sample was obtained. Participants received coupons from their recruiters that were used to track chain development and allowed correction of any sampling biases.

Forty-nine seeds referred 477 recruits; 57 were ineligible, and 76 withdrew prior to the data collection interview or repeatedly failed to keep interview appointments. All seeds were excluded from analyses per standard RDS procedures.1 Out of 344 eligible African–Americans (110 men, 234 women), sexually inactive participants (ie, no sexual partners reported in past 90 days; n=70)
were excluded, resulting in an analysis sample of 274 (101 men, 173 women; M age = 19.31, SD = 2.78, range = 15–25); 254 had or were completing high school (92.7%), 66.3% were employed full-time or part-time, 6.2% were married or cohabiting, and 79.2% lived in households receiving government assistance.

Procedures

Research staff conducted individual 1.5 h data collection interviews. Participants received US$30 for the interview and US$15 for each eligible peer recruited. The study was approved by the university Institutional Review Board and had a federal Certificate of Confidentiality.

The interview assessed sociodemographic characteristics; risk and protective behaviours related to substance use and reproductive health; social network characteristics; and health communication channels. Sexual practices were assessed using an adaptation of the 2009 Youth Risk Behavior Surveillance System (YRBS) Questionnaire (http://www.cdc.gov/healthyyou/yrb/ questionnaire_rationale.htm) including: (1) condom use at last sexual encounter, (2) first sexual intercourse before age 16 years, (3) substance use before last sexual intercourse, (4) ≥2 sexual partners in the last 90 days, (5) sex with a known injection drug user (IDU), (6) use of birth control, and (7) ‘transaction’ sex in exchange for food, shelter, money, or drugs. These seven dichotomous variables served as sexual behaviour indicators for identifying LCA subgroups. Risk outcomes included (1) verbal reports of a STI in the previous 6 months; and (2) whether the respondent had children (both genders) or was currently pregnant (women only).

Data analysis plan

Analyses entailed three steps: RDS sample evaluation, LCA of sexual risk behaviours, and comparisons between latent classes on outcomes. Data were evaluated using standard RDS analysis procedures via RDSAT 7.1 (http://www.respondentdrivesampling.org/). No evidence of significant sample bias due to differential recruitment patterns was found, and age and gender composition were independent of the non-randomly selected seeds. As recommended by Johnston and Sabin, a single weighting variable was generated using the reciprocal of participants’ reported social network size to correct potential biases from chain-referral sampling. LCA was then conducted using Mplus 7.0 to identify subgroups based on differential patterns of sexual risk behaviours (with age and gender as covariates). LCA was chosen because it is considered superior to traditional clustering methods and effectively handles missing data. χ² Tests examined whether the identified classes predicted outcome differences.

RESULTS

Based on comparisons of model fit indices and interpretability, a 3-group latent class solution was chosen. For each latent class, Table 1 reports the estimated probability of endorsing each sex risk behaviour. Class 1 (n=88, 32.12%) was considered a ‘low contraception use’ risk class because of the high probability of not using condoms or other birth control to prevent STIs and/or pregnancy. Class 1 was older (M age = 20.27 y) than Class 2 (M=18.79 y) and Class 3 (M=18.92 y), which did not differ significantly. Class 2 (n=87, 31.75%), the ‘early sex/multiple partner’ risk class, was characterised by a high probability of sexual initiation before age 16 years and having recent multiple partners. This group had a higher probability of condom and other contraception use compared to Class 1 and was predominantly male (92%, vs 14% and 9% for Classes 1 and 3, respectively). Risk Classes 1 and 2 showed greater probability to use alcohol or other drugs before sex relative to Class 3 (n=99, 36.13%), considered the ‘low sex risk’ group due to low endorsement probabilities on all risk behaviours.

A sizeable percentage of the sample were parents; 31% (n=85) reported having ≥1 children or were currently pregnant, and the percentages differed significantly across the classes, χ² (2) = 20.48, p < 0.0001. Posthoc comparisons indicated that Class 1 had a significantly higher percentage of parent or pregnancy status (47%, n=41) than Class 3 (31%, n=31), χ² (1) = 4.59, p < 0.05. Class 2 used condoms and had a lower pregnancy/parenthood percentage (15%, n=13) than Class 3, χ² (1) = 6.87, p < 0.01. Self-reported STIs in the previous 6 months were low with 4% (n=12) of the sample reporting any of seven STIs (chlamydia, genital herpes, gonorrhoea, human papilloma virus/genital warts, syphilis, trichomoniasis). A Fisher’s exact test, used to accommodate the small cell sizes, indicated a significant STI difference among the three classes (p=0.047). The percentages of STI history were 9%, 2% and 2% for Classes 1, 2 and 3, respectively.

DISCUSSION

Unprotected sex and concurrent partnering were the predominant risk behaviours distinguishing the three risk classes. Class 1 (low contraception use), and to a lesser extent Class 3 (low sex risk), had higher rates of unprotected sex, whereas Class 2 (early sex/multiple partners) reported recent multiple partners but had less unprotected sex. The unique protective behaviour of Class 2—consistent condom and other contraception use—may explain why this sexually active class reported lower STI and parent/pregnancy outcomes. The fact that this group was 92% male concurs with research suggesting that young African–American males are heeding sexual risk reduction messages and increasing condom and other contraception use.

Differential typologies emerged by gender. Compared with men, women were more likely to belong to a risk class showing low probabilities of condom/other contraception use and early sexual initiation, suggesting that risk profiles are determined in part by relational and gender socialisation factors. Research has demonstrated numerous sources of gender inequality that can
increase women’s risk of adverse outcomes including vulnerability to HIV/STIs and unintended pregnancy. The sample’s pregnancy and parenting prevalence further suggests that childbearing is normative among unmarried emerging adults living in resource-poor environments. This argues for a broadened scope of prevention to address gender-based influences on sexual health. However, ambivalence or desire for a child is a challenging obstacle to consistent condom and contraception use.

Some study limitations are worth noting. First, the reliance on verbal reports to assess risk factors could be influenced by recall bias and social desirability, particularly for sensitive behaviours and outcomes. Specific to STIs, participants may not have been recently tested and known their STI status, potentially contributing to lower than expected STI reports. Second, the use of cross-sectional data limits causal inferences. Third, sample selection was specific to a particular race/ethnicity in a southern metropolitan area, potentially limiting generalisability to other populations. Fourth, LCA classifications depend on the measures used, sample size, covariates and interpretational decisions. Given the low self-reported STIs, replication with larger samples may provide clarification on the robustness and replicability of associations between sex risk class and STIs.

**Future directions**

Although racial and ethnic differences in reproductive health outcomes and sexual risk-taking are common, within-group heterogeneity in risk-taking patterns has not been well investigated. The meaningful differences observed within population subgroups laid a foundation for future targeted HIV/STI prevention interventions based on gender, condom/contraception use, age of sexual initiation and multiple partners. Examination of pregnancy ambivalence or desire for a child within the context of consistent condom and contraception use deserves further inquiry.

**Conclusions**

The study adds to the understanding of how sexual risk-taking behaviours cluster to predict STI risk among urban minority emerging adults and underscores the need to reduce socio-economic and gender inequalities in sexual health.

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**Contributors** SLD: contributed to the design of the overall study; conceptualised, drafted and revised the manuscript; contributed to interpretation of results; and approved the final submitted manuscript. JWC: carried out statistical analyses and contributed to interpretation of results; conceptualised, drafted and revised the manuscript; and approved the final submitted manuscript. THL: carried out statistical analyses and contributed to interpretation of results; conceptualised, drafted, and reviewed the manuscript; and approved the final submitted manuscript. CAS: contributed to the design of the overall study; contributed to interpretation of results; critically revised the manuscript; and approved the final submitted manuscript. SDC: supervised study data collection and reduction; contributed to interpretation of results; critically revised the manuscript; and approved the final submitted manuscript. JAT: is Principal Investigator of the overall study; conceptualised and designed the study; contributed to interpretation of results; critically revised the manuscript; and approved the final submitted manuscript.

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### REFERENCES