Awareness and Knowledge of 'Treatment as Prevention' (TasP) among HIV-positive and HIV-negative men who have sex with men in Vancouver, Canada

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Study Objective

To assess awareness and knowledge of TasP among HIV-positive and HIV-negative gay, bisexual, and other men who have sex with men (MSM) in Vancouver, Canada.

Methods

Study Population: Baseline data were analyzed for Momentum Health Study participants enrolled via Respondent Driven Sampling (RDS) between Feb 2012 and Feb 2014 .

Primary Outcome: TasP awareness (ever vs. never heard of TasP).

- Among those who ever heard of TasP, **TasP knowledge** was explored by examining self-perceived knowledge level, risk perceptions, and information source (table 3) as well as short-answer definitions (figure 1).

Statistical Analysis: Stratified by HIV status, multivariable logistic regression identified covariates of TasP awareness (ever vs. never heard of TasP). Analyses are RDS-adjusted.

Results

Of 719 participants: 23% were HIV-positive and 46% heard of TasP. TasP awareness was higher among HIV-positive (69%) than HIV-negative MSM (41%, p<0.0001).

Table 1. Overall Sample Demographics (n=719)

	RDS % (95% CI)
HIV positive (Yes)	23.4 (16.1, 31.3)
Caucasian Ethnicity (Yes)	68.0 (61.0, 74.2)
Sexual orientation	
Gay	80.7 (76.2, 85.3)
Bisexual	15.3 (10.6, 19.5)
Other	4.0 (2.4, 6.2)
Education	
High school or less	14.5 (10.1, 20.8)
Completed high school	20.2 (14.5, 25.0)
Greater than high school	65.3 (58.0, 72.3)
Current student (Yes)	19.0 (14.0, 24.1)
Born in Canada (Yes)	74.7 (67.9, 80.5)
Currently employed (Yes)	52.0 (44.8, 58.7)
Regular partner (Yes)	34.4 (28.5, 41.6)
Party drug use past 6 mo (Yes)	59.3 (53.3, 65.4)
No. anal sex partners past 6 mo	
1	35.0 (29.1, 41.6)
2-5	25.7 (21.2, 31.3)
6+	25.6 (19.0, 30.7)
None	13.8 (9.9, 18.4)

Among HIV-positive participants:

- 89% were on antiretroviral therapy
- 67% were ≥95% adherent in past 6 months
- 82% had CD4 ≥ 350 cells/mm^3
- 72% had VL < 50 copies/mL

Table 2: Multivariable models of TasP awareness stratified by HIV status

	HIV-negative MSM AOR (95% CI)	HIV-positive MSM AOR (95% CI)
Ethnicity		
Caucasian	Reference	
Asian	0.91 (0.51 - 1.63)	
Aboriginal	0.38 (0.15 - 0.97)	
Other	1.42 (0.81 - 2.49)	
Sexual orientation		
Gay	Reference	Reference
Bisexual	0.45 (0.24 – 0.85)	0.15 (0.05 – 0.47)
Other	1.75 (1.75 – 4.11)	0.71 (0.10- 5.21)
Education		
High school or less	Reference	
Completed high school	3.33 (1.40 – 7.95)	
Greater than high school	3.49 (1.60 – 7.61)	
Current Student (No vs. Yes)	1.67 (1.09 – 2.58)	
Born in Canada (No vs. Yes)		4.05 (1.52 – 10.80)
Currently employed (No vs. Yes)		0.28 (0.13 – 0.95)
Regular partner (No vs. Yes)	1.91(1.27 – 2.87)	
Party drug use past 6 mo (No vs. Yes)		0.35 (0.13 – 0.95)
No. anal sex partners past 6 mo		
1	Reference	
2-5	0.75 (0.46 – 1.21)	
6+	1.77 (1.06 – 2.95)	
None	1.94 (1.07 – 3.52)	
Current CD4 cell count (HIV+ only)		
<200		Reference
200-349		4.12 (0.69 - 24.64)
350+		6.30 (1.30 - 30.64)

In summary, in adjusted analyses stratified by HIV status:

- ***HIV-positive MSM*** were more likely to have heard of TasP if they were Canadian born, unemployed, not using party drugs, and had higher CD4.
- ***HIV-negative MSM*** were more likely to have heard of TasP if they were Caucasian (vs. Aboriginal), students, had higher education, a regular partner, and multiple sexual partners.

*Note: Blank cells indicate non-significant variables removed from model selection process for each stratified analysis.

Results (continued)

Table 3: Self-perceived knowledge level, risk perceptions, and information source

	Total Sample	HIV-negative MSM	HIV-positive MSM	
	RDS % (95% CI)	RDS % (95% CI)	RDS % (95% CI)	P-value
How much do you think you know about what TasP means? (n=366)				
Not much or nothing at all	20.0 (10.0, 28.5)	30.6 (22.4, 38.8)	9.5 (1.0, 17.9)	<0.0001
A bit in general	57.1 (47.0, 68.6)	57.1 (48.1, 66.0)	52.4 (40.0, 64.8)	
A lot	22.9 (14.3, 33.8)	12.3 (7.2, 17.4)	38.1 (26.2, 50.1)	
How do you think that TasP changes your risk of getting/transmitting HIV? (n=289)				
A lot lower	57.5 (42.6, 69.2)	40.5 (28.7, 52.4)	63.6 (51.4, 75.8)	0.0020
A little lower	28.6 (19.4, 45.7)	41.0 (29.7, 52.4)	19.1 (8.2, 30.1)	
No difference	10.9 (4.9, 15.4)	16.2 (9.5, 22.9)	13.7 (65, 20.8)	
A little higher	1.4 (0.0, 2.1)	0.9 (0, 1.9)	2.3 (0, 6.5)	
A lot higher	1.6 (0.0, 4.0)	1.3 (0, 3.1)	1.3 (0, 3.2)	
Who or where did you learn about TasP from? (n=289)				
Friends	27.6 (13.7, 38.6)	31.5 (20.8, 42.2)	19.8 (9.2, 30.4)	0.0392
Sex partners	15.7 (6.0, 25.9)	17.1 (7.4, 26.9)	10.2 (1.6, 18.9)	0.1211
Community agencies	31.7 (29.1, 55.4)	25.3 (15.8, 34.8)	37.7 (25.6, 49.8)	0.0338
Doctor	27.8 (16.5, 41.4)	9.6 (4.2, 14.9)	44.0 (31.4, 56.7)	<0.0001
Gay Media	31.1 (25.1, 53.2)	33.9 (23.1, 44.7)	34.2 (21.8, 46.7)	0.9517

In summary:

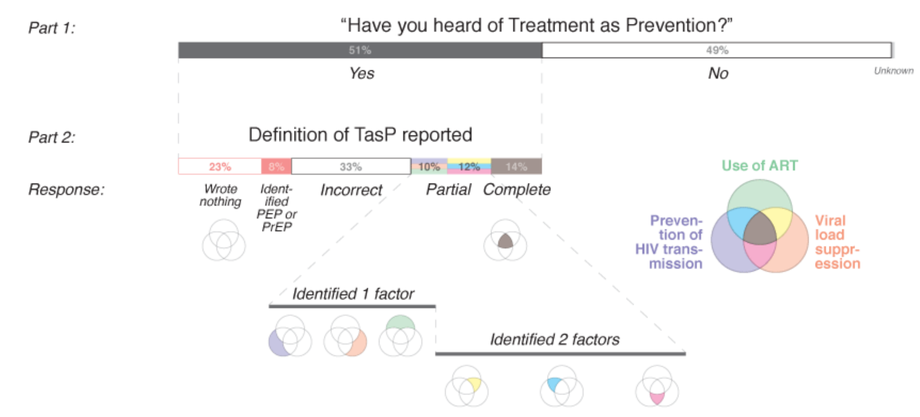
- *91% (HIV+) and 69% (HIV-) felt they knew 'a lot' or 'a bit in general' about TasP*
- *64% (HIV+) and 41% (HIV-) felt HIV treatment made transmission risk 'a lot lower'*
- *Leading information source was doctors (44%) (HIV+) and gay media (34%) (HIV-)*

Qualitative analysis of short-answer definitions revealed that only 21% (HIV+) and 13% (HIV-) demonstrated 'complete' TasP knowledge (Figure 1)

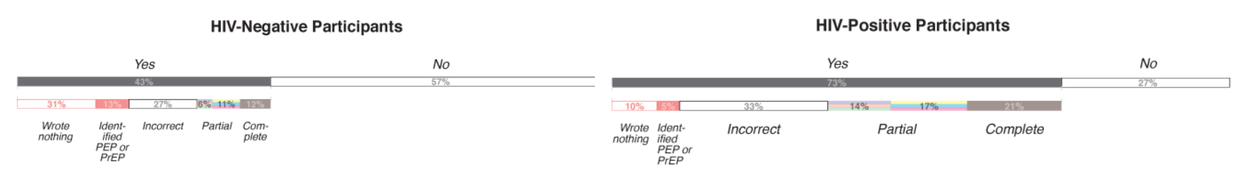
- *'Complete' definition identified 3 factors: ARV use, viral suppression, & prevention of transmission*
- *E.g., "By getting [HIV] treatment, viral load goes to 'non-detectable' (ideally) therefore lessening chances of transmission" (HIV-positive, Caucasian, 52 years)*

Figure 1. Classification of participants' self-reported definitions of TasP

a. Overall:



b. Stratified:



Conclusions

While TasP awareness was high among HIV-positive MSM, it was relatively low among HIV-negative MSM and varied by key socio-behavioural and clinical factors. Men's articulation of their knowledge of TasP was poor, albeit better among HIV-positive men. For MSM to make use of TasP, they must understand it. Health communication strategies relevant to diverse MSM are critical to advancing TasP health literacy.

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Conflict of Interest Disclosure: The authors have no conflicts of interest to disclose.