HIV-Related Stigma and Discrimination Among Health Care Workers During Early Program Decentralization in Indonesia: A Cross-Sectional Study

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Abstract

Background

Expanding HIV services by decentralizing provision to primary care raises a possible concern of HIV-related stigma and discrimination (SAD) from health care workers (HCWs) as new service points gain experience in HIV care delivery during early implementation. We surveyed indicators and examined the correlates of SAD among HCWs in a decentralizing district of rural Gunungkidul, Indonesia.

Methods

We conducted a cross-sectional survey on a random stratified sample of 234 HCWs in 14 public health facilities (one referent hospital, 13 primary health centers [PHC]) during the second year of decentralization roll-out in the district. We computed the prevalence of SAD indicators and used multivariable logistic regression with bootstrap standard errors to estimate the correlates of these indicators controlling for variations across facility units.

Results

The prevalence of SAD among HCWs was ~ 71% in fear of HIV transmission when caring for people living with HIV (PLHIV), ~ 75% in perceived negative image of PLHIV, and tended to differ between hospital and PHC HCWs for avoidance of service duties to HIV key populations (52.5% vs. 63.8%; $p = 0.081$) and discriminatory practices during HIV care delivery (96.1% vs. 85.2%; $p = 0.008$). Recent interactions with PLHIV and receipt of training lowered the odds of fear of HIV transmission ($p \leq 0.036$). However, the odds of avoiding care duties increased with receipt of training ($p < 0.001$) and male sex ($p = 0.050$). Age, HIV knowledge, hospital facility, and non-physician cadres increased the odds of discriminatory practices ($p \leq 0.026$). No significant correlate was found for perceived negative image of PLHIV.

Conclusion

HIV-related SAD among HCWs can be prevalent during early decentralization, highlighting the need for timely or preparatory interventions with a focus on building the capacity of hospital and non-physician workforce for positive patient-provider interactions when delivering HIV care.

Background

Stigma and discrimination (SAD) towards people living with HIV (PLHIV) remains widespread across the globe and particularly in low- and middle-income countries (LMICs) [1]. More than half of residents of LMICs participating in population surveys on SAD were estimated to exhibit at least one HIV-related SAD attitude within their lifetime [2]. A global community-driven monitoring initiative reported an incident of denial of health services for one in every eight PLHIV during their lifetime [3]. In the health care setting, evidence demonstrates that SAD prevents access to HIV testing and diagnosis, disincentivizes uptakes of antiretroviral treatment (ART), erodes treatment adherence, and compromises the quality of life of PLHIV [4–8]. The deleterious consequences of suboptimal health behaviors in morbidity and mortality [9] place health care delivery in a prominent rank among the priority sectors to target for SAD elimination [10].

The global commitment to HIV-related SAD has been recognized on an equal footing with efforts to eliminate new HIV infections and AIDS-related deaths [11]. In 2018, UNAIDS launched a partnership to support countries in protecting the human rights of PLHIV and advance country capacity to reduce SAD [10]. Within the short timespan since the launch, changes to the baseline levels of SAD have been reported in a varying degree, and most countries failed to achieve the elimination target by the end of 2020 [12]. Recent data reveal that the proportions of PLHIV experiencing SAD during health care delivery varied greatly in the range of 1.7–21.0% [12], which suggests different trajectories in the capacity to reduce SAD that may be specific to the health system in each locality [13].

Much of the early theoretical ground to distinctively capture and measure SAD in numerical indices was derived from the work of Goffman (1963) who laid the foundation of what constitutes stigma in terms of perpetrated actions (to devalue) and the impact these inflicted on others (the feeling of discredit) [14]. The conceptualization by Link and Phelan (2001) describes the cognitive and attitudinal process of stigma by active labeling of differences and stereotyping and by separating and eventually excluding those stigmatized from a relevant social context, thereby equating stigma with discrimination [15]. More recent theoretical work clarifies the cognitive process of SAD in which stereotyped ideas or imagined contra attitudes condition future discriminatory actions enacted as a response [16, 17]. Within this framework, SAD is underpinned by principal human faculties that manifest in knowledge or its lack thereof (ignorance), attitude (prejudice), and actions (discrimination) [18]. UNAIDS describes HIV-related SAD as a process of devaluation of PLHIV (or those associated with HIV) on the basis of real or perceived HIV status (or the associated risk behaviors) culminating in discriminatory or unjust treatment [19]. HIV-related SAD permeates beyond PLHIV by virtue of association with underlying risk behaviors that characterize HIV transmission, which negatively impacts the HIV key populations such as people who inject drugs (PWID), men who have sex with men (MSM), and sex workers [20].

Although experiences of SAD by PLHIV in the health care setting are widely documented [12], examination of SAD attitudes and practices among health care workers (HCWs) has received less attention. The expansion of HIV care and treatment in LMICs over the last two decades brought about innovations to redistributing service capacity more evenly in the health system in response to increased demand by decentralizing provision down to primary care and across the ranks of health care cadres [21]. Advances in diagnostic and antiretroviral technologies have simplified and standardized care procedures to the point of becoming amenable to decentralized provision by non-physician clinicians at the primary care level [22]. HIV care decentralization provides a unique programmatic context for emergent SAD in which a wider reach of HCWs is introduced firsthand to the care engagement of PLHIV and key populations.

Investigations into decentralized programming indicate fear of discrimination and unwarranted disclosure of HIV status as two areas of SAD that PLHIV feel strongly concerned about or commonly experienced during health care delivery [23, 24], possibly mirroring the differential quality of care between primary health centers (PHCs), as an emerging model of HIV care provision in the health system, and the referent hospital, which pioneered HIV care in the community. Consequently, some areas of SAD can be viewed as a trade-off outcome with access convenience for a segment of patients who changed their access location to PHCs due to high service volumes at the referent hospital or proximity to care providers within the community. The indication of differential quality of care receives little support in reviews of ART decentralization programs in LMICs, which have concluded non-inferior outcomes of PHCs or other equivalent facilities relative to the pioneering hospital [21, 25–27]. However, the summary effect sizes in these reviews mask the impact of various stages of program maturity in the included studies, with earlier periods more likely exhibiting emergent SAD as new facilities were adapting to the implementation. Similarly, existing studies exploring HIV-related SAD among HCWs are limited in the scope of health care professions or portray mature programs [28–31], which forego the dynamics in patient-provider interactions and emergent SAD during early decentralization.

The current study seeks to illuminate the topic on SAD behaviors in HCWs in a decentralizing rural district of Indonesia, a country that has expanded its HIV care to over 5,000 health care facilities [32]. Herewith we present the findings from a survey of HCWs, describing the prevalence of SAD and examining the correlates of different indicators of HIV-related SAD.

Methods

Study design and setting

We conducted a cross-sectional survey in Gunungkidul, a rural district in Yogyakarta Province, with data collection from December 2016 to March 2017. Two hospitals and 30 PHCs serviced an estimated 700,000 residents of the district in 2016 [33]. In 2016 there were 238 documented HIV cases with most diagnoses occurring in late clinical stages [34]. In response to the growing number of cases, the District Health Office decentralized provision of HIV testing and care from the district hospital to 13 PHCs beginning in 2015. The initiative expanded the role of PHCs to HIV testing, referrals of hospital-based ART initiation, management of stable ART patients, and treatment of non-severe opportunistic infections.

Participants and Sample Size

We surveyed HCWs at the district referent public hospital and 13 PHCs participating in the decentralization program. HCWs were eligible to participate in the survey if they had ≥ 12 months of service with the current facility in a medical or non-medical area. Health care professions comprised physicians (specialists and general practitioners), dentists, registered nurses, midwives, and a class of health care cadres with limited or no medical duties, including nutritionists, physiotherapists, laboratory or radiology technicians, medical record officers, and public health experts. We powered the survey to detect 64% HIV-related SAD in a stratified sampling design [35] and recruited 234 HCWs. We stratified recruitment by facility type and allocated recruitment in relation to the size of HCW populations in the hospital and PHCs. A list of HCWs meeting eligibility in 14 facilities was obtained, and a random proportional sample was selected in each stratum using a standard spreadsheet program.

Study instruments

The survey questionnaire on SAD indicators was adapted from *Measuring HIV Stigma and Discrimination among Health Facility Staff* prepared by The Health Policy Project [36]. The questionnaire also had an extended module on SAD in the context of prevention of mother-to-child HIV transmission. Data from this module were not utilized in this study. The main questionnaire was divided into five sections: one for demographic information including HIV knowledge and the remaining for various SAD indicators and in-facility HIV policy environment. The questionnaire has been used in diverse settings [29, 37] and proved simple to administer or for self-administration without much overhead in duration or cognitive effort. In the study setting, we piloted the translated questionnaire in 30 HCWs from the hospital prior to use in survey respondents, which demonstrated satisfactory inter-item reliability (Cronbach's $\alpha > 0.70$ for all sections). Selected HCWs were contacted to participate in the survey. Interested HCWs then received hardcopy questionnaires, an informed consent form, and survey instructions via courier or delivered in-person by a team member for those who wished to complete the questionnaire on the same day. Respondents self-completed the questionnaire in 20–35 minutes.

Study outcomes and other variables

Four SAD indicators were constructed from responses in the two sections of the questionnaire eliciting personal opinions on HIV infection control and PLHIV and key populations. SAD indicator 'fear of HIV infection' pertains to levels of worry (from 'not worried' to 'very worried') when performing medical duties with PLHIV patients involving direct contact with the clothing, dressing the wounds, blood drawing, and temperature check. 'Perceived negative image of PLHIV' corresponds to the level of agreement (from 'strongly agree' to 'strongly disagree') with exemplary statements on their perceived disregard for infecting others, presumptive promiscuity, reckless risk behaviors, and whether PLHIV deserve shame and HIV is believed to be a punishment for their risky behaviors. The third SAD indicator was assessed as how respondents would approve (from 'strongly agree' to 'strongly disagree') 'avoidance of service duties' for MSM, PWID, and sex workers, the HIV key populations, if given the opportunity. Lastly, 'discriminatory practices' refer to unjust or excessive precautions ('yes' and 'no') in contact avoidance, double gloving, being gloved up throughout the entire care episode, or use of special infection-control measures that HCWs would not apply when caring for non-HIV patients. All SAD indicators used a four-item Likert scale except for discriminatory practices. HCW cadres with core duties not relevant to one or more task described in a question set for a SAD indicator could select a 'not applicable' option. Fear of HIV infection and discriminatory practices were specific to medical cadres in the health care delivery. All respondents provided responses to the remaining SAD indicators.

We included age, sex, education ($<$ and $\geq$ bachelor's degree), HIV knowledge (scale: 0–10), facility type (hospital and PHCs), HCW cadres (physician, nurse, other professions), interactions with PLHIV, and receipt of training in HIV and SAD topics. HIV knowledge test comprised 10 questions on basic knowledge of HIV transmission and its mode of exposure [38, 39], with a total score accumulated on correct answers.

Statistical Analysis

We described sample characteristics in mean and standard deviation for continuous variables and counts and proportion for binary or categorical variables, stratified by facility type. We formed dummy indicators of SAD by dichotomizing all Likert-like responses at the mid category, which are ‘worried’ and ‘very worried’ for fear of HIV infection and ‘agree’ and ‘strongly agree’ for both perceived negative image and avoidance of service duties. Discriminatory practices were present if the respondent reported any unnecessary preventive measure. Prevalence of SAD indicators was then computed in a similar manner. Differences by facility type were evaluated using the Student’s t-test or Pearson’s chi-squared test. As we were concerned that our broad stratification may lead to imbalanced proportions of HCWs sampled across PHCs, we evaluated the effect of these differential sampling rates on SAD prevalence using binomial regression with the logit link function for fractional, prevalence outcomes in the 0–1 range [40]. **Table A1** in the supplement to this article reports no evidence of association between PHC sampling rates and the prevalence estimates on all SAD indicators ($p \geq 0.308$). Multivariable logistic regression was used to explore correlates of SAD indicators. We removed education from the final model as this variable was deemed redundant in differentiating groups of HCW cadres between physicians, who all had at least a bachelor’s qualification, and others. Accounting for clustered responses within facility units, we calculated the bias-corrected standard error and the corresponding 95% confidence intervals by re-sampling within strata and over facility units in 10,000 bootstrap replicates for all multivariable analyses [41–42]. We pursued this option as the number of facility units was deemed too few to generate reliable statistics using the conventional method of robust estimation [43]. All p -values < 0.050 were considered to provide sufficient evidence of statistical significance. Stata version 14.2 (College Station, TX) was used for all analyses.

Results

Characteristics of respondents

A total of 234 HCWs participated in the survey with an equal proportion of HCWs from the hospital ($n = 118$) and PHCs ($n = 116$). HCWs were on average 40 years old at the time of survey with a female majority, and could answer correctly no more than four questions on basic knowledge of HIV transmission and its mode of exposure (**Table 1**). PHC HCWs tended to be more highly educated with over 40% having at least a bachelor’s qualification compared to approximately 30% of their hospital counterparts. A majority were in the nursing or midwifery profession with slightly more physicians and other professions working at PHCs. Significantly more hospital HCWs (63. 6%) than PHC HCWs (44.8%) had recent interactions with PLHIV ($p = 0.004$). Most HCWs had yet to receive any training in HIV and SAD, infection control and universal precautions, informed consent and patient confidentiality, or SAD in HIV key populations. All characteristics except recent interactions with PLHIV were broadly similar for HCWs from either facility type.

Table 1. Respondent characteristics by facility type

	Total	Facility type		
Characteristic	Mean (SD)	Mean (SD) or n (%)		p-value ^a
	or n (%)	Hospital	PHC	
	(n = 234)	(n = 118)	(n= 116)	
Age (years)	40.1 (8.2)	39.4 (8.6)	40.9 (7.60)	0.173
Sex				0.431
Female	157 (67.1%)	82 (69.5%)	75 (64.7%)	
Male	77 (32.9%)	36 (30.5%)	41 (35.3%)	
HIV knowledge (scale:1–10) ^b	3.5 (1.3)	3.5 (1.5)	3.6 (1.0)	0.607
Education				0.061
<Bachelor degree	151 (65.4%)	83 (70.3%)	68 (58.6%)	
≥Bachelor degree	83 (35.5%)	35 (29.7%)	48 (41.4%)	
Profession				0.130
Physician/dentist	35 (15.0%)	14 (11.9%)	21 (18.1%)	
Nurse/midwife	148 (63.2%)	82 (69.5%)	66 (56.9%)	
Other	51 (21.8%)	22 (18.6%)	29 (25.0%)	
Interactions with PLHIV in 12 months				0.004
No	107 (45.7%)	43 (36.4%)	64 (55.2%)	
Yes	127 (54.3%)	75 (63.6%)	52 (44.8%)	
Receipt of training, by topic				
HIV and SAD				0.102
No	195 (83.3%)	92 (79.3%)	103 (87.3%)	
Yes	39 (16.7%)	24 (20.7%)	15 (12.7%)	
Infection control & precautions				0.110
No	160 (68.4%)	75 (63.6%)	85 (73.3%)	
Yes	74 (31.6%)	43 (36.4%)	31 (26.7%)	
Informed consent & confidentiality				0.792
No	188 (80.3%)	94 (79.7%)	94 (81.0%)	
Yes	46 (19.7%)	24 (20.3%)	22 (19.0%)	
SAD in HIV key populations ^c				0.221
No	204 (87.2%)	106 (89.8%)	98 (84.5%)	
Yes	30 (12.8%)	12 (10.2%)	18 (15.5%)	
Any topic				0.267
No	145 (62.0%)	69 (58.5%)	76 (65.5%)	
Yes	89 (38.0%)	49 (41.5%)	40 (34.5%)	
HIV = human immunodeficiency virus; PHC = primary health center; PLHIV = people living with HIV				
SAD = stigma and discrimination; SD = standard deviation.				
^a = For the difference between hospital and PHC health care workers using the Student's t-test and the Pearson's chi-squared test for continuous and binary or categorical variables, respectively.				
^b = Scores correspond to the number of correct answers out of 10 questions on basic knowledge of HIV transmission and its mode of exposure.				
^c = These are people who inject drugs, men who have sex with men, and sex workers.				

Figure 1 presents the prevalence estimates of perceived HIV-related SAD. Perceived SAD was prevalent, in rates greater than 50%, in all four indicators for both facility types. Of 215 HCWs who were eligible to provide responses, approximately 71% in both facility types feared contracting HIV infection when caring for PLHIV patients. There was a similarly high prevalence of hospital and PHC HCWs who perceived a negative image of PLHIV (~75%) out of all HCWs. Close to 64% of all PHC HCWs would avoid service duties for HIV key populations if and when it became feasible to do so. The prevalence of this indicator was lower for hospital HCWs (~53%), and the difference trended towards significance ($p = 0.081$). Discriminatory practices were the most prevalent SAD indicator, reported by over 80% of 191 HCWs involved in health care delivery, and were significantly higher for hospital HCWs than their PHC counterparts (~96% vs. ~85%; $p = 0.008$).

Correlates of HIV-related SAD

Table 2 presents the correlates of HIV-related SAD among HCWs in all four SAD indicators from multivariable analyses. The odds of fear of HIV infection were approximately half as much for HCWs who had recent interactions with PLHIV (adjusted odds ratio [aOR] = 0.45; 95% confidence interval [CI] = 0.28–0.95; $p = 0.036$) and received any training on HIV and SAD (aOR = 0.48; CI = 0.29–0.68; $p < 0.001$). No correlate was found for perceived negative image of PLIV as there was no significant association between any of the characteristics and this SAD indicator. Receipt of training increased the odds of avoiding service duties for HIV key populations by more than two-fold (aOR = 2.41; CI = 1.73–5.29; $p < 0.001$). Male sex appeared less likely to avoid service duties relative to their female counterparts with a borderline significant association (aOR = 0.72; CI = 0.21–1.00; $p = 0.050$). The odds of discriminatory practices increased with older age (aOR = 1.08; CI = 1.01–1.22; $p = 0.016$), HIV knowledge (aOR = 2.26; CI = 1.45–2.97; $p < 0.001$), and for hospital HCWs (aOR = 5.13; CI = 1.82–10.98; $p = 0.001$) or non-physician cadres, including nurses/midwives (aOR = 7.23; CI = 1.63–26.34; $p = 0.005$) and other professions (aOR = 4.51; CI = 1.18–15.88; $p = 0.026$).

Table 2. Correlates of HIV-related stigma and discrimination

	Fear of HIV			Perceived negative			Avoidance of service			Discriminatory		
Characteristic	infection ^a			Image of PLHIV ^a			Duties ^a			practice ^a		
	(n = 215)			(n = 234)			(n = 234)			(n = 191)		
	aOR	95% CI ^b	p-value ^b	aOR	95%CI ^b	p-value ^b	aOR	95%CI ^b	p-value ^b	aOR	95%CI ^b	p-value ^b
Age	1.02	0.98-1.04	0.497	1.01	0.99-1.04	0.195	0.99	0.96-1.08	0.635	1.08	1.01-1.22	0.016
Sex (male)	0.78	0.53-1.77	0.767	1.55	0.99-2.00	0.055	0.72	0.21-1.00	0.050	0.30	0.06-1.41	0.138
HIV knowledge ^c	0.99	0.77-1.93	0.518	0.95	0.87-1.13	0.729	1.07	0.54-1.15	0.572	2.26	1.45-2.97	<0.001
Facility type (hospital)	1.12	0.73-1.59	0.592	0.99	0.57-1.61	1.000	0.54	0.23-1.02	0.055	5.13	1.82-10.98	0.002
Profession												
Physician/dentist	Reference			Reference			Reference			Reference		
Nurse/midwife	2.31	0.85-4.44	0.109	1.59	0.69-2.32	0.395	1.05	0.24-1.85	0.895	7.23	1.63-26.34	0.005
Others ^d	1.34	0.62-2.48	0.540	2.00	0.73-3.58	0.216	1.51	0.25-2.91	0.589	4.51	1.18-15.88	0.026
Interactions with PLHIV in 12 months (yes)	0.45	0.28-0.95	0.036	1.01	0.68-1.28	1.000	1.32	0.34-2.01	0.516	0.47	0.19-1.43	0.285
Receipt of any training (yes) ^e	0.48	0.29-0.68	<0.001	0.88	0.54-1.20	0.299	2.41	1.73-5.29	<0.001	0.76	0.26-12.57	0.643

aOR = adjusted odds ratio; CI = confidence interval; HIV = human immunodeficiency virus; PLHIV = people living with HIV.

^a = Fear of infection: how worry staff are with the prospect of HIV transmission when caring for PLHIV; perceived negative image of PLHIV: unfounded beliefs, presumptions of negative behaviors of PLHIV; avoidance of service duties: omission, neglect to provide services for HIV key populations if such an option becomes feasible; discriminatory practice: unnecessary preventive measures taken when caring for PLHIV.

^b = Confidence intervals and *p*-values from bias-corrected standard errors estimated from 10,000 bootstrap replicates.

^c = Measured using 10 questions on basic knowledge of HIV transmission and its mode of exposure.

^d = A class of cadres with limited or no medical duties, including nutritionists, physiotherapists, laboratory or radiology technicians, medical record officers and public health experts.

^e = Training covers one or more of the following topics: HIV and stigma and discrimination; infection control and universal precautions; informed consent and patient confidentiality; and stigma and discrimination in HIV key populations.

Discussion

The prevalence of SAD during early decentralization was high as found in this setting and in equivalently concerning levels for all the four indicators despite some notable differences between hospital and PHC HCWs. Highly prevalent discriminatory practices, exceeding 90% and 80% of HCWs at the referent hospital and PHCs respectively, may indicate a lack of understanding of infection control, as evidenced from the low training coverage and suboptimal knowledge scores. Different areas of SAD seem to have unique correlates in the type and direction of effect. Systemic correlates encapsulating individual HCWs within their workplace or health care professions exert a greater likelihood of SAD than do demographic correlates or those related to competency such as training, HIV knowledge, and service interactions.

A rather unusual finding is related to how training can have an opposing influence on certain SAD indicators. In this case, training was associated with a reduction in the odds of fear of infection and unexpectedly increased avoidance of service duties. Our liberal definition of training as any receipt in one or more competency topic may misrepresent the training effect in its association with service avoidance. We defined training as such since some of the training topics may broadly correspond to more than one SAD indicator. This approach could, however, underplay specific trainings that are more relevant to service avoidance and result in a statistical artifact for other SAD indicators that share little in construct with fear of infection.

The perverse association of HIV knowledge with discriminatory practices contrasts with prior studies [44–45] and deserves further attention. The low HIV knowledge scores with a narrow spread in this study population suggests knowledge levels that are yet sufficient to instill a proper comprehension of HIV transmission and how this can be prevented safely and emphatically during health care interactions with PLHIV. No other SAD indicators were correlated with

HIV knowledge. Improving knowledge is essential and needs be recognized as one of the factors that condition or mediate SAD-preventive behaviors as found in other studies of HCWs or other populations in LMICs [46–47].

Discriminatory practices are more prevalent in the hospital and among the non-physician cadres. HIV patients seeking care at the hospital tend to be in late clinical stages and have a worse prognosis, requiring more invasive procedures that may subject ill-informed HCWs to excessive prevention in the presence of a perceived elevated threat of HIV and opportunistic infections. As decentralization program matures, more burden of acute care will be alleviated through expanded health system capacity to diagnose and enroll a greater number of PLHIV into ART care at PHCs [48–50], and this growth in implementation can be expected to indirectly reduce the excess SAD of hospital HCWs. SAD in non-physician cadres can be attributed to the physician-centered model of care preceding decentralization that placed nurses or other medical professions in support roles, with a limited functional scope in the delivery of vital health care for PLHIV such as management of opportunistic infections or ART prescribing. Decentralization taps into the supply of non-physician cadres and empowers them to assume clinical leadership in HIV care with documented success in other LMICs [25–26]. Quasi-experimental evidence demonstrates SAD reduction among nurses after participation in health delivery leadership programs [51].

Given the high prevalence of SAD among HCWs in this early decentralization setting, capacity building activities to combat SAD can are needed. Among the top priorities is special trainings on HIV-related SAD with a hands-on approach to nurture effective service interactions that uphold the rights and dignity of PLHIV and HIV key populations. A review of the existing national curricula, which HCWs must complete to hold a professional certification in HIV care, can identify gaps in modules, program structures, and learning methodologies to better adapt to the needs of PLHIV and HIV key populations and to the demand of decentralized programs in clinical leadership roles for nurses and other relevant non-physician cadres. Engagement with PLHIV groups as experts in the review process, content updating, and training facilitation will ensure that curricula stay abreast of emerging community perspectives.

Current approaches to capacity building allow piecemeal deliveries where a curriculum or a competency program is completed on standalone topics accumulated over a period of time. While offering flexibility, these approaches can delay completion of essential skills and result in partial competence. Systematizing training deliveries coherently for a comprehensive coverage of topics is another area of improvement in capacity building. Preferably, all essential trainings should be completed prior to or at the earliest time around the decentralization program roll-out for all HCW cadres.

Our findings should be interpreted with caution. Apart from the artifactual problem described above, the training effect on SAD can also be an outcome of self-selection where the trainings attracted participation from HCWs with persistent discriminatory attitudes or those who reasonably protect themselves from nosocomial HIV transmission rather than vice versa due to the cross-sectional design. Secondly, two SAD indicators depicted in this study, namely perceived negative image and avoidance of service duties, evaluate perceptions and hypothetical (in)actions which may or may not bear resemblance to the actual behavior of HCWs and therefore should not be construed as a definite form of enacted SAD. Thirdly, we do not feel that social desirability drove our results given the prevalent SAD found in the study and the self-administration of the survey, which minimized the likelihood of responses being falsely congruent with the expectations of the research team. Lastly, our survey participants encompassed a wider pool of health care cadres, with some non-medical professions having minimal exposure to HIV and thereby elevating the SAD prevalence as compared to what would be expected if participation was limited to medical professions.

Program implementation in high-SAD environment such as the study setting can benefit from the development and evaluation of innovations in capacity building of HCWs to reduce SAD. Tracking of SAD indicators over time can give insights into how SAD evolves through phases of program maturity and impacts on long-term patient outcomes.

Conclusion

Early decentralization is a critical period with possible high SAD in service delivery as a broad spectrum of HCW cadres participate in rapidly expanding services to anticipate the surging demand for HIV care. Facility type in which HCWs provide services and types of HCW cadres, and to a lesser extent HIV knowledge and training, are the strongest correlates of SAD. Pre-decentralization preparatory work or timely interventions in capacity building, emphasizing competencies to create safe and emphatic interactions during health care delivery, can reduce SAD among HCWs going forward.

List Of Abbreviations

aOR

Adjusted odd ratio; ART:Antiretroviral treatment; CI:Confidence interval; HCWs:Health care workers; HIV:Human immunodeficiency virus; LMICs:Low-and middle-income countries; MSM:men who have sex with men; PHCs:Primary health centers; PLHIV:people living with HIV; PWID:people who inject drugs; SAD:Stigma and discrimination.

Declarations

Ethics approval and consent to participate

Written informed consent was sought from all respondents. Each respondent received a small souvenir for their participation in the survey. This study protocol received approval from Medical and Health Research Ethics Committee (MHREC) Faculty of Medicine Gadjah Mada University – DR. Sardjito General Hospital (Ref: KE/FK/350/EC/2016) and clearance permits from all participating facilities.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests

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Authors' contributions

GGL, IP, and RAA were responsible for the initial conception of the research questions and research design. AR contributed to develop the research question and the analyses data plan. AR and GGL conducted the statistical analyses, interpreted the data and wrote the paper. All author contributed to critical revisions and approved the final version of the article.

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Figures

Figure 1

Prevalence of SAD indicators by facility type HIV = human immunodeficiency virus; PHC = primary health center; PLHIV = people living with HIV; SAD = stigma and discrimination. Fear of infection: how worry staff are with the prospect of HIV transmission when caring for PLHIV; perceived negative image of PLHIV: unfounded beliefs, presumptions of negative behaviors of PLHIV; avoidance of service duties: omission, neglect to provide services for HIV key populations if such an option becomes feasible; discriminatory practice: unnecessary preventive measures taken when caring for PLHIV.

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