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Factors Affecting Uptake of Voluntary Human Immunodeficiency Virus Counseling and Testing among Men Having Sex with Men in the National Capital Region, Philippines

INTRODUCTION

Globally, approximately 36.9 million people are living with HIV/AIDS (UNAIDS, 2017). The number of people living with HIV in the Philippines continues to increase. In the recent report of the Department of Health, 55,282 are diagnosed seropositive to HIV/AIDS (Department of Health Epidemiology Bureau, 2018). Although this prevalence is still considered low, remaining at 0.1% of the total population, it is noted that it is one of the fastest growing cases worldwide (HARP, 2016).

HIV voluntary counselling and testing (VCT) is a public health initiative designed to principally diagnose HIV infection and also encourage HIV transmission-reducing attitude through counselling (Chadborn, Delpech, Sabin, Sinka, & Evans, 2006; Higgins et al., 1991). HIV testing is the primary step in the cascade of HIV care; this conceptualizes access to HIV-related healthcare as a series of phases from HIV diagnosis to viral suppression (Mayer, Mugavero, Amico, Horn, & Thompson, 2013). Numerous studies have revealed that knowing one's HIV status is helpful for prevention and treatment (Chadborn et al., 2006; Desgrées-du-Loû et al., 2009; Higgins et al., 1991; Kamb et al., 1998; Marks, Crepaz, Senterfitt, & Janssen, 2005; Weinhardt, Carey, Johnson, & Bickham, 1999), it enables earlier diagnosis and subsequently, timely initiation of antiretroviral therapy (Le et al., 2013). Efforts to attain zero new infections and zero AIDS-related mortality entail increased uptake of HIV testing as a gateway to HIV prevention, treatment and care (Joint United Nations Programme on HIV/AIDS (UNAIDS), 2010).

Despite these noteworthy benefits of VCT, most individuals are tested late in the course of

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HIV infection due to HIV testing barriers (MacCarthy et al., 2015; Schwarcz et al., 2011). In May 2018, 17% of the newly diagnosed HIV infection in the Philippines were already classified as AIDS clinical stage (Department of Health Epidemiology Bureau, 2018). Late diagnosis of HIV infection is associated with serious health implications for both individuals and society; it could result in significant economic burden with costs in the year following diagnosis approximately to be 200% higher in those who present with a WHO clinical stage 4 infection (Krentz, Auld, & Gill, 2004). Several researches have pinpointed stigma and discrimination (Kalichman & Simbayi, 2003); perceived they are at low risk of HIV infection (Nakanjako et al., 2007); idea of lack of confidentiality of results (Bwambale, Ssali, Byaruhanga, Kalyango, & Karamagi, 2008; Matovu & Makumbi, 2007); distance to testing hubs and other socio-demographic characteristics (Hutchinson & Mahlalela, 2006); and awareness/knowledge with regards to HIV/AIDS (Bwambale et al., 2008; Hutchinson & Mahlalela, 2006; Jereni & Muula, 2008) as barriers to uptake VCT.

The current standard of care recommended by the Center for Disease Control and Prevention (CDCP) for sexually active men having sex with men (MSM) is to get VCT once every 3 or 6 months, however, few MSM observe this guideline and/or aware of it. One of the major challenges in efficiently scaling up HIV VCT uptake is to understand and address why individuals decline from being tested, in particular those who are at high risk. Improved understanding of HIV testing attitudes and knowledge among MSM in the National Capital Region of the Philippines could shed light for the development of new interventions to improve the frequency of counselling and testing. Thus, the aims of this study is to identify the history and frequency of HIV testing among MSM and identify factors that affect their uptake of VCT.

METHODS

DATA COLLECTION AND SAMPLING

The samples for this research include men having sex with men because they are perceived to be the high risk population and continuously to be the group with highest incidence of HIV infection (Department of Health Epidemiology Bureau, 2018). Men who have not had sex with the same gender were excluded in the survey. The baseline survey interview was conducted purely online to preserve the identity of the respondents. The

questionnaire was structured using Google Forms and was floated to different social media application available over the internet. To validate the tool, the questionnaire was launched to more than 103 MSM currently living outside NCR. The researcher used a simple random probability sampling to select potential respondents. The respondents were chosen randomly and entirely by chance. Eligible men who happened to be online during the course of data gathering were asked to answer the survey. A consent letter was flashed before the respondents start answering the questionnaire for them to know that their participation is voluntary. The variables assessed included socio-demographic characteristics, their history of HIV testing, assessment of knowledge regarding HIV/AIDS, and barriers that hinder them to immediately access VCT.

DESIGN AND STUDY AREA

This study was conducted only in the National Capital Region of the Philippines where 40% of the total prevalence of HIV was recorded (Department of Health Epidemiology Bureau, 2018). A cross-sectional study design and correlational study design was employed to determine the correlation of the respondent's knowledge regarding HIV/AIDS, socio-economic information, willingness to undergo HIV test and deterrents to uptake VCT.

STATISTICAL ANALYSIS

Logistic regression was utilized to determine the association between the independent (socio-demographic data, and knowledge) and dependent variables (HIV testing). The selection of the variables was based upon the own discretion of the researcher and previous finding from studied literature. The association between the dependent and each independent variable was analyzed separately using univariate analysis. The associations were presented as odds ratios and 95% confidence intervals.

Multiple answers were allowed in determining the possible barriers that inhibit respondents from immediately seeking VCT. The possible answer choices were provided from a previously defined list of possible responses taken from findings in reviewed previous researches.

FINDINGS

1. DEMOGRAPHIC PROFILE OF THE RESPONDENTS

A total of 103 men having sex with men from the National Capital Region of the Philippines were enrolled in the study. Most belong to the 26-30 age group representing 34.0% of the total respondents. The majority of the study participants were college graduate and are currently employed (Table 1.1).

Table 1.1 Demographic characteristics of the respondents

Age	f	%	Educational Status	f	%
15 - 20	3	2.9	high school graduate	15	14.6
21 - 25	28	27.2	college graduate	75	72.8
26 - 30	35	34.0	post graduate	13	12.6
31 - 35	23	22.3	Total	103	100.0
36 - 40	10	9.7	Employment Status	f	%
>40	4	3.9	student	6	5.8
Total	103	100.0	unemployed	9	8.7
			employed	88	85.4
			Total	103	100.0

Table 1.2 shows the sexual preferences, associated risk and HIV testing history of the respondents. Majority of the participants identified their selves as bisexuals, (which is defined as, an individual who is sexually attracted to both men and women; 96.1%) and are versatile (can be both insertive and/or receptive during sexual intercourse; 55.3) as their sexual dominant position.

Among the total sample, about 56.3% reported to have more than 10 sexual encounters during their lifetime and most of them had multiple sexual partners. Most of the respondents (79.6%) have submitted their selves to voluntary counselling and testing during their life time, however, more than half of them reported that their last HIV testing was already more than a year ago.

Table 1.2 Sexual preferences & factors of HIV condition

Self-identified Gender	f	%	Sexual Dominant Position	f	%
homosexual			Insertive (Top)	27	26.2
Bisexual	99	96.1	Receptive (Bottom)	19	18.4
pansexual	4	3.9	Both (Versatile)	57	55.3
Total	103	100.0	Total	103	100.0
Total number of sexual encounters	f	%	Total number of Sexual Partner/s	f	%
1-3	24	23.3	1	38	36.9
4-6	13	12.6	2	9	8.7
7-9	8	7.8	3- 6	25	24.3
>10	58	56.3	7 - 9	2	1.9
Total	103	100.0	>10	29	28.2
Ever Tested of HIV?	f	%	Total	103	100.0
yes	82	79.6	If YES	f	%
no	21	20.4	>1 year	58	56.3
Total	103	100.0	Within the past year	20	19.4
			Within the past 6 months		
			Within the past 3 months	6	5.8
			Not identified	19	18.4
			Total	103	100.0

2. KNOWLEDGE AND AWARENESS ON HIV CONDITION

Table 2 Knowledge and Awareness on HIV condition

Variables	Yes		No	
	f	%	f	%
Reduce risk of getting AIDS by not having sex at all (yes)	66	64.1	37	35.9
Reduce chance of getting AIDS by having one sexual partner with no other partner (yes)	93	90.3	10	9.7
Reduce chances of getting HIV/AIDS by always using condoms during sexual intercourse (yes)	96	93.2	7	6.8
Can a healthy-looking person have HIV? (yes)	97	94.2	6	5.8
One can get AIDS by sharing food with person who has HIV/AIDS (no)	3	2.9	100	97.1
One can get AIDS from mosquito bites (no)	13	12.6	90	87.4
Showering, or washing one's genitals/private parts after sex keep a person from getting HIV (no)	11	10.7	92	89.3
Taking vitamins does not keep a person from getting HIV (YES)	52	50.5	51	49.5
A pregnant woman with HIV can give the virus to her unborn baby (yes)	97	94.2	6	5.8
A person cannot get HIV through contact with saliva, tears, sweat, or urine (yes)	79	76.7	24	23.3

A great proportion of the participants were knowledgeable on certain facts regarding HIV/AIDS, its causes, transmission and prevention as shown in table 2. However, up to this date, misconceptions still arise on some of them such as the effectiveness of abstinence, mutual faithfulness and the use of condom in significantly reducing the risk of HIV transmission. Some still believes that the virus causing AIDS can be transmitted through sharing of foods with a person living with HIV, mosquito bites and contact with bodily fluids that are scientifically proven to have insignificant amount of viral load. Surprisingly, almost half of the population thinks that taking vitamins could spare their selves from HIV infection.

3. REGRESSION ANALYSIS OF HIV KNOWLEDGE AND AWARENESS ANALYSIS AMONG DEMOGRAPHIC CHARACTERISTICS

Table 3 Regression analysis of HIV knowledge and awareness analysis among demographic characteristics

Variables	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
Age	0.013	0.011	0.139	1.166	0.248
Educational Status	0.004	0.027	0.019	0.150	0.881
Employment Status	-0.017	0.025	-0.084	-0.674	0.502
Self-identified Sexual Identity	-0.045	0.066	-0.087	-0.692	0.491
Total number of sexual encounters	-0.006	0.012	-0.066	-0.503	0.617
Total number of Sexual Partner/s	0.013	0.009	0.185	1.344	0.183
Ever Tested of HIV?	0.074	0.071	0.124	1.043	0.300
Frequency of HIV tested	0.006	0.017	0.048	0.388	0.699

This shows that there is no significant association between HIV knowledge & awareness and 8 selected demographic characteristics ($F(9, 74) = 0.490, p > .05, R^2 = .058$). Hence, all the selected demographic characteristics ($p > 0.05$) were not significant predictors of knowledge & awareness on HIV.

4. CORRELATION BETWEEN HIV TESTING AWARENESS AND DEMOGRAPHIC CHARACTERISTICS

Table 4 Correlation between HIV testing awareness and Demographic characteristics

Age	HIV	Educational Status	HIV	Employment Status	HIV
15 - 20	100.0%	high school graduate	86.7%	student	83.3%
21 - 25	75.0%	college graduate	78.7%	unemployed	100.0%
26 - 30	68.6%	post graduate	76.9%	employed	77.3%
31 - 35	87.0%	Chi	0.559	Chi	2.653
36 - 40	100.0%	df	2	df	2
>40	4.9%	p	0.756	p	0.265
Chi	8.113	Total number of sexual encounters	HIV	Total number of Sexual Partner/s	HIV
df	5	1-3	54.2%	1	55.3%
p	0.150	4-6	53.8%	2	100.0%
Self-identified Gender	HIV	7-9	100.0%	3- 6	88.0%
homosexual	-	10	93.1%	7 - 9	50.0%
Bisexual	78.8%	Chi	23.443·p	>10	100.0%
pansexual	100.0%	df	3	Chi	25.775
Chi	1.066	p	0.000	df	4
df	1			p	0.000
p	0.302				

The chi square test for independence indicated no significant difference in the proportion of ages, $X^2(5, n=103) = 0.8113, p = 0.150$; educational status, $X^2(2, n=103) = 0.559, p = 0.756$; employment status, $X^2(2, n=103) = 2.653, p = 0.265$; and, self-identified gender, $X^2(1, n=103) = 1.066, p = 0.302$ that undergo HIV testing. Whereas, there is a significant difference in the proportion of number of sexual encounters, $X^2(3, n=103) = 23.443, p = 0.000$ and number of sexual partners, $X^2(4, n=103) = 25.775, p = 0.000$. This shows that there is no association between undergoing HIV testing and age, educational status, employment status and self-identified gender but the number of sexual encounters and sexual partners cause them tested with HIV.

5. BARRIERS TO HIV TESTING

Table 5 Factors associated with not being tested

BARRIERS	Frequency	%
Fear of discovering my own HIV status	51	49.5
Diagnosis of HIV would lead to discrimination and psychological burden	37	35.9
Fear of being seen by friends at testing site	32	31.1
Perceive myself as healthy	31	30.1
Always have consistent condom use during any sexual acts	27	26.2
Fear to expose my sexual orientation	27	26.2
Doubt about confidentiality of results	27	26.2
Time clash between working hours and HIV testing	23	22.3
Unwilling to go to HIV testing sites alone	20	19.4
Have sex with regular partners only	20	19.4
AIDS cannot be cured, cannot do anything if positive	17	16.5
Perceive they cannot afford treatment if HIV positive	15	14.6
Don't know where to go for HIV testing	14	13.6
Need to provide real name for testing	11	10.7
Fear of needles	11	10.7
Only have sex with people who look healthy	8	7.8
Attitudes of staff at testing sites are bad	8	7.8
Others	8	7.8

A list of reported barriers is shown in table 4. Among the list, the three most common barriers to testing were fear of knowing their HIV status, fear of discrimination and psychological burden, and fear of being seen by friends at testing site. All of these factors are related to stigmatization and discrimination. Nearly one-third of the respondents do not feel the need to get tested since they perceive their selves as healthy and always practice safe sex by consistently using condoms during any sexual acts. Two other factors why respondents do not uptake VCT are related to perceiving their selves at low risk (eg. Have sex with regular partners only and only have sex with people who look healthy). Others are afraid of going to testing hubs due to their fear that their sexual orientation may be revealed and doubt that their results will be held confidential once they get tested while others are hindered from getting tested due to conflicting time of work and desire to get tested and do not know where to go for HIV testing. Some respondents think that they do not need to get tested because of their belief that they cannot do anything once tested

positive or cannot afford treatment.

DISCUSSION

The current scale-up of HIV testing, treatment and care services among numerous regions of developing countries aims to upsurge the longevity and quality of lives of person living with HIV (PLHIV) and also form a key strategy to stop the spread of HIV infection (Joint United Nations Programme on HIV/AIDS (UNAIDS), 2010; Matovu & Makumbi, 2007). However, despite these remarkable HIV treatment and care needs, MSM communities underuse these services for a variety of reasons, including fear associated with a positive test result and HIV-related stigma (Chakrapani, Newman, Shunmugam, Kurian, & Dubrow, 2009; Wang et al., 2011); doubts regarding confidentiality of their results (Bwambale et al., 2008; Matovu & Makumbi, 2007); and distance to testing hubs and other socio-demographic characteristics (Hutchinson & Mahlalela, 2006) to name a few. This study showed that multiple factors such as personal and interpersonal factors influence the utilization of VCT among MSM in the National Capital Region of the Philippines where the highest prevalence of HIV infection is consistently recorded. This factors are need to be addressed to improve HIV testing, care and support services among PLHIVs. This study investigated the association of socio-demographic variables and knowledge as possible factors that may affect utilization of VCT and identify barriers that hinder MSM from getting tested.

In this study, 79.6% of the total respondents have submitted their selves to VCT, however, more than half of them had their selves tested for more than a year already prior to interview. The result of this study revealed that socio-demographic characteristics of MSM such as age, educational status, employment status, sexual dominant position and gender identity does not correlate with their utilization with VCT but the number of sexual encounters and partners significantly affect their submission to VCT. The more sexual encounters and sexual partners they engage, the more likely for them to get tested. This result is consistent with previous findings: MSM who had multiple sexual partners are more likely to take up VCT (Chow et al., 2013; Song et al., 2011; Wei et al., 2011). Conversely, numerous studies had associated age as a factor in affecting submission to VCT. According to Wardman, Quantz, & Clement, 2006, VCT utilization is more likely if

respondents were younger than 40-45 years, while other studies suggest that respondents who were younger than 25 or 30 years are least likely to have tested with HIV (McGarrigle et al., 2005).

Like other studies, MSM in this study had comprehensive knowledge on facts regarding HIV (Beattie et al., 2012). However, it was revealed in this study that personal and interpersonal factors such as the fear to know their HIV status and their fear of discrimination from the society primarily hinders respondents from taking up VCT. This result is comparable with numerous studies all over the world where knowing one's HIV status is the major deterrent in utilization of HIV VCT (Chakrapani, Newman, Shunmugam, Kurian, & Dubrow, 2009; Wang et al., 2011; Kalichman & Simbayi, 2003). The main reason for their fear of knowing their HIV status is their uncertainty about their perceived ability to cope with a positive result (Flowers, Duncan, & Knussen, 2003). It also appears that low-risk perception and belief that HIV is a lethal rather than a chronic manageable infection contributes to their fear adding to the barrier of getting tested (Flowers et al., 2003). Promoting consciousness of risk and educating people about the benefits of VCT may aid to shift toward a choice to get tested (Burns, Imrie, Nazroo, Johnson, & Fenton, 2007; Mikolajczak, Hospers, & Kok, 2006). It may also be valuable to make people cognizant of laws that protect HIV-positive persons from discrimination and to tackle HIV-related stigma through community involvement (Delva et al., 2008).

Structural barriers were also noted to be major deterrent in HIV VCT utilization. The findings of the study highlight issues regarding confidentiality such as mistrust that VCT providers will maintain confidentiality of their results and anonymity during testing. Several studies reported that their respondents avoided testing hubs because they feared that other people may see them and potentially reveal their risk behaviors to others (Burns et al., 2007; Madge, Jones, Mocroft, Wells, & Johnson, 1999; Mitra, Jacobsen, O'Connor, Pottie, & Tugwell, 2006). The Republic Act 8504 of the Philippines or the Philippine AIDS Prevention and Control Act of 1998 has long been existing, mandating that all test results are bound to confidentiality and anonymity or the use of alias during testing is possible. Aside from confidentiality issues, this study also found out that accessibility of testing hubs poses as barrier to HIV VCT uptake. Since majority of the

respondents are currently employed, their working time consumes their day making it an obstacle to get tested of HIV. Also, some respondents are unaware as to where to get tested. Such a finding is consistent with other studies that uncertainty regarding the location where HIV testing could be obtained serves as a blockage to HIV testing, however, they have identified this factor as less important as compared to other barriers (Townsend, Cliffe, & Tookey, 2006). New methods to the delivery of testing, including the usage of rapid tests and providing tests in places and conditions that are convenient to clients/patients are emphasized as strategies to overcome such structural barriers (Delva et al., 2008; Stokes, McMaster, & Ismail, 2007). The United Nations has initiated a program called the 90-90-90 strategy that targets to end the HIV epidemic. The idea of this strategy is by 2020, globally, 90% of people who are infected with HIV will be diagnosed, 90% of PLHIVs will be on antiretroviral (ARV) treatment and 90% of those who receive ART will be virally suppressed (Gray, 2016). The Department of Health has identified and accredited numerous social hygiene community clinics and local health departments to conduct free HIV counseling and testing. In 2016, the department has also advocated NGOs as peer educators and trained community based screeners to provide various strategies including emotional and practical support which resulted to an increase in utilization of VCT (Garin, 2016).

This study has identified several limitations. One of which is the use of a cross-sectional design which only allows the researcher to observe associations and not the attribution of cause and effect owing to temporal relationships of behaviors and VCT uptake. The researcher also relied on self-reported data which is deemed to recall bias and can lead to erroneous reporting of factors and HIV testing rates. Moreover, the researcher only focused on the socio-demographic data which he perceives to be the most determining factors of VCT uptake based on literature reviewed, hence, other variables that may significantly contribute to the voluntariness of VCT utilization may have been missed. Nevertheless, the findings of this study may provide information that can considerably contribute to the efforts being done to escalate the uptake of VCT among MSM in the Philippines.

CONCLUSION

The findings from this study indicate that socio-demographic variables of men having sex with men less likely influence their behavior in utilizing HIV VCT except for their number of sexual encounters and sexual partners which gives a direct correlation. The more sexual encounters and partners they have, the more they desire to get tested. The study also identified numerous factors that hinders the respondents from getting tested. The most noticeable factors are stigma- and discrimination-related such as their fear of knowing their own HIV status and mistrust with confidentiality and anonymity. Other factors are structural in nature including time clash between working hours and HIV testing and lack of knowledge as to where they can go for testing. This now poses a challenge to governing bodies to provide interventions and promote strategies to enhance uptake of HIV VCT among the high risk group in the Philippines.

REFERENCES

- Beattie, T. S. H., Bhattacharjee, P., Suresh, M., Isac, S., Ramesh, B. M., & Moses, S. (2012). Personal, interpersonal and structural challenges to accessing HIV testing, treatment and care services among female sex workers, men who have sex with men and transgenders in Karnataka state, South India. *Journal of Epidemiology and Community Health*, 66(Suppl 2), ii42-ii48. <https://doi.org/10.1136/jech-2011-200475>
- Burns, F. M., Imrie, J. Y., Nazroo, J., Johnson, A. M., & Fenton, K. A. (2007). Why the(y) wait? Key informant understandings of factors contributing to late presentation and poor utilization of HIV health and social care services by African migrants in Britain. *AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV*. <https://doi.org/10.1080/09540120600908440>
- Bwambale, F. M., Ssali, S. N., Byaruhanga, S., Kalyango, J. N., & Karamagi, C. A. S. (2008). Voluntary HIV counselling and testing among men in rural western Uganda: Implications for HIV prevention. *BMC Public Health*. <https://doi.org/10.1186/1471-2458-8-263>
- Chadborn, T. R., Delpech, V. C., Sabin, C. A., Sinka, K., & Evans, B. G. (2006). The late diagnosis and consequent short-term mortality of HIV-infected heterosexuals (England and Wales, 2000-2004). *AIDS*. <https://doi.org/10.1097/>

QAD.0b013e32801138f7

- Chakrapani, V., Newman, P. A., Shunmugam, M., Kurian, A. K., & Dubrow, R. (2009). Barriers to Free Antiretroviral Treatment Access for Female Sex Workers in Chennai, India. *AIDS Patient Care and STDs*. <https://doi.org/10.1089/apc.2009.0035>
- Chow, E. P. F., Jing, J., Feng, Y., Min, D., Zhang, J., Wilson, D. P., ... Zhang, L. (2013). Pattern of HIV testing and multiple sexual partnerships among men who have sex with men in China. *BMC Infectious Diseases*. <https://doi.org/10.1186/1471-2334-13-549>
- Delva, W., Wuillaume, F., Vansteelandt, S., Claeys, P., Verstraelen, H., Broeck, D. Vanden, & Temmerman, M. (2008). HIV Testing and Sexually Transmitted Infection Care among Sexually Active Youth in the Balkans. *AIDS Patient Care and STDs*. <https://doi.org/10.1089/apc.2007.0237>
- Department of Health Epidemiology Bureau. (2018). HIV / AIDS and ART Registry of the Philippines. *Republic of the Philippines*, (April), 1–6. Retrieved from http://www.doh.gov.ph/sites/default/files/statistics/EB_HIV_Mar-AIDSreg2016.pdf
- Desgrées-du-Loû, A., Brou, H., Traore, A. T., Djohan, G., Becquet, R., & Leroy, V. (2009). From prenatal HIV testing of the mother to prevention of sexual HIV transmission within the couple. *Social Science and Medicine*. <https://doi.org/10.1016/j.socscimed.2009.05.045>
- Flowers, P., Duncan, B., & Knussen, C. (2003). Re-appraising HIV testing: An exploration of the psychosocial costs and benefits associated with learning one's HIV status in a purposive sample of Scottish gay men. *British Journal of Health Psychology*. <https://doi.org/10.1348/13591070321649150>
- Gray, G. (2016). HIV, AIDS and 90-90-90: what is it and why does it matter?
- HARP. (2016). Hiv/aids and art registry of the philippines (HARP). *Doh*.
- Higgins, D. L., Galavotti, C., O'Reilly, K. R., Schnell, D. J., Moore, M., Rugg, D. L., & Johnson, R. (1991). Evidence for the effects of HIV antibody counseling and testing on risk behaviors. *Jama*.
- Hutchinson, P. L., & Mahlalela, X. (2006). Utilization of voluntary counseling and testing services in the Eastern Cape, South Africa. *AIDS Care*. <https://doi.org/10.1080/09540120500213511>

- Jereni, B. H., & Muula, A. S. (2008). Availability of supplies and motivations for accessing voluntary HIV counseling and testing services in Blantyre, Malawi. *BMC Health Services Research*. <https://doi.org/10.1186/1472-6963-8-17>
- Joint United Nations Programme on HIV/AIDS (UNAIDS). (2010). *Getting to zero: 2011-2015 Strategy. Development*. <https://doi.org/10.1016/B978-0-12-385136-9.10009-9>
- Kalichman, S. C., & Simbayi, L. C. (2003). HIV testing attitudes, AIDS stigma, and voluntary HIV counselling and testing in a black township in Cape Town, South Africa. *Sexually Transmitted Infections*. <https://doi.org/10.1136/sti.79.6.442>
- Kamb, M. L., Fishbein, M., Douglas, J. M., Rhodes, F., Rogers, J., Bolan, G., ... Peterman, T. A. (1998). Efficacy of risk-reduction counseling to prevent human immunodeficiency virus and sexually transmitted diseases. A randomized controlled trial. *Journal of the American Medical Association*. <https://doi.org/10.1001/jama.280.13.1161>
- Krentz, H., Auld, M., & Gill, M. (2004). The high cost of medical care for patients who present late (CD4<200 cells/mL) with HIV infection. *HIV Medicine*.
- Le, T., Wright, E. J., Smith, D. M., He, W., Catano, G., Okulicz, J. F., ... Ahuja, S. K. (2013). Enhanced CD4+ T-Cell Recovery with Earlier HIV-1 Antiretroviral Therapy. *New England Journal of Medicine*. <https://doi.org/10.1056/NEJMoa1110187>
- MacCarthy, S., Hoffmann, M., Ferguson, L., Nunn, A., Irvin, R., Bangsberg, D., ... Dourado, I. (2015). The HIV care cascade: Models, measures and moving forward. *Journal of the International AIDS Society*. <https://doi.org/10.7448/IAS.18.1.19395>
- Madge, S., Jones, M., Mocroft, A., Wells, H., & Johnson, M. A. (1999). Do people attending a same day testing clinic discuss their need for a HIV test with their GP? *British Journal of General Practice*.
- Marks, G., Crepaz, N., Senterfitt, J. W., & Janssen, R. S. (2005). Meta-analysis of high-risk sexual behavior in persons aware and unaware they are infected with HIV in the United States: implications for HIV prevention programs. *Journal of Acquired Immune Deficiency Syndromes (1999)*. <https://doi.org/10.1097/01.qai.0000151079.33935.79>
- Matovu, J. K. B., & Makumbi, F. E. (2007). Expanding access to voluntary HIV counselling and testing in sub-Saharan Africa: Alternative approaches for improving uptake, 2001-2007. *Tropical Medicine and International Health*. <https://doi.org/10.1111/j.1365->

3156.2007.01923.x

- Mayer, K. H., Mugavero, M. J., Amico, K. R., Horn, T., & Thompson, M. A. (2013). The state of engagement in HIV care in the United States: From cascade to continuum to control. *Clinical Infectious Diseases*. <https://doi.org/10.1093/cid/cit420>
- McGarrigle, C. A., Mercer, C. H., Fenton, K. A., Copas, A. J., Wellings, K., Erens, B., & Johnson, A. M. (2005). Investigating the relationship between HIV testing and risk behaviour in Britain: National Survey of Sexual Attitudes and Lifestyles 2000. *Aids*. <https://doi.org/10.1097/00002030-200501030-00009>
- Mikolajczak, J., Hospers, H. J., & Kok, G. (2006). Reasons for not taking an HIV-test among untested men who have sex with men: An internet study. *AIDS and Behavior*. <https://doi.org/10.1007/s10461-006-9068-8>
- Mitra, D., Jacobsen, M. J., O'Connor, A., Pottie, K., & Tugwell, P. (2006). Assessment of the decision support needs of women from HIV endemic countries regarding voluntary HIV testing in Canada. *Patient Education and Counseling*. <https://doi.org/10.1016/j.pec.2006.04.005>
- Nakanjako, D., Kanya, M., Daniel, K., Mayanja-Kizza, H., Freers, J., Whalen, C., & Katabira, E. (2007). Acceptance of routine testing for HIV among adult patients at the medical emergency unit at a national referral hospital in Kampala, Uganda. *AIDS and Behavior*. <https://doi.org/10.1007/s10461-006-9180-9>
- Schwarcz, S., Richards, T. A., Frank, H., Wenzel, C., Hsu, L. C., Chin, C.-S. J., ... Dilley, J. (2011). Identifying barriers to HIV testing: personal and contextual factors associated with late HIV testing. *AIDS Care*. <https://doi.org/10.1080/09540121.2010.534436>
- Song, Y., Li, X., Zhang, L., Fang, X., Lin, X., Liu, Y., & Stanton, B. (2011). HIV-testing behavior among young migrant men who have sex with men (MSM) in Beijing, China. *AIDS Care*. <https://doi.org/10.1080/09540121.2010.487088>
- Stokes, S. H. M., McMaster, P., & Ismail, K. M. K. (2007). Acceptability of perinatal rapid point-of-care HIV testing in an area of low HIV prevalence in the UK. *Archives of Disease in Childhood*. <https://doi.org/10.1136/adc.2006.106070>
- Townsend, C. L., Cliffe, S., & Tookey, P. A. (2006). Uptake of antenatal HIV testing in the United Kingdom: 2000-2003. *Journal of Public Health*. <https://doi.org/10.1093/>

pubmed/fdl026

UNAIDS. (2017). Global Hiv Statistics — July 2017 Unaid. *Fact Sheet*.

Wang, Y., Li, B., Pan, J., Sengupta, S., Emrick, C. B., Cohen, M. S., & Henderson, G. E. (2011). Factors associated with utilization of a free HIV VCT clinic by female sex workers in Jinan City, Northern China. *AIDS and Behavior*. <https://doi.org/10.1007/s10461-010-9703-2>

Wardman, D., Quantz, D., & Clement, K. (2006). HIV/AIDS: testing and risk behaviors among British Columbia's rural Aboriginal population. *International Journal of Circumpolar Health*. <https://doi.org/10.3402/ijch.v65i4.18129>

Wei, C., Ruan, S., Zhao, J., Yang, H., Zhu, Y., & Raymond, H. F. (2011). Which Chinese men who have sex with men miss out on HIV testing? *Sexually Transmitted Infections*. <https://doi.org/10.1136/sti.2010.047407>

Weinhardt, L. S., Carey, M. P., Johnson, B. T., & Bickham, N. L. (1999). Effects of HIV counseling and testing on sexual risk behavior: a meta-analytic review of published research, 1985-1997. *American Journal of Public Health*. <https://doi.org/10.2105/AJPH.89.9.1397>