Individual and Network Drivers of Racial Disparities Among YMSM

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INTRODUCTION

- There is a marked racial disparity observed in HIV infections in the U.S. with black MSM (BMSM) experiencing the greatest burden.[1,2]
- In 2014, two-thirds of all new HIV diagnoses in the U.S. occurred among MSM with BMSM (36%) accounting for the majority of these diagnoses followed by Hispanic MSM (17%) and white MSM (WMSM; 15%).[1,2]
- From 2010 to 2014, the CDC reported differential trends in HIV diagnoses by race/ethnicity: WMSM saw an 11% decline, BMSM experienced a 1% increase, and Hispanic MSM saw a 14% increase in the rate of new HIV diagnoses.[1]
- Awareness of infection, however, followed a reverse trend with 90% of WMSM, 75% of Hispanic MSM, and 67% of BMSM being aware of their HIV infection.[2]
- Individual sexual behaviors have failed to explain the observed racial disparity in HIV acquisition.
- To increase understanding of potential drivers in these disparities, we assessed differences across individual and network domains.

METHODS

- Data were collected as part of RADAR, an ongoing longitudinal cohort study of YMSM living in the Chicago metropolitan area.
  - Participants were recruited using a multiple cohort, accelerated longitudinal design.
  - Participants were between 16 and 29 years of age, assigned male at birth, and had a sexual encounter with a man in the previous year or identified as gay, bisexual or transgender.
- Egocentric interviews were conducted to gather information regarding the respondents' relationship with their alters, persons with whom they previously had social, sexual, or substance use relationships.
- Data and measures were collected across 5 domains:
  - Social behavioral
    - Mental health, stigma, substance use, and sexual risk taking behaviors
  - Biological
    - HIV testing, rectal gonorrhea and chlamydia testing
  - Structural
    - Experiences of violence and trauma, living in a high disadvantaged neighborhood, access to prevention and treatment services
  - Partner-level
    - Sexual partner demographics were captured, such as age, race, sexual orientation, strength of relationship, and HIV status
  - Network-level
    - Relationships between network members

Table 1. Social, biological, and structural characteristics of sample stratified by race and ethnicity, RADAR, Chicago 2015-2017 (N = 1015)

Characteristic	Black (n = 344)	Hispanic (n = 304)	White (n = 252)	Other/Multiple (n = 115)	Estimate, p-value
Social Behavior					
Mental Health					
Depression	14.09	16.10	16.47	14.96	5.80, < 0.001
Suicide Ideation	0.10	0.10	0.15	0.10	3.78, 0.29
Suicide Plan	0.74	0.06	0.04	0.08	2.78, 0.43
Suicide Attempt	0.04	0.02	0.01	0.04	3.77, 0.29
Substance Use					
AUDIT	4.31	6.07	7.46	5.47	15.39, <.001
CUDIT	6.73	6.03	5.03	5.51	3.09, 0.026
Sexual Risk Taking					
No. Sexual Partners	2.77 (2.59)	3.26 (3.02)	4.36 (3.89)	3.56 (2.58)	31.59, < 0.001
No. CAS Partners	0.80 (1.17)	1.30 (1.87)	1.43 (2.19)	1.23 (1.29)	25.36, < 0.001
Stigma					
Internalized Stigma	1.86	1.68	1.58	1.88	8.98, <0.001
Externalized Stigma	2.80	2.65	2.55	2.39	5.03, 0.002
Biological					
Detectable Viral Load	0.60	0.38	0.17	0.25	11.26, 0.01
Structural					
Violence and Trauma					
Victimization (mean)	0.29	0.17	0.15	0.28	5.4, 0.001
Trauma (ever)	1.94	1.60	1.34	1.62	4.61, 0.003
Childhood Sexual Abuse (Ever)	0.31	0.30	0.15	0.27	20.78, < 0.001
Intimate partner violence	0.08	0.09	0.07	0.08	0.84, 0.839
Prevention Access					
Number of lifetime HIV tests	8.67	5.99	3.82	7.48	7.03, < 0.001
PrEP use in past six months	0.07	0.05	0.08	0.09	2.17, 0.537
Treatment Access					
Miss Medication in past week	0.27	0.27	0.00	0.22	1.51, 0.687
Number of Visits to Health Care Provider	2.95	2.93	1.60	3.64	0.49, 0.686

Table 2. Partner characteristics of sample, stratified by race and ethnicity, RADAR, Chicago 2015-2017 (N = 1015)

	Black	Hispanic	White	Other/Multiple	Estimate
Gender, n(%)					36.81, p < 0.001
Female	59 (6.5)	32 (5.2)	60 (4.5)	13 (6.3)	
Male	803 (88.0)	553 (90.7)	1220 (91.3)	181 (88.3)	
Not Listed	12 (1.3)	14 (2.3)	38 (2.8)	8 (3.9)	
Transgender: FTM	5 (0.5)	1 (0.2)	5 (0.4)	0 (0.0)	
Transgender: MTF	34 (3.7)	10 (1.6)	13 (1.0)	3 (1.5)	
Sexual Orientation, n(%)					98.11, p < 0.001
Bisexual	204 (22.3)	96 (15.9)	141 (10.6)	29 (14.2)	
Gay / Lesbian	567 (62.1)	450 (74.4)	1052 (78.8)	146 (71.6)	
Heterosexual / Straight	73 (8.0)	29 (4.8)	52 (3.9)	7 (3.4)	
Other	69 (7.6)	30 (5.0)	90 (6.7)	22 (10.8)	
Relationship Strength, n(%)					66.27, p < 0.001
Very Close	370 (41.7)	312 (53.1)	784 (59.1)	106 (52.5)	
Somewhat Close	272 (30.6)	149 (25.3)	301 (22.7)	50 (24.8)	
Not close at all	246 (27.7)	127 (21.6)	241 (18.2)	46 (22.8)	

RESULTS

- Participant demographics included (N=1015):
  - 344 (33.9%) identified as black, 304 (30.0%) identified as Hispanic, 252 (24.8%) identified as white, and 115 (11.3%) identified as other
  - 112 (11.0%) were 16-17 years old, 459 (45.2%) were 18-20 years old, 329 (32.4%) were 21-24 years old, and 115 (11.3%) were 25-29
  - 705 (69.5%) identified as homosexual, 216 (21.3%) as bisexual, and 93 (9.2%) as a different category
- Compared to White an Hispanic MSM, BMSM had a higher prevalence of both HIV (32%; p<0.001) and rectal STIs (26.5%; p=0.011)
- Young BMSM, compared to other young MSM (Table 1):
  - Lower rates of participation in sexual risk practices (p<0.001), a greater number of lifetime HIV tests (p<0.001), but were less likely to achieve viral suppression (p=0.01)
  - Greater levels of stigma (p<0.001), victimization (p=0.04), trauma (p<0.001), and childhood sexual abuse (p<0.001)
- Young WMSM, compared to other young MSM:
  - Higher rates of depression (p<0.001) and highest rates of alcohol (p<0.001)
- In network analyses, young BMSM reported (Table 2):
  - A greater number of sexual partners identifying as non-male and non-gay and more HIV-positive sexual partners (p<0.001)
  - Had stronger relationship ties (p<0.001) and greater racial homophily with sexual partners (p<0.001)
- Significant differences existed across network characteristics:
  - YBMSM had the lowest transitivity (p=0.002), the highest density (p<0.001), and the highest concurrency of YMSM alters (p<0.001)

DISCUSSION

- YBMSM do not report higher rates of HIV risk behaviors than YWMSM and young Hispanic MSM.
- YBMSM do report more HIV-positive sexual partners, more concurrent sexual partners, and have more homogeneous sexual networks.
- Importantly, YBMSM are significantly less likely to have viral suppression when HIV-infected, suggesting they may be more likely to transmit the virus through their sexual networks.
- These results support that network factors drive racial disparities in HIV acquisition and suggest structural interventions may be useful to reduce disparities.

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