

Retention in Care among HIV infected Men who have Sex with Men attending a Community Health Centre, Yaba Lagos, Nigeria

Chinenyeike Daniel^{1*}, Ekanem E Ekanem¹, Jean E Njab², Oridota ES¹ and A A Robert¹

¹Community Health Department, College of Medicine University of Lagos, College of Medicine University Teaching Hospital Lagos, Nigeria

²Population Council, Nigeria Henry Jackson Foundation-Walter Reed Program Nigeria, US Department of Defense| Population Council, Nigeria

Abstract

Background: Given the burden of HIV infection among men who have sex with men (MSM), the paucity of research on strategies that could successfully engage and retain them in care is striking. The aim of this study was to assess the retention in care among HIV infected MSM attending a Community Health Centre, Yaba Lagos, Nigeria.

Methods: This retrospective study was carried out at Community Health Centre Yaba, Lagos Nigeria. Out of 300 clients in HIV care in the facility, a total number of 181 participants were enrolled into the study. Two approaches were used for data collection. First, the clinical data of 181 participants in HIV care were abstracted from the clinic electronic records from May 2015 and then followed up to June 2016 to assess their retention in care; the second one was pretested interviewer administered semi-structured questionnaire which was used to collect information on the MSM specific factors that either facilitate or act as barriers to their retention in HIV care from the same respondents. Data was analyzed using SPSS 20. Descriptive analysis was used to analyze quantitative variables while chi square was used to measure the association. A p-value<0.05 was considered statistically significant for this study.

Result: The mean age of the participants sampled was 25.4. Overall, a total number of 151 (83%) participants were retained in care within 1 year. While distance 50% and full-time job 30% were found as major barriers to retention in care, friendly clinic service 43% was identified as the major facilitators for their retention in HIV care.

Conclusion: Majority of the participants were retained in HIV care over time due to robust strategies and policies put in place. Strategies to sustain the retention capacity of MSM in HIV care should be sustained.

Keywords: Retention; Care; HIV; MSM

Introduction

Measuring retention in HIV care is complex as it requires an assessment of multiple clinic visits occurring over time [1]. Retention in Care is defined as being alive and still on any Anti-Retroviral Therapy (ART) within a specified assessment period of time [2]. Retention in care is associated with improved access to Anti-Retroviral Therapy (ART), greater likelihood of virologic suppression, and less rapid HIV disease progression [3-4]. The literature search, thus, revealed that current knowledge on adherence to ART and retention in care among MSM was limited as research was heavily concentrated in the United States unlike in developing countries [5-8]. There are, consequently, glaring gaps in the literature, as there appeared to be little to no research on retention in care among HIV infected MSM in developing countries, where most MSM living with HIV live [9]. Evidence has shown that one of the factors contributing to higher mortality rate among HIV infected young and adolescents were difficult in retention in care and lack of adherence to antiretroviral therapy regimens [10-12]. Studies have demonstrated that HIV biomarkers such as CD4 count and plasma HIV viral load have been used to measure linkage and retention in HIV care, acting as a surrogate for a completed visit [13]. Importantly, HIV infected patients with better retention capacity will be less likely to have a last CD4 cell counts<200 cells/μl. This is because treatment guidelines recommend laboratory assessments and visits for patients every 3–6 months' time intervals [14-16]. Research has shown that there is no gold standard for measuring patient retention in care [1]. However, different methods such as counting the number of missed visits, gaps in care and visit constancy had been used to assess retention in care. The behavioral models for vulnerable population reveals that individual and structural barriers impede retention in HIV care among men who have sex with men [17]. At the individual level, multiple cohort and

survey studies have revealed that younger age, ethnicity, not having healthcare insurance, having dropped out of school, homelessness, existence of a mental disorder, use of intravenous drugs are associated with poor retention [18-24]. At the structural level, features of the HIV Clinic and the patient-provider relationship have been implicated as key structural factors that limit retention in care among HIV infected MSM [25-28]. Studies have revealed that the clinic-level barriers such as transportation problems, and lack of the clinic staff to consistently answer and return phone call impede retention in care [29-31], unstable housing conditions [32] and lack of attendance at school acted as barriers to adherence [23]. Distance to clinic and transportation have been identified as major barriers to retention in care in a wide variety of settings in Africa and Asia. In a study conducted in rural Uganda, 50% of patients lost to follow up were as a result of transportation problem and 42% was attributed to excessive distance [33]. Financial constraint contributed about 34% limiting factor to retention in care in South Africa [34]. Black race, younger age, substance abuse and alcohol use have been implicated to be associated with lower retention in care

***Corresponding author:** Chinenyeike Daniel, Community Health Department, College of Medicine University of Lagos, Itesiwaju Street Akoka, Lagos 100213, Nigeria; Tel: +234-08068359626; +234-08036921372; E-mail: odetal2k9@yahoo.com

Received June 01, 2018; Accepted June 15, 2018; Published June 22, 2018

Citation: Daniel C, Ekanem EE, Njab JE, Oridota ES, Robert AA (2018) Retention in Care among HIV infected Men who have Sex with Men attending a Community Health Centre, Yaba Lagos, Nigeria. J AIDS Clin Res 9: 770. doi: [10.4172/2155-6113.1000770](https://doi.org/10.4172/2155-6113.1000770)

Copyright: © 2018 Daniel C, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

among HIV infected outpatients [15,19]. Conversely, studies have identified possible facilitators such as attaining self-sufficiency through the development of a positive gay and HIV-positive identity, having a positive provider-patients relationship, and access to transportation as powerful tools that enhance retention in care [25-28,34]. Several studies have identified that engaging African American and Latino MSM in social support group interactions serves as a powerful force to retaining them in care [35].

Retention in care among HIV infected MSM has been a persistent challenge to healthcare systems because they are more likely to experience social isolation and disconnectedness to healthcare due to fear of being stigmatized and discriminated against by healthcare providers. The prevalence of HIV infection among these groups has posed a lot of threat to public health. Having discovered that men who have sex with men which are subset of the general population play a major driving role in the spread of HIV infection because of their sexual behavior that heighten their risk of contracting HIV, achieving the UNAIDS 90, 90, 90 strategy which aims to end AIDS by 2020 [36] through the diagnosis of 90% of all persons living with HIV/AIDS, through the linkage to care of 90% of those diagnosed and through the achievement of viral suppression in 90% of the later has become worrisome. Additionally, the dearth of research (especially in developing country) that is specific for retention in care has contributed significantly in the continued HIV transmission in both minority group and general population.

Research has shown that 17% of men who have sex with men (MSM) are living with HIV in Nigeria [37]. In 12 months follow up study on retention in HIV care conducted in 21 cities in United States, about 64% of MSM were not retained in HIV care [38]. This underscores the need to improve linkage and retention in care for this population. Retaining the HIV infected MSM in care will reduce the HIV transmission and also improve their health outcome. Similarly, keying into this study will be of help in identifying those MSM specific factors that can either enhance or militate against their retention capacity in HIV care.

The goal of this study was to assess the retention in care among HIV infected MSM attending a Community Health Centre, Yaba Lagos, Nigeria. Exploring the MSM specific barriers and enhancers to HIV care will go a long way in providing a good insight on how to retain them in care.

Methods

This retrospective study on retention in care among HIV infected men who have sex with men was conducted in a Community Health Centre, Yaba Lagos. Community Health Centre is located behind Ozone Cinema in Yaba, the heart of Lagos State. This is a Henry Jackson Foundation supported Health Centre under the aegis of Population Council. The mission of this Centre is to provide free clinical, psychosocial, antiretroviral therapy, and laboratory support services to HIV and STI infected vulnerable populations (MSM, people who inject drugs, and commercial sex workers). It was designed to gain the trust of these minority groups by offering confidential services in a convenient atmosphere to them. The Community Health Centre is a two-story building with an inbuilt community Centre. This Community Centre is where MSM congregate to share their experiences after accessing care from healthcare providers. As a Non-profit International Organization sponsored PEPFAR Health Centre, it has been receiving referral HIV/STIs infected vulnerable populations from other sister NGOs such as Society for Family Health (SFH), The initiative for Equal Rights (TIERS), Heartland Alliance, Nigeria Youth Aid Program (NYAP),

and Centre for Right to Health (CRH). This site works closely with 68 Nigeria Army Reference Hospital, Yaba Lagos for other complementary services that could arise. However, the idea of choosing this Community Health Centre Yaba as a site for this study was because it served as a good site that could provide an enough sample size for this study. Also, it operates in line with international best practices, as it has an inbuilt control mechanism of storing all its data generated electronically via Health Management Information System (HMIS) which will reduce the effects of missing data of interest for this study.

A total number of 300 HIV infected MSM was enrolled on Antiretroviral Therapy from May, 2013 to June, 2016 and out of this number, 181 were recruited on this study from May, 2015 and then followed up to June, 2016 (1-year study). These 181 respondents were selected based on the eligibility criteria for the study while the remaining 119 were not eligible for the study. The target populations for this study were male that self-reported ever engaged in anal sex in the last 12 months prior to the study.

During this study, two approaches were used for data collection. The first approach was by reviewing the electronic clinic records of the HIV infected MSM that enrolled in ART from May 2015 to June 2016. Evidence has revealed that an electronic based medical record of storing information are considered one of the best approaches to obtaining valid information on utilization patterns [39]. The second approach was information on the specific factors that either enhance or act as barriers to their retention in HIV; this was collected using pretested semi-structured questionnaire developed by the researchers. These tools were divided into three sections ranging from section A, B, and C. Information on section A and B which were socio-demographic characteristics of the respondents and laboratory-based visit (last known CD4 cell count based clinic visit within the last 6 months of the study) respectively were abstracted from electronic records while section C questions that identified specific MSM factors that either enhance or mitigate their retention in care were obtained through interviewer administered questionnaire. Data on the specific MSM factors that enhance or mitigate their retention in care were collected by the health care providers such as Doctors, Nurses, Laboratorian and Pharmacist.

Retention in HIV care in this study is defined as having at least the last known CD4 cell count visit within the last 6 months of the assessment period. Retention in care was measured by the inclusion of the total enrolled participants minus [(proportion of patients lost to follow up-LFTU) plus (proportion of patients who die) plus (proportion of patients who stop ART)]. For the purpose of this study, LFTU was defined as a withdrawal from the Centre, died and stopped intake of ART before June, 2016 with no formal notice. The inclusion criteria included HIV infected self-reported men that ever engaged in anal sex in the last 12 months prior to the study, enrolled into ART for at least 1 year, age bracket of 15 years and above, and able to provide a written informed consent.

On the other hand, exclusion criteria for this study were HIV infected men that self-reported to had not engaged in anal sex within 12 months prior to the study, HIV infected men who engaged in anal sex that enrolled in ART less than 1 year prior to the study, less than 15 years and HIV infected MSM that were receiving ART in another clinic.

Data was analyzed using SPSS version 20. Descriptive statistics was used to summarize quantitative variables while the association between the variables and retention in care was measured using chi-square test. A p-value<0.05 was considered statistically significant for the study.

Results

Table 1, showed the socio-demographic characteristics of the respondents. Majority of the study participants (53%) was within the age group of ≥ 25 years. Most of the respondents (56%) was from Igbo ethnic background. Eighty six percent (86%) of the respondents were predominantly Christians. Three quarter of participants (86%) were mainly single. Thirty four percent (34%) were Students. The proportion of participants (81%) had sexual preference for both male and female (Bisexual). More than half (72%) played both penetrative and receptive sexual role. Most of the participants (61%) had finished their secondary education. Table 2 revealed that majority of the participants (83%) were retained in HIV care. From Table 3, most of the respondents (85%) with age bracket of ≤ 25 years were retained in care. Most of the Muslim respondents (92%) was retained. Similarly, 87% of the Yoruba ethnic group were retained within 1 year compare to other ethnic group. All the respondents with Master level of education (100%) were retained in care as shown in Table 3. Half of the participant, approximately 50% and 30% of the respondents attributed distance and full-time job respectively as major barriers for not being retained in care as seen in Table 4. Around 43% and 22.5% of the respondents testified that friendly clinic services and secured environment respectively accounted for their retention in care (Table 5).

Discussion

This is the first study in Nigeria to assess the retention in care among HIV infected men who have sex with men. This study used being alive, still on ART and having laboratory based last CD4 cell count visits within the last 6 months of the assessment period as a method to assess retention in care. From the appendix below, overall, as shown in Table 2, Eighty three percent (83%) of the participants were retained in care within 1 year. This finding revealed that large percentage of the participants were retained as against what was obtained in the previous study conducted in 21 cities in the United States [38]. Perhaps, this sharp disparity may not be unconnected to the availability of MSM

Variables	Freq. (%)	Variables	Freq. (%)
Age group (Years)		Occupation	
≤ 24	85 (47.0%)	Student	61 (33.7)
≥ 25	96 (53.0%)	Unemployed	4 (2.2%)
Mean age	25 \pm 5.99	Artisan	48 (26.5%)
Median age	24	Professional	39 (21.6%)
		Civil Servant	4 (2.2%)
		Self-employed	25 (13.8%)
Ethnic group		Sex partner	
Hausa	4 (2.2%)	Both Male & Female	147 (81.2%)
Igbo	101 (55.8%)	Male Only	34 (18.8%)
Yoruba	76 (42.0%)		
Religion		Sexual Role	
Christianity	156 (86.2%)	Receptive	17 (9.4%)
Muslim	25 (13.8%)	Penetrative	33 (18.2%)
		Both	131 (72.4%)
Marital Status		Educational Level	
Single	156 (18.2%)	None	3 (1.7%)
Married	10 (5.5%)	Primary	4 (2.2%)
Engaged	8 (4.4%)	Secondary	110 (60.8%)
Separated	6 (3.3%)	Tertiary	59 (32.6%)
Cohabitation	1 (0.6%)	Master	5 (2.8%)

Table 1: Socio-demographic characteristics of respondents.

Variables	Freq. (%)
Last CD4 count visit outcome	
Respondent with last CD4 visit	151 (83.0%)
Respondent without last CD4 visit (LTFU)	30 (17.0%)

Table 2: Outcome of retention in care within 1 year among respondents.

individual and structural service enhancers at the study site [25-28,34,35]. The participants with an age range of ≤ 24 years (85%) were

Variables	Retained within 1 year		
	YES Freq. (%) , n=151	NO Freq. (%) , n=30	Total, n=181
Age in years			
≤ 24	79 (85.0%)	14 (15.0%)	93
≥ 25	72 (82.0%)	16 (18.0%)	88
Religion			
Christianity	128 (82.0%)	28 (18.0%)	156
Muslim	23 (92.0%)	2 (8.0%)	25
Ethnic group			
Hausa	3 (75.0%)	1 (25.0%)	4
Igbo	82 (81.0%)	19 (19.0%)	101
Yoruba	66 (87.0%)	10 (13.0%)	76
Marital Status			
Cohabitation	1 (100.0%)	0 (0.0%)	1
Engaged	6 (75.0%)	2 (25.0%)	8
Married	8 (80.0%)	2 (20.0%)	10
Separated	5 (83.0%)	1 (17.0%)	6
Single	131 (84.0%)	25 (16.0%)	156
Sex Partner			
Both Male & Female	126 (86.0%)	21 (14.0%)	147
Male only	25 (74.0%)	9 (26.0%)	34
Sexual Role			
Both Penetrative & Receptive	114 (87.0%)	17 (13.0%)	131
Receptive only	11 (65.0%)	6 (35.0%)	17
Penetrative only	26 (79.0%)	7 (21.0%)	33
Occupation			
Artisans	37 (77.0%)	11 (23.0%)	48
Civil Servant	4 (100.0%)	0 (0.0%)	4
Professional	27 (69.0%)	12 (31.0%)	39
Self employed	22 (88.0%)	3 (12.0%)	25
Student	57 (93.0%)	4 (7.0%)	61
Unemployed	4 (100.0%)	0 (0.0%)	4
Level of Education			
Master	5 (100.0%)	0 (0.0%)	5
Tertiary	48 (81.0%)	11 (19.0%)	59
Secondary	95 (86.0%)	15 (14.0%)	110
Primary	2 (50.0%)	2 (50.0%)	4
None	1 (33.0%)	2 (67.0%)	3
Housing Status			
Living in a House	151 (84.0%)	28 (16.0%)	179
Not living in a House	0 (0.0%)	2 (100.0%)	2

Table 3: Association between Socio-demographic variables and retention in care among respondents within 1 year.

Variables	Freq. (%)
Barriers	
Full time job	9 (30.0%)
Death	2 (6.7%)
Distance	15 (50.0%)
Self-denial	3 (10.0%)
Trust in the efficacy of herbal medication	1 (3.3%)

Table 4: Most of identified barriers to retention in HIV care among respondents.

Variables	Freq. (%)
Facilitators	
Presence of support group	1 (0.7%)
Appointment reminder phone calls	2 (1.3%)
Client-friendly clinic services	65 (43.0%)
	2 (1.3%)
Flexible appointment schedule	14 (9.3%)
Free healthcare services and drugs	34 (22.5%)
Friendly and secured environment	1 (0.7%)
Having positive relationship with clinic staff	27 (17.9%)
Less clients' waiting time	2 (1.3%)
Provision of confidential healthcare services	3 (2.0%)
Proximity to the clinic	

Table 5: Facilitators to retention in HIV care among respondents.

found to be more retained in care than older age group of ≥ 25 years as shown in Table 3. This outcome was contrary to cohort study conducted in United States that revealed an association between younger age and poor retention in care [15,19]. Majority of Muslim respondents (92%) were more retained than Christians while the Yoruba ethnic group (87%) were mostly retained in care than other ethnic groups (Igbo and Hausa). This findings was consistent with the previous research conducted in US that religion and Ethnicity limit retention in care [18-29]. Also, most of the respondents' cohabitating (100%) and single (84%) were more retained in care than others. Respondents that were identified to be practicing both penetrative and receptive sexual role (87%) were more retained than others that were engaged in either penetrative or receptive sexual role only. Respondent with Master level of education (100%) were all retained in care than those who had less education. Similarly, those respondents that were not homeless (84%) were mostly retained than those who were homeless. All these findings were consistent with the previous research that demonstrated that lack of education, and homelessness impede retention in care [18-23,32].

Table 4 revealed that around 30% of the participants attributed full time job as one of the major barriers to retention. This finding was similar to other study that identified a competing life activity such as work schedule as a major barrier to retention in care [24-29]. Similarly, most of the participant (50%) attributed distance as a major barrier for not being retained in care. This finding was consistent with other study conducted in rural Uganda that has the same economic status with Nigeria which revealed that 42% of barrier to retention in care was distance [33]. Also, ten percent (10%) of barrier to retention was found to be self-denial and this outcome was similar to the previous study that stated that difficulty with self-acceptance affect the willingness to be retained [24-29], and finally, 3.3% of them were not retained because they trusted in the efficacy of herbal medication.

Conversely, from Table 5, majority of the participants (43%) ascribed Clients-friendly clinic services they have been receiving as the major facilitator for their retention in HIV care. This may not be unconnected to the previous study that revealed that having a positive provider-patients relationship enhances retention in care [25-28,34]. It was also found that 22.5% of respondents observed friendly and secured environment as a factor that encouraged them to remain in HIV care over time. While 17.9% of the participants identified less clients' waiting times as a source of their motivator for accessing HIV care services over time, 9.3% of them attributed their retention enhancer to the availability of free health care services and drugs. This finding was in line with a study conducted by Ulett et al. [15,25-27].

Conclusion

Engagement and retention in care has been linked to improved health outcomes, better medication adherence and increased overall survival [15-20]. This study was able to reveal the retention capacity of MSM in HIV care, and the associated factors that either facilitate or act as barriers to their retention in HIV care. Therefore, improving retention in care among these underserved groups begins with addressing the relevant social, economic, geographical, and political forces that are acting against them. Importantly, more research that focuses on retention in care among not only the HIV infected MSM but also all the MSM population in Nigeria will provide some effective strategies for optimizing HIV care among this groups and invariably stem down the HIV prevalence in Nigeria.

Ethical Approval

This study received ethical approval from of the Lagos University

Teaching Hospital (LUTH) Health Research Ethics Committee (HREC), Idi-Araba, Lagos and Management of Population Council, Nigeria before commencing the study. Sufficient information that was enough to make an informed decision on whether or not to participate in the study were adequately explained to each respondent and signed informed consent obtained. All the respondents were assured of absolute confidentiality in the information provided and that non-participation or withdrawal from the study attract no penalty.

Study Limitations

The limitations encountered during the study assessment period were sexual harassment, and death that snatched the two participants away at the tail end of the assessment period.

Acknowledgement

Many thanks go to Population Council, Nigeria, Henry Jackson Foundation-Walter Reed Program Nigeria, US Department of Defense, Community Health Department, and College of Medicine University of Lagos Nigeria for the support given in making this study a reality.

References

1. Mugavero MJ, Westfall AO, Zinski A, Davila J, Drainoni ML, et al. (2012) Measuring retention in HIV care: The elusive gold standard. *J Acquir Immune Defic Syndr* 61: 574-580.
2. Théry FR, Duncombe C, Kerr S, Thierry S, Perriens J (2010) Adult antiretroviral therapy in resource limited settings: A systematic review of first-line failure and attrition rates. World Health Organization, Geneva 27, Switzerland CH-1211.
3. Edison L, Hughes D, Drenzek C, Kelly J, Centers for Disease Control and Prevention (CDC) (2014) Prevalence and indicators of viral suppression among persons with diagnosed HIV infection retained in care-Georgia, 2010. *MMWR Morb Mortal Wkly Rep* 63: 55-58.
4. Mayer KH (2011) Linkage, engagement, and retention in HIV care: Essential for optimal individual- and community-level outcomes in the era of highly active antiretroviral therapy. *Clin Infect Dis* 52: 205-207.
5. Wohl AR, Garland WH, Wu J, Au CW, Boger A, et al. (2011) A youth-focused case management intervention to engage and retain young gay men of color in HIV care. *AIDS Care* 23: 988-997.
6. Bouris A, Voisin D, Pilloton M, Flatt N, Eavou R, et al. (2013) Project nGage: Network supported HIV care engagement for younger black men who have sex with men and transgender persons. *J AIDS Clin Res* 4.
7. Gillman J, Davila J, Sangiry S, Parkinson-Windross D, Miertschin N, et al. (2013) The effect of conspiracy beliefs and trust on HIV diagnosis, linkage, and retention in young MSM with HIV. *J Health Care Poor Underserved* 24: 36-45.
8. Harper GW, Fernandez IM, Bruce D, Hosek SG, Jacobs R, et al. (2013) The role of multiple identities in adherence to medical appointments among gay/bisexual male adolescents living with HIV. *AIDS Behav* 17: 213-223.
9. UNAIDS, WHO (2007) AIDS epidemic update. WHO, Geneva 7.
10. Auld AF, Agolory SG, Shiraishi RW, Wabwire-Mangen F, Kwasigabo G, et al. (2014) Antiretroviral therapy enrollment characteristics and outcomes among HIV-infected adolescents and young adults compared with older adults-seven African countries, 2004-2013. *MMWR Morb Mortal Wkly Rep* 63: 1097-1103.
11. Mellins CA, Tassiopoulos K, Malee K, Moscicki AB, Patton D, et al. (2011) Behavioral health risks in perinatally HIV-exposed youth: Co-occurrence of sexual and drug use behaviour, mental health problems, and non-adherence to antiretroviral treatment. *AIDS Patient Care STDS* 25: 413-422.
12. Nachega JB, Hislop M, Nguyen H, Dowdy DW, Chaisson RE, et al. (2009) Antiretroviral therapy adherence, virologic and immunologic outcomes in adolescents compared with adults in southern Africa. *J Acquir Immune Defic Syndr* 51: 65-71.
13. Olatosi BA, Probst JC, Stoskopf CH, Martin AB, Duffus WA (2009) Patterns of engagement in care by HIV-infected adults: South Carolina, 2004-2006. *AIDS* 23: 725-730.
14. Giordano TP, Gifford AL, White AC Jr, Suarez-Almazor ME, Rabeneck L, et al. (2007) Retention in care: A challenge to survival with HIV infection. *Clin Infect Dis* 44: 1493-1499.

15. Ulett KB, Willig JH, Lin HY, Routman JS, Abrams S, et al. (2009) The therapeutic implications of timely linkage and early retention in HIV care. *AIDS Patient Care STDS* 23: 41-49.
16. Evaluating the contribution of ancillary services in improving access to primary care in the United States under the Ryan White CARE Act (2002) *AIDS Care* 14: 3-136.
17. Gelberg Andersen RM, Leake BD (2000) The behavioral model for vulnerable populations: application to medical care use and outcomes for homeless people. *Health Serv Res* 34: 1273-1302.
18. Mugavero MJ, Westfall AO, Zinski A, Davila J, Drainoni ML, et al. (2012) Measuring retention in HIV care: The elusive gold standard. *J Acquir Immune Defic Syndr* 61: 574-580.
19. Mugavero MJ, Lin HY, Willig JH (2009) Missed visit and mortality among patients establishing initial outpatient HIV treatment. *Clin Infect Dis* 48: 248-256.
20. Yehia BR, Fleishman JA, Metlay JP, Korthuis PT, Agwu AL, et al. (2012) Comparing different measures of retention in outpatient HIV care. *AIDS* 26: 1131-1139.
21. Giordano TP, Visnegarwala F, White AC Jr, Troisi CL, Frankowski RF, et al. (2005) Patients referred to an urban HIV clinic frequently fail to establish care: Factors predicting failure. *AIDS Care* 17: 773-783.
22. Giordano TP, Hartman C, Gifford AL, Backus LI, Morgan RO (2009) Predictors of retention in HIV care among a national cohort of US veterans. *HIV Clin Trials* 10: 299-305.
23. Rudy BJ, Murphy DA, Harris DR, Muenz L, Ellen J (2009) Adolescent Trials Network for HIV/AIDS Interventions Patient-related risks for non-adherence to antiretroviral therapy among HIV-infected youth in the United States: A study of prevalence and interactions. *AIDS Patient Care STDS* 23: 185-194.
24. Garland PM, Valverde EE, Fagan J, Beer L, Sanders C, et al. (2011) HIV counseling, testing and referral experiences of persons diagnosed with HIV who have never entered HIV medical care. *AIDS Educ Prev* 23: 117-127.
25. Kempf MC, McLeod J, Boehme AK (2010) A qualitative study of the barriers and facilitators to retention –in – care among HIV –positive patients in the rural southern United States: implications for targeted interventions. *AIDS Patients Care STDs* 24: 515-520.
26. Quinlivan EB, Messer LC, Adimora AA, Roytburd K, Bowditch N, et al. (2013) Experiences with HIV testing, entry, and engagement in care by HIV-infected women of color, and the need for autonomy, competency, and relatedness. *AIDS Patient Care STDS* 27: 408-415.
27. Messer LC, Quinlivan EB, Parnell H, Roytburd K, Adimora AA, et al. (2013) Barriers and facilitators to testing, treatment entry, and engagement in care by HIV-positive women of color. *AIDS Patient Care STDS* 27: 398-407.
28. Moneyham L, McLeod J, Boehme A, Wright L, Mugavero M, et al. (2010) Perceived barriers to HIV care among HIV-infected women in the Deep South. *J Assoc Nurses AIDS Care* 21: 467-477.
29. Rajabiun S, Mallinson RK, McCoy K, Coleman S, Drainoni ML, et al. (2007) Getting me back on track: The role of outreach interventions in engaging and retaining people living with HIV/AIDS in medical care. *AIDS Patient Care STDS* 21: S20-S29.
30. Mallinson RK, Relf MV, Dekker D, Dolan K, Darcy A, et al. (2005) Maintaining normalcy: A grounded theory of engaging and retaining people living with HIV/AIDS in medical care. *Adv Nurs Sci* 28: 265-277.
31. Christopoulos KA, Massey AD, Lopez AM, Geng EH, Johnson MO, et al. (2013) Taking a half day at a time: Patient perspectives and the HIV engagement in care continuum. *AIDS Patient Care STDS* 27: 223-230.
32. Rudy BJ, Murphy DA, Harris DR, Muenz L, Ellen J (2009) Adolescent Trials Network for HIV/AIDS Interventions Patient-related risks for non-adherence to antiretroviral therapy among HIV-infected youth in the United States: A study of prevalence and interactions. *AIDS Patient Care STDS* 23: 185-194.
33. Geng EH, Bangsberg DR, Musinguzi N (2010) Understanding reasons for and outcomes of patients lost to follow up in antiretroviral therapy programs in Africa through a sampling-based approach. *Acquir Immune Defic Syndr* 53: 405-411.
34. Hussen SA, Andes K, Gilliard D, Chakraborty R, Del Rio C, et al. (2009) Transition to adulthood and antiretroviral adherence among HIV-positive young black men who have sex with men. *HIV Clin Trials* 10: 299-305.
35. Magnus M, Jones K, Phillips G, Binson D, Hightow-Weidman LB, et al. (2010) Characteristics associated with retention among African American and Latino adolescent HIV-positive men: Results from the outreach, care, and prevention to engage HIV-seropositive young MSM of color special project of national significance initiative. *J Acquir Immune Defic Syndr* 53: 529-536.
36. <http://www.hivmediaguide.org.au/global-context/un aids-90-90-90-targets/>.
37. UNAIDS (2014) The Gap Report. UNAIDS.
38. Hall HI, Frazier E, Rhodes P (2012) Continuum of HIV Care: differences in care and treatment by sex and race/ethnicity in the United States. XIX International AIDS Conference: Washington DC.
39. Mkanta WN, Uphold CR (2006) Theoretical and methodological issues in conducting research related to health care utilization among individuals with HIV infection. *AIDS Patient Care STDs* 20: 293-303.