Abstract

Self-Rated Competence among HIV Care Providers Working with Adolescents in Kenya

Elizabeth Ann Karman

Introduction:

Adolescents living with HIV in Sub-Saharan Africa have disproportionately poor linkage to and retention in HIV care compared to other age groups. Health Care Workers (HCWs) serving adolescents living with HIV in Kenya have reported that they feel ill-prepared to work effectively with this population. More understanding of the competence and skills of HCWs in caring for HIV-positive adolescents in Kenya is needed to understand the current state of HIV services, and to inform and target future HCW training interventions.

Methods:

Data were collected from managers of 24 health facilities providing HIV care to adolescents, as well as 142 HCWs working within the enrolled facilities, in four counties in Kenya. Participant HCWs completed a survey to assess their socio-demographic characteristics, training history, and self-rated competency in caring for HIV positive adolescents. Competence was measured by eight statements with Likert scale responses; space for optional text comments was available. Descriptive statistics were computed, and linear regression was used to identify correlates of HCW self-rated competency.
Results:

Few facilities offered ‘youth friendly’ space, services, or providers. Among HCWs, fewer than half, (n=57, 40.1%) reported receiving special training in youth friendly health services (YFHS) or the care of HIV positive adolescents. HCWs reported a median composite self-rated competency score of 78.1 on a scale of 1-100 (IQR: 68.8- 84.4), and most rated their competence highest in non-technical aspects of care. Variables significantly associated with higher self-rated competency included years of experience caring for HIV-positive individuals, past training in adolescent HIV care, and caring for 11-15 adolescents per week compared to lower or higher caseloads in univariate analyses. Years of experience in caring for HIV-positive adolescents and history of training in adolescent HIV care remained statistically significant after adjusting for confounding.

Conclusion:

Most surveyed HCWs had not received training in the care of adolescents living with HIV, and most facilities offering services to adolescents living with HIV did not offer YFHS. Though HCWs reported moderately high self-rated competence in providing services to this population, many also requested more training. This analysis suggests that training in the care of HIV-positive adolescents may have the most potential to increase self-rated competence when directed at HCWs with fewer years of experience, and/or no prior history of similar training.
### Abbreviations and Acronyms

| Acronym | Description |
|---------|-------------|
| AIDS    | Acquired Immune Deficiency Syndrome |
| ART     | Anti-Retroviral Therapy |
| AYA     | Adolescents and Young Adults |
| HCW     | Health Care Worker |
| HIV     | Human Immunodeficiency Virus |
| MOH     | Ministry of Health |
| SPEED   | Simulated Patient Encounters to Promote Early Detection and Engagement in HIV Care for Adolescents |
| WHO     | World Health Organization |
| YFHS    | Youth Friendly Health Services |
Introduction:

More than 80% of HIV positive adolescents (ages 10-19 years) live in Sub-Saharan Africa, and progress in decreasing new HIV infections and AIDS related deaths within this age group lags behind both adults and children.1-4 Adolescents have lower uptake of antiretroviral therapy (ART) than adults, and among those who have access to ART, adherence is sub-optimal.5,6 Retention in HIV care is also lower among adolescents than in adults and children, and rates of loss to follow up are high.7,8 Data from the Kenyan National AIDS Control Council reveal a significant drop off in the HIV care cascade after HIV diagnosis.9 In 2014, only 27% of the 141,014 known HIV-positive adolescents were enrolled in HIV care; 34,846 (25%) were on ART, and 22,649 (16%) were virally suppressed.9 The Kenyan Ministry of Health (MOH), through the Kenya AIDS Strategic Framework, has identified the need to improve care for adolescents living with HIV, with the goal of 90% of HIV-positive adolescents in care and receiving ART.9,10 Key interventions proposed to meet this goal in Kenya include improving access to high quality adolescent services through health care worker (HCW) capacity building and rapid expansion of youth friendly health services (YFHS).8,9 YFHS as defined by the WHO includes multiple components, such as ensuring that the open hours and location of a clinic facilitate easy youth access, and providing staff trained in communication with adolescents.11,12 Staff training, both to understand the national guidelines with regards to YFHS, and to learn the skills necessary to provide YFHS, forms a critical component of a facility’s YFHS package.

In a systematic review of YFHS, barriers to implementation in low and middle-income countries included lack of HCW training in communication with young people, as well as lack of competence in negotiating sensitive issues such as parental presence during healthcare discussions.13 Barriers reported by studies in Kenya included lack of awareness of national guidelines by HCWs, and lack of confidence among HCW’s in their ability to competently provide YFHS.14-16 HCWs reported that training in YFHS was either unavailable or insufficient,
and doubted their own ability to set personal and cultural values aside in order to carry out YFHS. While HCW’s report that they feel ill-prepared to work effectively with adolescent populations, poor provider-patient interactions have been consistently cited as a barrier to care linkage and retention. Meanwhile, the number of adolescents in Sub-Saharan Africa is growing, and is projected to double between 2014 and 2050.2

Self-assessment of competence is an established component of self-regulating professions like health care, and is useful in identifying training needs and in setting goals.20,21 Low self-assessment of an HCW’s competence in performing a skill, such as patient-centered communication, may indicate that the HCW is in danger of avoiding certain topics or situations altogether where that skill is required.20–22 Conversely, in a variety of global settings and across HCW cadres, high self-rated competence involving specific communication skills and content areas has been shown to be associated with accurate understanding of and willingness to discuss sensitive health care topics.22–25 For example, among HIV care providers in Uganda, high self-rated competence in providing safer fertility services was associated with an increased proportion of patients receiving fertility counselling.23

This study examines the characteristics, facility context, and self-reported competence of HCWs working with adolescents living with HIV in Kenya, with the goal of better understanding current training needs. An improved understanding of HCW training needs, as well as correlates of health worker competence related to adolescents, will inform interventions to improve linkage to and retention in care among adolescents living with HIV in Sub-Saharan Africa.

Methods:

Study Design

This study was a cross-sectional secondary analysis of data collected as part of the SPEED study, a stepped wedge cluster randomized trial of a training intervention for HCWs caring for
adolescents and young adults living with HIV in Kenya. Baseline data were collected from facility managers and HCWs working within participating facilities who consented and were enrolled in the larger intervention trial.

**Population and Setting**

Participants were recruited from 24 high volume public health care facilities providing HIV care to adolescents in Nairobi, Kiambu, Homa Bay, and Kisumu Counties, Kenya, between November 2016 and May 2017. Facilities were considered for inclusion if they reported serving at least 40 adolescents currently engaged in HIV care, used an electronic medical record system, and were not enrolled in a concurrent adolescent intervention. From within each enrolled facility, a facility manager and up to ten HCWs providing clinical services to adolescents were identified for study participation. Eligible HCW participants were at least 18 years of age, and reported employment at the trial facility for at least three months and/or were employed under a one-year contract. HCW cadres surveyed included medical and clinical officers, nurses, and counselors. Peer counselors were excluded.

**Definitions, Outcomes, and Data Collection**

Prior to intervention activities, participant HCWs completed a baseline survey to assess socio-demographic characteristics, professional cadre, training history, and self-rated competence in care for HIV positive adolescents. For analysis purposes, nurses who reported that they also worked in a counseling role were categorized as nurses, and one medical officer was combined with the clinical officer category. The primary outcome of interest was individual HCW self-rated competence in providing care to HIV-positive adolescents. Competence scores were defined as the sum score derived from Likert scale responses to eight unique statements, which included references to HCWs’ communication and interpersonal skills, comfort level with adolescents, and skills training in care for adolescents living with HIV (see Appendix 1). Likert scales offered five response options for each statement, anchored by “strongly agree” and “strongly disagree”.
Responses were assigned a one to five numerical value, which was then summed across the eight statements per HCW, with the sum then converted into a 1-100 scale. An assessment tool, originally designed for self-assessment of clinical performance in the US, was adapted for use in the Kenyan setting, with content informed by communication skills described in the Kalamazoo I Consensus.27–29 Participating HCWs also were able to provide optional free-text comments at certain points during data collection.

A complementary survey of facility-level characteristics was completed to assess staffing levels, patient volume, history of program involvement with adolescent HIV care, and specific services offered. Individual and facility-level data were collected using tablets equipped with Open Data Kit (ODK) and uploaded to a secure server for cleaning and analysis.30

**Analysis**

Descriptive statistics were generated for selected outcome measures included in both the facility level and individual HCW surveys. Competence score data (range:1-100) were described using medians and inter-quartile ranges (IQR). Univariate regression analysis was used to assess the association between each covariate and the primary outcome of individual HCW self-rated competence. Potential confounders were identified based on prior studies, and included education level, cadre, years of experience in HIV care, number of adolescent HIV positive clients seen per week, and history of relevant training.22,31–35 Multivariate adjusted models were fit by applying the a priori selected confounders of age and sex, then including the potential confounders which changed the primary outcome by >10%.36 Linear regression accounted for clustering by facility and used robust standard errors. All analyses were performed using Stata 15.0 (College Station, TX).
Ethical Considerations

Study staff recruited facilities first and subsequently met with facility administrative teams to request access to HCWs employed at the site. A study team member then approached all eligible HCWs at the clinics to discuss participation in the SPEED intervention. Voluntary written informed consent was obtained from each participant prior to data collection. Ethical approval was received from the University of Washington Human Subjects Research Committee (#00002035) and the Kenyatta National Hospital/ University of Nairobi Ethics and Research Committee (P476/06/2016).

Results:

Data were collected from 142 HCWs and 24 facility managers. Facility characteristics are shown in Table 1. Most facilities were at the Sub-county (42%) or Health Center (33%) level. Facilities provided care for a median of 83 (IQR 40–153) adolescents living with HIV, and employed a median of 11 (IQR 5.0–18) HCWs. Eight (33%) facilities reported ever having a special program or training in adolescent care and/or adolescent HIV care; and 5 facilities (20.8%) offered Youth Friendly space, services or providers.

HCW respondents were mostly female (71.8%), a median of 33 years old (IQR: 29-39), and nearly all reported post-secondary education (95.8%). HCWs described their primary role as Clinical/ Medical Officer (31.7%), Nurse (28.1%), or Counselor (40.1%). When asked specifically about providing HIV care, HCWs reported a median of 4 years of experience (IQR: 2–8) for all-age populations, and slightly fewer years in providing care specifically to adolescents living with HIV (median=3 years, IQR:1–6). Most described their HIV-positive patients as primarily adults older than 24 years of age (78.2%), with a smaller number (20.4%) reporting that the majority of their HIV-positive patients were adolescents and young adults. Less than half, (40.1%) reported receiving any special training in providing "Youth Friendly Services", "Adolescent Package of Care", and/or the care of HIV positive adolescents. Fewer, (21.8%) reported any special
training in counseling of patients with depression, substance use problems, or exposure to gender-based violence.

HCWs reported a median composite self-rated competence in providing care to HIV-positive adolescents of 78.1 (IQR: 68.8–84.4) on a scale of 1-100. From among the eight discrete statements making up the composite score, HCWs responded “strongly agree” most often in response to statements describing their comfort level with HIV positive adolescents (53.5%), ability to empathize with adolescents (40.1%), and ability to effectively communicate with HIV positive adolescents (37.3%). HCWs rated themselves as “strongly agree” less frequently on technical aspects of care, including possessing sufficient skills to address the clinical needs of HIV positive adolescents (21.1%), and training in youth friendly services (10.6%) (Table 3). Among optional responses provided by 103 HCWs, 77.7% requested training in the care of adolescents living with HIV; and among those who had previously undergone relevant training (n=69), 55% indicated a need for ‘refresher’ or updated training.

In univariate analysis, years of experience caring for HIV positive individuals of any age (per year Coefficient: 1.04, 95% CI: 0.40–1.68, p=0.003) and for adolescents (per year Coefficient: 1.08, 95% CI: 0.51–1.65, p=0.001) were positively associated with increased competence. Competence was also higher with report of caring for a moderate number (11-15 compared to ≤5) of HIV positive adolescents in an average work week (Coefficient 7.06, 95% CI: 1.48–12.66, p=0.02), and with receipt of training in adolescent care and/ or adolescent HIV care (Coefficient: 6.38, 95% CI: 2.56–10.21, p=0.002). Though not statistically significant, male HCWs rated themselves higher than female HCWs (Coefficient: 4.18, 95% CI: -0.34–8.70, p=0.07).

In multivariate analysis, years of experience in caring for HIV positive adolescents and history of training in adolescent HIV care remained statistically significant after adjusting for both a priori confounders and those potential confounders which changed the outcome by >10% (Table 5).
Discussion:

This analysis showed that at the time of the study, most surveyed HCWs working with HIV-positive adolescents had not received training in the care of adolescents living with HIV. Likewise, most facilities offering services to adolescents living with HIV did not offer YFHS, and few facilities had designated spaces, times, or staff dedicated to providing quality care to adolescents living with HIV.

Despite these discouraging factors, HCWs reported a moderately high degree of self-rated competence in providing services to this population. Variables significantly associated with increased competence were plausible and similar to those identified in previous studies.\textsuperscript{22,32,33,35} The fact that HCWs tended to rate themselves higher in care components involving non-technical skills, such as communication, understanding, and empathy, suggests HCWs may feel they have the capacity to deliver high quality care to this population, but perceive themselves as lacking the skills or training to actually deliver this care effectively. Kak, \textit{et al}, describe HCW ‘competence’ as involving knowledge, skills, abilities, and traits.\textsuperscript{21} Using this framework, HCWs in this study appear to have rated themselves higher in areas involving abilities and traits. This is encouraging, as Kak, \textit{et al}, go on to describe knowledge and skills as more amenable to change through training. That the surveyed HCWs’ frequently expressed comments mentioning a desire for training despite a fairly high existing self-rated competence would seem to support this interpretation.

In this study, HCWs who reported receiving training in the care of adolescent HIV care also reported higher self-rated competence. Our preliminary research in the same Kenyan HIV care programs has shown an association between the proportion of HCWs within a facility who have been trained in adolescent-friendly care and increased retention among adolescents in HIV care.\textsuperscript{37} This is supported by previous research showing that the degree to which a HCW considers themselves to be confident and competent performing a skill is associated with actual
application of that skill in practice.\textsuperscript{22,23} Increased use of a learned skill is likely to reinforce the user’s perception of competence.\textsuperscript{21} Additionally, adolescents may feel more comfortable and cared for when interacting with HCWs who are competent in providing care to this specialty population, contributing to a feedback loop in which competence and quality care are reinforced by improved ease of interaction.

Implementation of the Adolescent Package of Care as recommended by the Kenyan MOH, which incorporates YFHS, has also been shown to be associated with increased retention in care among adolescents living with HIV.\textsuperscript{37} Yet in this analysis, HCWs reported the least amount of agreement with the competence statement regarding sufficient training in “youth friendly services”. This suggests an opportunity to improve adolescent retention in HIV care through expanded implementation of services described in the Kenyan Adolescent Package of Care. Knowledge of and training in this package, along with a workplace setting conducive to practicing the services described, would provide HCWs with the framework to implement the specific communication and clinical skills with confidence.

Though this analysis revealed that certain plausible factors, such as previous training and increased years of experience, were positively associated with self-rated competence, we could not infer the direction of influence or causality. It is possible that those who feel most competent providing care to this population then remain in their roles longer, and/or seek out specialty training. However, desire for training was expressed across both HCWs who had previously received specialty training and those who had not. Training may be targeted to augment the skills and knowledge of HCWs, even if they have expressed confidence in their ability to understand and empathize with adolescents living with HIV.

The strengths of this analysis included the ability to assess a wide variety of HCW and facility-level variables which had been shown to be associated with provider competence in previous studies.\textsuperscript{22,32,33,35} The measure used to analyze self-rated competence was not a single indicator
but a compilation of eight statements, each focused on a specific aspect of quality care. In analysis, directionality of effect was considered, and only those variables with a plausible effect on the outcome of interest were included in analysis and modeling. This analysis also had some limitations. As a secondary data analysis, the original tools were not expressly designed, nor were HCWs sampled, to detect differences in HCWs’ self-rated competence. As a self-rated measure, HCW competence may have been subject to social-desirability bias. The HCWs participating in data collection may not be representative of all HCWs working with AYA living with HIV in the areas surveyed. Study sites included in the analysis may not be representative of other regions within Kenya.

Conclusion:

Improving the quality of care for HIV-positive adolescents is critical to achieving Kenya’s AIDS Strategic Framework goal of 90% of people living with HIV in care and receiving ART.\textsuperscript{9,10} The Kenyan government recognizes that offering YFHS and building HCW capacity in providing quality care to adolescents living with HIV are key interventions to ensure equity in access to quality care across age groups.\textsuperscript{9} Despite moderately high self-reported competence, this analysis demonstrates a need for ongoing YFHS and HCW training in adolescent HIV care. Future training may have the most potential to increase competence when directed at HCWs with fewer years of experience or who have never received training in adolescent HIV care. More research is needed to determine optimal timing, length, and style of repeated training in this population, as well as explore other structural factors which may further impact quality of care.
References:

1. UNAIDS. GLOBAL REPORT: UNAIDS Report on the Global AIDS Epidemic 2013.; 2013. doi:JC2502/1/E
2. Idele P, Gillespie A, Porth T, et al. Epidemiology of HIV and AIDS Among Adolescents. 
JAIDS J Acquir Immune Defic Syndr. 2014;66:S144-S153. 
doi:10.1097/QAI.0000000000000176
3. United Nations Childrens Fund. Towards an AIDS-Free Generation – Children and AIDS: Sixth Stocktaking Report, Fund, 2013 United Nations Childrens. UNICEF; 2013. 
http://www.unaids.org/sites/default/files/media_asset/20131129_stocktaking_report_children_aids_en_0.pdf.
4. Unaids. Start Free Stay Free AIDS Free — 2017 Progress Report. Geneva; 2017. 
https://reliefweb.int/sites/reliefweb.int/files/resources/JC2923_SFSFAF_2017progressreport_en.pdf.
5. Jean B. Nachega, Michael Hislop, Hoang Nguyen D, W. Dowdy, Richard E. Chaisson, 
Leon Regentsberg, Mark Cotton and GM. Antiretroviral Therapy Adherence, Virologic and 
Immunologic Outcomes in Adolescents Compared with Adults in Southern Africa. J 
Acquir Immune Defic Syndr. 2009;51(1):65-71. 
doi:10.1097/QAI.0b013e318199072e.Antiretroviral
6. Kenya Ministry of Health. Kenya National Adolescent Sexual and Reproductive Health Programme. 2015.
7. Koech E, Teasdale CA, Wang C, et al. Characteristics and outcomes of HIV-infected 
youth and young adolescents enrolled in HIV care in Kenya. Aids. 2014;28(18):2729-2738. doi:10.1097/QAD.0000000000000473
8. National AIDS Control Council. Kenya AIDS Strategic Framework (KASF) 2015. 2015:37-45. 
http://nacc.or.ke/wp-content/uploads/2015/09/KASF_Final.pdf.
9. NACC. Kenya ’s Fast-track Plan To End HIV and AIDS Among Adolescents and Young People. 2015;(September):40.
10. UNAIDS. 90-90-90; An Ambitious Treatment Target to Help End the AIDS Epidemic.; 2014.
11. Population Services International (PSI). Making Your Health Services Youth Friendly: A 
Guide for Program Planners and Implementers.; 2014. http://www.psi.org/wp-content/uploads/drupal/sites/default/files/publication_files/PSI_YFHS 
Guide_2014_English.pdf.
12. WHO: Making Health Services Adolescent Friendly.; 2012. doi:ISBN 978 92 4 150359 4
13. Tylee A, Haller DM, Graham T, Churchill R, Sanci LA. Youth-friendly primary-care 
services: how are we doing and what more needs to be done? Lancet. 
2007;369(9572):1565-1573. doi:10.1016/S0140-6736(07)60371-7
14. Godia PM, Olenja JM, Lavussa JA, Quinney D, Hofman JJ, van den Broek N. Sexual 
reproductive health service provision to young people in Kenya; health service providers’ 
experiences. BMC Health Serv Res. 2013;13(1):476. doi:10.1186/1472-6963-13-476
15. Wolf HT, Halpern-Felsher BL, Bukusi EA, Agot KE, Cohen CR, Auerswald CL. “It is all 
about the fear of being discriminated [against]...the person suffering from HIV will not be 
accepted”: a qualitative study exploring the reasons for loss to follow-up among HIV-
positive youth in Kisumu, Kenya. BMC Public Health. 2014;14(1):1154. doi:10.1186/1471- 
2458-14-1154
16. Teasdale, Chloe; Alwar, Tareza; Chege, Duncan; Fayorse, Ruby; Hawken, Mark; Abrams 
E. Impact of Youth and Adolescent Friendly Services on Retention of 10 – 24-Year-Olds 
in HIV Care and Treatment Programs in Nyanza, Kenya. J Acquir Immune Defic Syndr. 
2015:e56-e59.
17. Wachira J, Naanyu V, Genberg B, et al. Health facility barriers to HIV linkage and retention in Western Kenya. BMC Health Serv Res. 2014;14(1):646. doi:10.1186/s12913-014-0646-6
18. Rachlis B, Naanyu V, Wachira J, et al. Identifying common barriers and facilitators to linkage and retention in chronic disease care in western Kenya. BMC Public Health. 2016;16(1):741. doi:10.1186/s12889-016-3462-6
19. Wilson KS, Beima-Sofie KM, Moraa H, et al. “At our age, we would like to do things the way we want.” A qualitative study of adolescent HIV testing services in Kenya. Aids. 2017;31(February):S213-S220. doi:10.1097/QAD.0000000000001513
20. Eva KW, Regehr G. Self-Assessment in the Health Professions: A Reformulation and Research Agenda. Acad Med. 2005;80(Supplement):S46-S54. doi:10.1097/00001888-200510001-00015
21. Kak N, Burkhalter B, Cooper M. Measuring the competence of healthcare providers. Qual Assur. 2001;2(1):1-28.
22. Vickers K, Kircher KJ, Smith MD, Petersen LR, Rasmussen NH. Health Behavior Counseling in Primary Care: Provider reported rate and confidence. Fam Med. 2007;39(10):730-735.
23. Goggin K, Hurley EA, Wagner GJ, et al. Changes in Providers' Self-Efficacy and Intentions to Provide Safer Conception Counseling Over 24 Months. AIDS Behav. 2018;(0123456789):1-11. doi:10.1007/s10461-018-2049-x
24. Sung SC, Huang HC, Lin MH. Relationship Between the Knowledge, Attitude, and Self-Efficacy on Sexual Health Care for Nursing Students. J Prof Nurs. 2015;31(3):254-261. doi:10.1016/j.profnurs.2014.11.001
25. Ngomuo ET, Klepp Ki, Rize J, Mnyika KS. Promoting safer sexual practices among young adults: A survey of health workers in Moshi Rural District, Tanzania. AIDS Care. 1995;7(4):501-508. doi:10.1080/09540129550126443
26. Wilson KS, Mugo C, Bukusi D, et al. Simulated patient encounters to improve adolescent retention in HIV care in Kenya: Study protocol of a stepped-wedge randomized controlled trial. Trials. 2017;18(1):1-11. doi:10.1186/s13063-017-2266-z
27. Makoul G. Essential elements of communication in medical encounters: the Kalamazoo consensus statement. Acad Med. 2001;76(4):390-393. doi:10.1097/00001888-200104000-00021
28. Duffy FD, Gordon GH, Whelan G, Cole-Kelly K, Frankel R. Assessing Competence in Communication and Interpersonal Skills: The Kalamazoo II Report. Acad Med. 2004;79(6):495-507. doi:10.1097/00001888-200406000-00002
29. Fernandez R, Parker D, Kalus JS, Miller D, Compton S. Using a human patient simulation mannequin to teach interdisciplinary team skills to pharmacy students. Am J Pharm Educ. 2007;71(3):51. doi:10.5688/aj710351
30. Brunette W, Sundt M, Dell N. Open data kit 2.0: expanding and refining information services for developing regions. In: ACM HotMobile 2013: The 14th Workshop on Mobile Computing Systems and Applications. ; 2013. doi:10.1145/2444776.2444790
31. Kabami J, Turyakira E, Biraro S, et al. Attitudes, Knowledge, and Correlates of Self-Efficacy for the Provision of Safer Conception Counseling Among Ugandan HIV Providers. Contraception. 2015;11(2):152-159. doi:10.1016/j.contraception.2015.04.011
32. Panter AT, Huba GJ, Melchior LA, et al. HealthCare Provider Characteristics and Perceived Confidence from HIV/AIDS Education. AIDS Patient Care STDS. 2000;14(11):603-614.
33. Urbani, Steve; Smith, Michael; Maddux, Cleborne; Smaby, Marlowe; Torres-Rivera, Edil; Crews J. Skills-Based Training and Counseling Self-Efficacy. Couns Educ Superv. 2002;42(December):92-106.
34. Cruz JP. Quality of life and its influence on clinical competence among nurses: a self-
35. Numminen O, Leino-Kilpi H, Isoaho H, Meretoja R. Newly Graduated Nurses’ Competence and Individual and Organizational Factors: A Multivariate Analysis. J Nurs Scholarsh. 2015;47(5):446-457. doi:10.1111/jnu.12153

36. Bursac Z, Gauss CH, Williams DK, Hosmer DW. Purposeful selection of variables in logistic regression. Source Code Biol Med. 2008;3:1-8. doi:10.1186/1751-0473-3-17

37. Wilson K, Mugo C, Moraa H, et al. Adolescent-specific provider training and provision of services is associated with retention in Kenyan HIV clinics. In: International Aids Conference 2018, Accepted Abstract. ; 2018.
Table 1: Characteristics of Participating Facilities (n=24)

| Health facility type                                      | Median (IQR) or N (%) |
|-----------------------------------------------------------|-----------------------|
| Teaching and referral hospital                            | 1 (4.2)               |
| County referral hospital                                  | 5 (20.8)              |
| Sub-county hospital                                       | 10 (41.7)             |
| Health center                                             | 8 (33.3)              |
| Number of adolescents (10–19) in active follow-up, n=23   | 83 (40–153)           |
| Number of adolescents (10–19) currently on ART, n=23     | 82 (42–148)           |
| Total number of staff members at clinic who work with HIV+ adolescents* | 11 (5-18)             |
| History of training in the care of HIV positive adolescents | 8 (33.3)              |
| Youth Friendly Services space, providers or services available | 5 (20.8)              |

* Does not include peer counselors
| Table 2: Sociodemographic Characteristics of Participating HCWs (n=142) |
|-----------------|-----------------|
| **Median (IQR) or N (%)** |
| **Age (years)**  | 33 (29–39)      |
| **Sex**          |                 |
| Male             | 40 (28.2)       |
| Female           | 102 (71.8)      |
| **Highest Level of Education Started** |
| Secondary        | 6 (4.2)         |
| Diploma Program  | 97 (68.3)       |
| Degree Program   | 39 (27.5)       |
| **HCW Cadre**    |
| Clinical/Medical Officer | 45 (31.7) |
| Nurse*           | 40 (28.2)       |
| Counselor        | 57 (40.1)       |
| **Number of years caring for HIV positive individuals (of any age)** | 4 (2–8) |
| **Number of years caring for HIV positive adolescents (ages 10–19)** | 3 (1–6) |
| **Number HIV-positive adolescents cared for in an average work week** |
| ≤5               | 49 (34.5)       |
| 6-10             | 35 (24.7)       |
| 11-15            | 23 (16.2)       |
| ≥16              | 35 (24.7)       |
| **Received training in the care of HIV positive adolescents** | 57 (40.1) |
| **Received training in the counseling of patients with depression, substance abuse problems or exposure to gender-based violence** | 31 (21.8) |
| **Received any of the above types of training** | 69 (48.6) |
| **Satisfaction with any of the above past training (Range 1–100), n=69** | 80.0 (75.0–90.0) |
| **Composite self-rated competence score (Range 1–100), n=142** | 78.1 (68.8–84.4) |

* Nurses who also reported counseling duties were described as nurses
Table 3: HCW Agreement with Each Self-Rated Competence Statement (n=142)

|                                                                                                           | HCWs Responding “Strongly Agree” |
|-----------------------------------------------------------------------------------------------------------|-----------------------------------|
| I feel quite comfortable interacting with HIV positive adolescent patients                               | 76 (53.5)                        |
| I can empathize with an adolescent patient's situation and/or concerns effectively                        | 57 (40.1)                        |
| I can communicate with HIV positive adolescent patients effectively                                      | 53 (37.3)                        |
| I understand the issues that HIV positive adolescents face                                                | 52 (36.6)                        |
| I feel quite confident in my ability to care for HIV positive adolescents                                | 45 (31.7)                        |
| I have sufficient skills to address the clinical needs of HIV positive adolescent patients               | 30 (21.1)                        |
| I have sufficient skills to address the emotional needs of HIV positive adolescent patients              | 23 (16.2)                        |
| I feel sufficiently trained to offer "youth friendly services"                                          | 15 (10.6)                        |
Table 4: Univariate association Between Self-Rated Competence and Individual HCW Variables

|                               | Median self-rated competence Score (IQR) | Coefficient (95%CI) | p-value |
|--------------------------------|-----------------------------------------|---------------------|---------|
| **Age**                       |                                         |                     |         |
| <=29 (n=43)                   | 75.0 (65.6–81.3)                        | reference           |         |
| 30-39 (n=66)                  | 75.0 (68.8–84.4)                        | 1.61 (-3.96–7.12)   | 0.555   |
| >=40 (n=33)                   | 81.3 (71.9–87.5)                        | 4.31 (-2.73–11.36)  | 0.218   |
| **Sex**                       |                                         |                     |         |
| Male (n=40)                   | 78.1 (71.9–89.1)                        | reference           |         |
| Female (n=102)                | 75.0 (65.6–84.4)                        | -4.18 (-8.70–0.34)  | 0.068   |
| **Highest Level of Education Started** |                                         |                     |         |
| Secondary (n=6)               | 75.0 (71.9–81.3)                        | Reference           |         |
| Diploma Program (n=97)        | 78.1 (68.8–87.5)                        | 0.63 (-9.11–10.36)  | 0.895   |
| Degree Program (n=39)         | 75.0 (65.6–84.4)                        | -1.40 (-11.0–8.15)  | 0.764   |
| **HCW Cadre**                 |                                         |                     |         |
| Clinical/ Medical Officer (n=45) | 75.0 (65.6–81.3)                  | reference           |         |
| Nurse (n=40)                  | 78.1 (68.8–84.4)                        | 2.37 (-4.42–9.16)   | 0.478   |
| Counselor (n=57)              | 78.1 (71.9–87.5)                        | 4.93 (-1.15–11.02)  | 0.107   |
| **Number of years caring for HIV positive individuals (any age)** |                                         |                     |         |
| Below Median (n=72)           | 73.4 (67.2–81.3)                        | Reference           |         |
| Above Median (n=70)           | 81.3 (71.9–87.5)                        | 6.42 (1.25–11.60)   | 0.017   |
| **Number of years caring for HIV positive adolescents (ages 10-19)** |                                         |                     |         |
| Below Median (n=73)           | 75.0 (68.8–81.3)                        | Reference           |         |
| Above Median (n=69)           | 78.1 (68.8–87.5)                        | 4.37 (-0.57–8.78)   | 0.053   |
| **Number of HIV-positive adolescents cared for in an average work week** |                                         |                     |         |
| <=5 (n=49)                    | 75.0 (68.8–81.3)                        | Reference           |         |
| 6-10 (n=35)                   | 78.1 (68.8–84.4)                        | 4.36 (-2.21–10.93)  | 0.183   |
| 11-15 (n=23)                  | 78.1 (71.9–87.5)                        | 7.06 (1.48–12.66)   | 0.015   |
| >=16 (n=35)                   | 78.1 (68.8–87.5)                        | 5.79 (-0.91–12.50)  | 0.087   |
| **Received training in the care of HIV-positive adolescents** |                                         |                     |         |
| No (n=85)                     | 75.0 (68.8–81.2)                        | Reference           |         |
| Yes (n=57)                    | 81.3 (75.0–90.6)                        | 6.38 (2.56–10.21)   | 0.002   |
| **Received training in the counseling of patients with depression, substance abuse problems or exposure to gender-based violence** |                                         |                     |         |
| No (n=111)                    | 78.1 (68.8–84.4)                        | Reference           |         |
| Yes (n=31)                    | 78.1 (68.8–87.5)                        | 3.10 (-2.24–8.44)   | 0.241   |
Table 5: Association between Self-Rated Competence and Individual HCW Characteristics

|                                | Univariate Coefficient (95%CI) | ρ  | Adjusted Coefficient (95%CI) | ρ  |
|--------------------------------|--------------------------------|----|------------------------------|----|
| Age* (Per Year)                | 0.14 (-0.24–0.52)              | 0.463 | 0.12 (-0.28–0.52)          | 0.535 |
| Sex**                          |                                |    |                              |    |
| Female                         | -4.18 (-8.70–0.34)             | 0.068 | -3.99 (-8.92–0.94)         | 0.107 |
| Cadre***                       |                                |    |                              |    |
| Clinical/Medical Officer (n=45) | reference                     |    |                              |    |
| Nurse (n=40)                   | 2.37 (-4.42–9.16)              | 0.478 | 3.08 (-2.45–8.62)          | 0.261 |
| Counselor (n=39)               | 4.93 (-1.15–11.02)             | 0.107 | 5.16 (-1.28–11.61)         | 0.111 |
| Number of years caring for HIV-positive adolescents (effect per year) * | 1.08 (0.51–1.65)              | 0.001 | 1.04 (0.49–1.59)          | 0.001 |
| Received training in the care of HIV-positive adolescents **** | 6.38 (2.56–10.21)              | 0.002 | 5.28 (1.48–9.08)          | 0.009 |
| Number of HIV-positive adolescents cared for in an average work week **** |                                |    |                              |    |
| ≤5 (n=49)                      |                                |    |                              |    |
| 6-10 (n=35)                    | 4.36 (-2.21–10.94)             | 0.183 | 3.11 (-2.95–9.16)         | 0.300 |
| 11-15 (n=23)                   | 7.07 (1.48–12.66)              | 0.015 | 3.78 (-1.93–9.48)         | 0.184 |
| ≥16 (n=35)                     | 5.79 (-0.91–12.50)             | 0.087 | 4.11 (-2.52–10.73)        | 0.212 |

*Adjusted for sex  
** Adjusted for age  
*** Adjusted for age and sex  
**** Adjusted for sex and number of years caring for HIV-positive adolescents
Simulated Patient Encounters to Promote Early Detection and Engagement in Care for Adolescents (SPEED)

**Health Care Worker (HCW) Satisfaction Survey**

**Survey completion date:**

| Day | Month | Year |
|-----|-------|------|

**Time:** 

| ___ | ___ | : | ___ | ___ | ___ |
|-----|-----|---|-----|-----|-----|

**Respondent ID:** ___________ ___________ ___________ ___________ ___________ ___________ ___________

**INSTRUCTIONS:** Sections I & II filled ONCE at baseline. Section III filled ONCE immediately following training.

### SECTION I: SOCIO-DEMOGRAPHIC CHARACTERISTICS & TRAINING HISTORY

*(To be filled at baseline and right before the SPEED training intervention)*

|   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|

1. Primary location of your work:  
   - [ ] CCC  
   - [ ] Other ____________________________

2. Sex:  
   - [ ] Male  
   - [ ] Female

3. Age of HCW: ___ ___ years

4.  
   - 4a. What is your highest level of education? *(highest level of education started)*  
     - [ ] none  
     - [ ] primary  
     - [ ] secondary  
     - [ ] college  
     - [ ] university
   
   - 4b. How many years of education have you completed: _____ years

5. What is your current employment status? *(tick all that apply)*  
   - [ ] Medical Officer  
   - [ ] Nurse  
   - [ ] Peer Counselor  
   - [ ] Clinical Officer  
   - [ ] HTC Counselor  
   - [ ] Other counselor, specify: ____________________________

6. Number of years at current clinic: ___ ___ years

---

Simulated Patient Encounters to Promote Early Detection and Engagement in HIV Care for Adolescents (SPEED)

HCW satisfaction survey

Version 2.0 22 September 2016
|   | Question                                                                 | Response |
|---|-------------------------------------------------------------------------|----------|
| 7 | Number of years of experience in HIV counseling:                        | ____ ___ | years |
| 8 | Number of years caring for HIV positive individuals (any age)           | ____ ___ | years |
| 9 | Number of years caring for HIV positive adolescents (ages 10-19)       | ____ ___ | years |
| 10| The majority of the HIV-positive patients you care for here are from what age group? |         |
|   | Adults (25 and older) □       Adolescents and youth ages 10-24 □     Children/infants (under 10) □ |
| 11| How many HIV-positive adolescents do you care for in an average work week? | None □   1-5 □   6-10 □   11-15 □   16-20 □   More than 20 □ |
| 12a| Received any special training in providing “Youth Friendly Services” or “Adolescent Package of Care”: | □ Yes □ No |
|   | If Yes, please give approximate month/year of training, topics covered, and the organization that gave it: |         |
| 12b| Received any special training in care of HIV-positive adolescents (if in addition to training received in Q12a). | □ Yes □ No |
|   | If Yes, please give approximate month/year of training, topics covered, and the organization that gave it: |         |
| 12c| Received any special training in counseling of patients with depression, substance use problems, or exposure to gender-based violence: | □ Yes □ No |
|   | If Yes, please give approximate month/year of training, topics covered, and the organization that gave it: |         |

If NO to items 12a-c, SKIP to SECTION III.


SECTION II: SATISFACTION WITH PREVIOUS NON-STUDY TRAININGS

(To be filled ONCE at baseline if history of ANY trainings noted in Q12a-c)

| Please rate your level of satisfaction with ANY prior training that you received in care for HIV-positive adolescents: | Response categories |
|---|---|
| 13. Overall length of the training | far too long | somewhat too long | just the right length | somewhat too short | far too short |
| 14. Timing of the training around your clinical duties | Very satisfied | Somewhat satisfied | Neutral | Somewhat dis-satisfied | Very dissatisfied |
| 15. Format of the training (e.g. lectures, role plays) | Very satisfied | Somewhat satisfied | Neutral | Somewhat dis-satisfied | Very dissatisfied |
| 16. Relevance of training content to HIV-positive adolescent patients whom you serve | Very satisfied | Somewhat satisfied | Neutral | Somewhat dis-satisfied | Very dissatisfied |
| 17. Ability of the trainer(s) to lead the training | Very satisfied | Somewhat satisfied | Neutral | Somewhat dis-satisfied | Very dissatisfied |
| 18. Overall satisfaction with your prior training | Very satisfied | Somewhat satisfied | Neutral | Somewhat dis-satisfied | Very dissatisfied |

Comments:

Please rate your competency in care for HIV-positive adolescents:

| Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
|---|---|---|---|---|
| 19. I understand the issues that HIV-positive adolescents face | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
| 20. I can communicate with HIV-positive adolescent patients effectively | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
| 21. I can empathize with an adolescent patient’s situation and/or concerns effectively | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
| 22. I feel quite comfortable interacting with HIV-positive adolescent patients | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
| 23. I have sufficient skills to address the clinical needs of HIV-positive adolescent patients | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
| 24. I have sufficient skills to address the emotional needs of HIV-positive adolescent patients | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
| 25. I feel quite confident in my ability to care for HIV-positive adolescents | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
| 26. I feel sufficiently trained to offer “youth friendly services” | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |

Comments: