Douching Is Associated with Rectal Inflammation in HIV-Negative Sexual Minority Men

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McGaugh A,[1] Miller C,[1] King J,[1] McManus K,[1] Alcaide M,[1] Bauermeister J,[2] Grov C,[3] Manuzak J,[1] Broedlow C,[1] Parisi R,[4] Martinez D,[4] Klatt NR,[1,5] & Carrico AW[1]

[1]University of Miami, Miami, FL, USA, [2]University of Pennsylvania, Philadelphia, PA, USA, [3]City University of New York, New York, NY, USA, [4]AIDS Healthcare Foundation, Los Angeles, CA, USA, [5]University of Minnesota, Minneapolis, MN, USA

Rectal Douching is associated with higher levels of rectal inflammation (IL-6 & IL-8). This could amplify risk for HIV and STI acquisition.

BACKGROUND

- Among sexual minority men (gay, bisexual, and other men who have sex with men), condomless receptive anal intercourse (CRAI) leads to 70% of new HIV infections.[1]
- Local inflammation likely results in rectal mucosal damage, amplifying biological vulnerability to HIV and other STIs.[2]
- Rectal douching, rinsing the anus and rectum prior to or after anal sex, is common among sexual minority men.[3]
- Due to local damage and inflammation, the act of rectal douching may increase the risk of HIV and STI acquisition.
- Understanding the bio-behavioral correlates of rectal douching among sexual minority men is crucial to developing novel HIV/STI prevention interventions and informing safer douching practices.

METHODS

- In total, 279 participants were recruited from four AIDS Healthcare Foundation HIV/STI clinics in Miami and Fort Lauderdale, two high priority Ending the HIV Epidemic regions.
- Eligible subjects met the following inclusion criteria:

  1) HIV uninfected
  2) Sexual minority man
- Participants completed a tablet-based survey assessing sociodemographics, self-reported risk behaviors (i.e., sexual practices, rectal douching, and substance use), and PrEP use.
- Rectal swabs were self-collected by study participants and stored at room temperature in Puritan DNA/RNA Shield for up to one moth after collection, after which swabs were moved to -80C for long term storage.
- A total of 92 rectal swabs that met the following criteria were selected for cytokine assays:

  1) Reported any CRAI (past 3 months)
  2) No Antibiotic Use (past 3 months)
- The LEGENDplex human inflammation panel (BioLegend) was used to detect 13 human inflammatory cytokines/chemokines from rectal swabs.
- Prior to conducting assays, swabs were thawed and vortexed in rectal swab eluent for 30 seconds and the rectal swab eluent was utilized in the assay.
- Logistic regression analyses examined the independent associations of rectal douching with detectable levels of rectal cytokines.

RESULTS

- Participants were early middle-aged (Mean= 34.6; SD=13.7) and all self-identified as gay
- The sample was multi-ethnic: 46% Caucasian, 37% Hispanic/Latino, 14% Black/African American, and 3% other ethnic minorities
- ~28% of participants were taking PrEP
- ~70% of participants reported any rectal douching in the past 3 months, and the median times they reported douching in the past three months was six

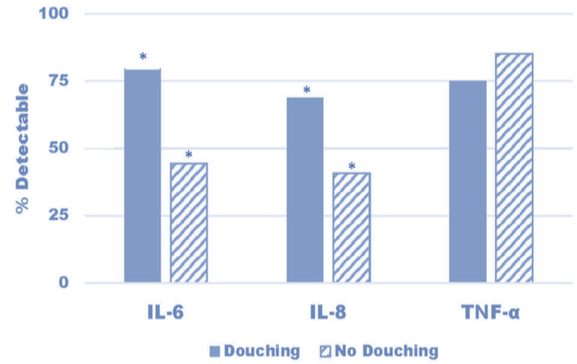
Table 1: Correlates of Rectal Douching Among HIV- Sexual Minority Men Engaging in CRAI (N= 92)

	N	Any Douching (N=64) N (%)	No Douching (N=27) N (%)	p-value
Race/Ethnicity	89			0.62
Black/African American		7 (11.1)	5 (19.2)	
White		30 (33.7)	11(42.3)	
Hispanic/Latinx		3 (4.8)	10 (38.5)	
Other Ethnic Minority		51 (81.0)	20 (74.1)	
Born in the United States	90			0.46
Education	90			0.92
Less than high school		1 (1.0)	0 (0)	
HS graduate		9 (14.1)	3 (11.5)	
Some college/trade school		20 (31.3)	7 (26.9)	
College graduate		22 (34.4)	9 (34.6)	
Post graduate		12 (18.8)	7 (26.9)	
Income	82			0.03
<$4,999		7 (12.1)	2 (8.3)	
$5,000-$11,999		4 (6.9)	2 (8.3)	
$12,000-$15,999		3 (5.2)	0 (0)	
$16,000-$24,999		3 (5.2)	5 (20.8)	
$25,000-$34,999		4 (6.9)	3 (12.5)	
$35,000-$49,999		9 (15.5)	8 (33.3)	
>$50,000		28 (48.3)	4 (16.7)	
Gay-Identified	89	63 (100.0)	26 (100.0)	1.0
PrEP Use	90			0.01
Taking PrEP		24 (37.5)	2 (7.7)	
Discontinued PrEP		7 (10.9)	4 (15.4)	
Never Prescribed PrEP		33 (51.0)	20 (76.9)	
Screened Positive for Depression	89	17 (27.0)	5 (19.2)	0.44
Hazardous Drinking	91	33 (51.6)	8 (29.6)	0.05
Self-Reported Cannabis Use (Past 3 Months)	91	33 (51.6)	9 (33.3)	0.11
Self-Reported Stimulant Use (Past 3 Months)	88	15 (24.6)	4 (14.8)	0.40
Detectable Rectal Inflammatory Cytokines	91			
IL-6		51 (79.7)	12 (44.4)	0.0009
IL-8		44 (68.8)	11 (40.7)	0.01
TNF-α		49 (75.0)	23 (85.2)	0.41
		Median (IQR)	Median (IQR)	
Age	91	34.6 (27.4-47.4)	35.0 (25.4-48.8)	0.81
Number of CRAI Partners	91	2.0 (1.0-3.5)	1.0 (1.0-2.0)	0.003

Correlates of Rectal Douching

- As shown in Table 1, men who engaged in rectal douching were more likely to screen positive for hazardous drinking and report more CRAI partners
- Men who douched also had significantly higher odds of detectable IL-6 and Il-8 (Fig 1)
- Douching was independently associated with more than 4-fold greater odds of detectable rectal IL-6 and more than 3-fold greater odds of detectable rectal IL-8

Figure 1: Association of Rectal Douching with Detectable Rectal Inflammatory Cytokine Levels (N= 92)



IL-6: p= 0.002
IL-8: p= 0.019

CONCLUSIONS

- Among sexual minority men engaging in CRAI, rectal douching is associated with amplified behavioral and biological risk for HIV and other STIs.
- Sexual minority men who douche are more likely to screen positive for hazardous drinking and report more CRAI partners.
- Douching is associated with greater odds of detectable rectal inflammation.
- These findings underscore the need to investigate bio-behavioral interventions that meet the unique HIV and STI prevention needs of sexual minority men who douche.
- Mechanistic studies are needed to examine the role of rectal dysbiosis and altered mucosal immunity as potential drivers of rectal inflammation.

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