ABSTRACT

Objective To assess AIDS stigmatising attitudes and behaviours by prevention of mother-to-child transmission (PMTCT) service providers in primary healthcare centres in Lagos, Nigeria.

Design Cross-sectional survey.

Setting Thirty-eight primary healthcare centres in Lagos, Nigeria.

Participants One hundred and sixty-one PMTCT service providers.

Outcome measures PMTCT service providers' discriminatory behaviours, opinions and stigmatising attitudes towards persons living with HIV/AIDS (PLWHAs), and nature of the work environment (HIV/AIDS-related policies and infection-control guidelines/supplies).

Results Reported AIDS-related stigmatisation was low: few respondents (4%) reported hearing coworkers talk badly about PLWHAs or observed provision of poor-quality care to PLWHAs (15%). Health workers were not worried about secondary AIDS stigmatisation due to their occupation (86%). Opinions about PLWHAs were generally supportive; providers strongly agreed that women living with HIV should be allowed to have babies if they wished (94%). PMTCT service providers knew that consent was needed prior to HIV testing (86%) and noted that they would get in trouble at work if they discriminated against PLWHAs (83%). A minority reported discriminatory attitudes and behaviours; 39% reported wearing double gloves and 41% used other special infection-control measures when providing services to PLWHAs. Discriminatory behaviours were correlated with negative opinions about PLWHAs (r=0.21, p<0.01), fear of HIV infection (r=0.16, p<0.05) and professional resistance (r=0.32, p<0.001). Those who underwent HIV training had less fear of contagion.

Conclusions This study documented generally low levels of reported AIDS-related stigmatisation by PMTCT service providers in primary healthcare centres in Lagos. Policies that reduce stigmatisation against PLWHA in the healthcare setting should be supported by the provision of basic resources for infection control. This may reassure healthcare workers of their safety, thus reducing their fear of contagion and professional resistance to care for individuals who are perceived to be at high risk of HIV.
infections in 2014. While many countries in sub-Saharan Africa have made significant strides in reducing the burden of paediatric HIV infection, Nigeria failed to meet the 2015 Global Plan target of eliminating new HIV infections among children by 90% and keeping their mothers alive.

Available evidence shows that serious barriers against uptake of, and retention in, prevention of mother-to-child transmission (PMTCT) care exist in Nigeria. Recent studies have demonstrated the effectiveness of a culturally adapted, faith-based programme in increasing HIV counselling, testing and enrolment in care among pregnant women and their male partners in Nigeria. However, analysis of factors influencing refusal to test for HIV has revealed that fear of AIDS-related stigmatisation was a major reason for not testing. AIDS-related stigmatisation poses barriers at each step of the PMTCT care cascade, and such barriers must be addressed to reduce the burden of paediatric HIV infection in Nigeria. In 2014, Nigeria passed an antidiscrimination act that was intended to reduce AIDS-related stigmatisation. As part of a multisectoral approach to address AIDS-related stigmatisation and discrimination, the National Agency for Control of AIDS also developed the National HIV/AIDS Stigma Reduction Strategy as a guide to stakeholders, especially those that implement programmes and services at the community level. ‘AIDS-related stigmatisation’ refers to the prejudice, discounting, discrediting and discrimination directed at people perceived to be living with HIV or AIDS. Duckitt describes two concepts associated with AIDS-related stigmatisation: (1) prejudice (the attitude)—an evaluation or judgement towards members of a stigmatised group, which involves emotions of fear, disgust, anger and contempt; and (2) discrimination (the act)—differential treatment of individuals according to their membership in a stigmatised group. Analysis of Nigeria’s 2013 Demography and Health Survey showed that nearly 50% of adults (aged 15–49) responded ‘no’ to the question ‘Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV?’, thus indicating a high prevalence of AIDS-related stigmatisation in the society. Although individuals usually learn of their HIV seropositive status at a healthcare facility, healthcare settings are often cited as places where people experience the most direct AIDS-related stigmatisation. AIDS-related stigma experienced in healthcare settings is particularly concerning since it can directly prevent individuals from seeking prevention and care services. Stigmatising acts by healthcare workers may include refusal to treat HIV-positive persons, burning the linen of HIV-infected patients, charging HIV-infected patients for the cost of infection-control supplies and early hospital discharge. Other acts include ward segregation, isolation, lack of confidentiality (sharing information on patients’ HIV-positive status with hospital workers and other patients) and selective application of ‘universal’ precautions (eg, use of gloves with only HIV-infected patients). A study of AIDS-related stigmatisation by primary healthcare workers conducted in in Ilorin, Nigeria (about 180 miles from Lagos), in 2013, revealed that 98% of the health workers reported observing discrimination against persons living with HIV by other health workers. In a similar study in neighbouring Ghana, health workers who cared for persons living with HIV expressed concerns about secondary stigmatisation by family members and friends who know they interact with such patients. Some health professionals take extreme caution when treating HIV-positive individuals, exacerbating a medical environment in which AIDS-related stigmatisation leads to differential treatment of persons living with HIV/AIDS (PLWHAs).

Lagos recently intensified efforts to scale up PMTCT services through multiple strategies, including training and engagement of primary healthcare centre (PHC) personnel. As part of this strategy, PMTCT services were integrated into maternal and child health services at the PHC level in the state. PHCs represent people’s first level of contact with the health system and are typically located near the communities they serve. Task shifting of PMTCT services to PHCs has the potential to increase access to HIV counselling, testing, enrolment and retention in PMTCT services. However, in situations where most people know each other, and health workers know, and are known by many in the community, confidentiality may be difficult to maintain, thus leading to increased concern about AIDS-related stigmatisation. The objective of this study was to assess the extent to which AIDS-related stigmatisation existed in PHCs in Lagos state, Nigeria. It was hoped that evidence from the study would add to the body of information available to inform efforts to reduce health system barriers against the elimination of paediatric HIV in the state.

**DESIGN AND METHODS**

**Study area and setting**

The study was conducted in Lagos state, southwest Nigeria. With a population of 13.463 million inhabitants, Lagos is the commercial centre of both Nigeria and the West African subregion. The large population and the fluid movement of people in and out of the state have significant implications for the spread of HIV/AIDS. Lagos has 20 local government areas (LGAs), 37 local council development areas and approximately 2000 communities. The HIV prevalence rate among adults is 4.1%, higher than the national average of 3.2%. At the end of 2015, an estimated 217,569 individuals (adults and children) were positive for HIV/AIDS in Lagos state.

**Research design, study population and data collection**

This was a cross-sectional survey of PMTCT service providers in PHCs in Lagos State, Nigeria. Using a geopolitical map, we purposively selected central and western districts of the state for the study. These districts were chosen because they covered the largest areas of Lagos, including areas with populations with income levels that...
are most representative of the state. With approvals from the Lagos State Ministry of Health, the Lagos State AIDS Control Agency and the Lagos State Primary Healthcare Board, Medical Officers of Health in the LGAs within the two study districts were contacted with study information and an invitation to participate. Of the 10 LGAs in the western district, 8 responded and agreed to participate; 2 of the 5 LGAs in the central district responded and volunteered to participate. Consenting medical officers introduced the study team to the nursing officers in charge of PMTCT services in the PHCs within their LGAs. Eligible PMTCT workers at each PHC were then provided with detailed information about the study. Health providers who expressed willingness to participate were asked to sign an informed consent prior to data collection. To ensure confidentiality, each participant was assigned a unique study identification number. Data were collected from 161 consenting health workers in 38 PHCs in 10 LGAs in the central and western districts of Lagos. Only health workers involved in direct patient care (nurses and nursing assistants) or who had access to information on clients’ HIV serostatus (laboratory workers, pharmacists, pharmacy technicians and medical records personnel) participated. All PMTCT service providers in the 38 PHCs volunteered to participate in the study except for 20 who were absent (on leave or off-duty) during the time of the survey. Data were collected by JE and VY between April and August 2017 using direct interviews via Research Electronic Data Capture software.31

Data collection instrument

Data were collected using the Brief Questionnaire for Measuring AIDS-related stigmatisation by health facility staff, developed and validated by the U.S. Agency for International Development (USAID).32 An expert consultation by USAID reviewed an item pool of existing AIDS-related stigma measures, identified gaps and prioritised the items. The resulting instrument was field tested among different levels of health facility staff that works across diverse levels of HIV prevalence, language and healthcare settings. Field tests analysed both psychometric properties (α=0.78) and contextual issues.32 The instrument was piloted locally using a purposive sample of 10 PMTCT workers in two PHCs in Lagos. Participants in the pilot study were not included in the main study. Their feedback was used to modify and adapt the instrument as appropriate. Data on1 (1) participant demographics, (2) discriminatory behaviours, (3) opinions and stigmatising attitudes towards PLWHAs and (4) work environment were collected. Variables in demographic information and work-related characteristics included age (≤24, 25–39, 40–55 and 56 or above), gender, professional category (doctor, nurse and laboratory technician), professional contact with PLWHA (yes or no), number of staff working directly on provision of PMTCT services (1–3, 4–6, 7–9 and >9), number of HIV-positive patients served per week and HIV-related training status, including training on AIDS-related stigma (yes or no) (table 1).

Healthcare workers’ discriminatory behaviours were grouped into the following domains: extra infection precautions, observed stigmatisation and secondary

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Demographic and work-related characteristics of respondents*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baseline characteristics</strong></td>
<td><strong>No</strong></td>
</tr>
<tr>
<td>Age group (years) (n=160)</td>
<td></td>
</tr>
<tr>
<td>≤24</td>
<td>10</td>
</tr>
<tr>
<td>25–39</td>
<td>78</td>
</tr>
<tr>
<td>40–55</td>
<td>65</td>
</tr>
<tr>
<td>56 and above</td>
<td>7</td>
</tr>
<tr>
<td>Gender (n=161)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>135</td>
</tr>
<tr>
<td>Female</td>
<td>26</td>
</tr>
<tr>
<td>Profession (n=159)</td>
<td></td>
</tr>
<tr>
<td>Laboratory technicn/scientist</td>
<td>22</td>
</tr>
<tr>
<td>Medical records personnel</td>
<td>30</td>
</tr>
<tr>
<td>Community health extension worker</td>
<td>44</td>
</tr>
<tr>
<td>Nurse/midwife</td>
<td>17</td>
</tr>
<tr>
<td>Pharmacist</td>
<td>2</td>
</tr>
<tr>
<td>Database operator</td>
<td>11</td>
</tr>
<tr>
<td>Counselling specialist</td>
<td>9</td>
</tr>
<tr>
<td>Others†</td>
<td></td>
</tr>
<tr>
<td>Personal contact with PLWHA (n=159)</td>
<td>110</td>
</tr>
<tr>
<td>Yes</td>
<td>49</td>
</tr>
<tr>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Number of staff working directly on provision of PMTCT (n=160)</td>
<td></td>
</tr>
<tr>
<td>1–3</td>
<td>50</td>
</tr>
<tr>
<td>4–6</td>
<td>65</td>
</tr>
<tr>
<td>7–9</td>
<td>26</td>
</tr>
<tr>
<td>&gt;9</td>
<td>19</td>
</tr>
<tr>
<td>Number of HIV-positive patients served per week (n=161), median (IQR)</td>
<td></td>
</tr>
<tr>
<td>Training (n=161)</td>
<td>96</td>
</tr>
<tr>
<td>HIV stigma and discrimination</td>
<td>114</td>
</tr>
<tr>
<td>Infection control and universal precautions (including postexposure prophylaxis)</td>
<td>120</td>
</tr>
<tr>
<td>Patients’ informed consent, privacy and confidentiality</td>
<td>93</td>
</tr>
<tr>
<td>Key population stigma and discrimination</td>
<td></td>
</tr>
</tbody>
</table>

*Some respondents left some questions with blanks or no answers; these were not included in the number of responses for the specific question.
†Other profession comprises accountants, cashiers and administrators.

n, number of responses; PLWHA, person living with HIV/AIDS; PMTCT, prevention of mother-to-child transmission.
stigmatisation (table 2). For extra infection precautions and observed stigmatisation, the original responses for each statement were 1 (yes), 0 (no) or 777 (I would prefer not to answer or cannot remember). A score of 1 was given for a ‘yes’ response and 0 for ‘no’, ‘I would prefer not to answer’ or ‘can’t remember’. For secondary stigmatisation, participants responded using a 4-point Likert-type scale that ranged from 0 (not worried/never) to 3 (very worried/most of the time). Higher scores indicated that the respondent held a stronger discriminatory attitude.

Attitudes towards PLWHA were assessed using five questions on opinions about people living with HIV, four questions concerning fear of contracting HIV infection, four questions on willingness to care for key populations and 15 questions related to health workers’ resistance to treat PLWHA and key populations (table 3). For opinions about PLWHA, the responses were scored 1 for ‘yes’ and 0 for ‘no’ or ‘don’t know’. For the remaining variables, participants responded using a 4-point Likert-type scale ranging from 0 (strongly disagree/don’t know) to 3 (strongly agree). Higher scores indicated that the respondent held a stronger stigmatising attitude. Work environment measured policies related to HIV management/support and infection-control guidelines/supplies (six questions). A score of 1 was given for a yes response if a policy document was observed by the data collector and 0 for no or don’t know if none was observed. Higher scores indicated greater health facility policies and procedures (table 4).

Data analysis
All analyses were performed using STATA statistical software V.14. Descriptive statistics were used to describe healthcare workers’ demographic characteristics, professional cadre, professional contact with PLWHA, number of HIV-positive patients served per week, HIV-related discriminatory behaviours and stigmatising attitudes, and presence of institutional policies and procedures. Pearson correlation coefficients were calculated to assess the relationship between professional resistance to treat PLWHA and key populations, negative emotions towards people with HIV, negative opinions about key populations, fear of contagion, observed stigmatisation, secondary stigmatisation, HIV training, institutional policies, work environment, and demographic variables such as age and gender. Furthermore, three multiple regression analyses were conducted to examine associations among levels of discrimination at work, stigmatising attitudes and presence of institutional policies and procedures, controlling for the simultaneous effects of participant age, gender, professional cadre, personal contact with PLWHA and HIV-related training experiences. We tried to answer the following question: how were healthcare workers’ attitudes and discriminatory behaviours towards PLWHA associated with work environment, observed stigmatisation, and institutional policies and procedures?

**Table 2** HIV-related discriminatory behaviours among healthcare workers* (n=161)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Yes n (%)</th>
<th>No n (%)</th>
<th>No opinion n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra infection precautions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoid physical contact</td>
<td>18 (11.18)</td>
<td>140 (86.96)</td>
<td>3 (1.86)</td>
</tr>
<tr>
<td>Wear double gloves</td>
<td>62 (38.51)</td>
<td>95 (59.01)</td>
<td>4 (2.48)</td>
</tr>
<tr>
<td>Use any special infection-control measures with PLWHA that you usually do not use</td>
<td>66 (40.99)</td>
<td>90 (55.9)</td>
<td>5 (3.11)</td>
</tr>
<tr>
<td>Observed stigma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workers unwilling to care for a patient living with or thought to be living with HIV</td>
<td>21 (13.04)</td>
<td>134 (83.23)</td>
<td>6 (3.73)</td>
</tr>
<tr>
<td>Workers providing poorer quality of care to patients with or thought to be living with HIV</td>
<td>14 (8.70)</td>
<td>137 (85.09)</td>
<td>10 (6.21)</td>
</tr>
<tr>
<td>Healthcare workers talking badly about people with or thought to be living with HIV</td>
<td>7 (4.35)</td>
<td>150 (93.17)</td>
<td>4 (2.48)</td>
</tr>
<tr>
<td>Secondary stigma†</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worried about people talking badly about you because you care for PLWHAs</td>
<td>21 (13.04)</td>
<td>140 (86.96)</td>
<td></td>
</tr>
<tr>
<td>Worried about friends and family avoiding you because you care for PLWHAs</td>
<td>22 (13.66)</td>
<td>139 (86.34)</td>
<td></td>
</tr>
<tr>
<td>Worried about colleagues avoiding you because of your work caring for PLWHAs</td>
<td>9 (5.59)</td>
<td>152 (94.41)</td>
<td></td>
</tr>
<tr>
<td>Experienced people talking badly about you because you care for PLWHAs</td>
<td>28 (17.39)</td>
<td>133 (82.61)</td>
<td></td>
</tr>
<tr>
<td>Have been avoided by friends and family because you care for PLWHAs</td>
<td>12 (7.45)</td>
<td>149 (92.55)</td>
<td></td>
</tr>
<tr>
<td>Have been avoided by colleagues because of your work caring for PLWHAs</td>
<td>11 (6.88)</td>
<td>149 (93.13)</td>
<td></td>
</tr>
</tbody>
</table>

*Some respondents left some responses blank; these were not included in the number of responses for the specific question.
† For consistency within the scale, ‘strongly agree’ and ‘agree’ were collapsed into a ‘yes’ category, and ‘strongly disagree’ and ‘disagree’ were collapsed into a ‘no’ category; ‘once or twice,’ ‘several times’ and ‘most of the time’ were also collapsed into a yes category, and ‘never’ were collapsed into a no category.

n, number of responses; PLWHA, person living with HIV/AIDS; PMTCT, prevention of mother-to-child transmission.
workers’ demographics, work and HIV training, and perceived risk of infection at work associated with their stigmatising attitudes and work environments? Regression coefficient estimations and their significant levels are described. The following key major assumptions were tested and confirmed to be satisfactory prior to the analyses: normality, linearity, absence of multicollinearity and homoscedasticity.

Patient and public involvement
Patients or members of the public were not involved in the design, conduct or dissemination of this study.

RESULTS
Respondent characteristics
As shown in table 1, most respondents (83.8%) were women aged 25–39 years (48.7%) or 40–55 years (40.6%). Professional cadres represented in the survey included 44 nurses/midwives (27.7%), 30 community health extension workers (18.9%) and 24 laboratory personnel (15.1%). Sixty-nine percent of the respondents reported having direct contact with HIV-positive individuals, averaging two contacts per week. Most respondents (74.5%) indicated having undergone previous training on informed consent and confidentiality, and on infection control and
universal precautions (70.8%). Sixty per cent reported undergoing training on AIDS-related stigmatisation.

**Discriminatory behaviours**

As shown in table 2, a majority of respondents (80%) had not encountered another healthcare worker who was unwilling to care for a PLWHA, witnessed provision of poor-quality services to PLWHAs or witnessed other healthcare workers talking badly about PLWHA. However, 39% reported wearing double gloves, and 41% used other special infection-control measures when providing services to PLWHAs. Regarding secondary stigmatisation, participants reported low levels of enacted secondary stigmatisation and low levels of anticipated secondary stigmatisation. More than 85% were neither worried about people talking badly about them because of their work with PLWHAs, nor concerned about friends and family or colleagues avoiding them. Most did not experience people talking badly about them (83%) and had not been avoided by friends and family (93%) or colleagues (93%) because they cared for PLWHAs.

**Attitudes towards PLWHA**

A small proportion (18%–24%) of respondents indicated that they would prefer not to provide services to PLWHAs or key populations (table 3). Similarly, a small proportion of the respondents expressed concern about HIV transmission through drawing blood from (31%) or dressing wounds of (25%) PLWHAs. Less than half (40%) of the respondents believed that most PLWHAs did not care if they infected other people, while very few (26%) believed that most PLWHAs had multiple sexual partners or engaged in irresponsible behaviours (19%). Importantly, 94% agreed that women living with HIV should be allowed to have babies if they wished (table 3).

When asked about occupational safety, 46% believed HIV/AIDS made their jobs risky. A similar proportion thought it was best to train a few specialists who would be responsible for treating PLWHAs, and 32% expressed fear of contracting HIV while on the job. Twenty-two per cent would prefer to refer persons with HIV or AIDS to their professional colleagues, and 19% would rather not have those perceived to be at high risk of HIV/AIDS (eg, persons who inject drugs or men who have sex with men) as patients. Although 50% of the respondents would not eat at a restaurant where the chef had HIV or AIDS, 82% admitted that they often had tender, concerned feelings for PLWHAs (table 3).

**Health facility policies and procedures**

As shown in table 4, most of the health facilities (75%) had documented policies that aim to protect PLWHA from AIDS-related stigmatisation, including policies on HIV counselling and testing. Eighty-six per cent of the respondents were aware that they could not test patients for HIV without their knowledge, and 83% indicated that they would get in trouble at work if they were found to discriminate against a PLWHA. Thirty per cent of the respondents noted that they did not have adequate supplies to reduce the risk of becoming infected with HIV.

**Correlation coefficients of the identified variables**

As shown in table 5, opinions about PLWHAs were significantly associated with willingness to care for PLWHAs (r = 0.28, p < 0.001), professional resistance (r = 0.37, p < 0.001) and quality of healthcare policies and procedures (r = 0.23, p < 0.01). Fear of contracting HIV infection was significantly associated with professional resistance (r = 0.34, p < 0.001), which was significantly correlated with preference not to care for PLWHAs (r = 0.28, p < 0.001). In terms of sociodemographic variables, age was significantly correlated with opinions of healthcare workers about PLWHA (r = 0.17, p < 0.05) and healthcare policies and procedures (r = 0.28, p < 0.001). Providers who underwent HIV training had less fear of contracting HIV infection (r = -0.21, p < 0.01) and were less professionally resistant (r = -0.18, p < 0.05).

**Multivariate results**

Results of multiple regression analyses (table 6) show that health workers’ HIV training and perceived on-the-job risk of infection were important predictors of stigmatising
attitudes. Health workers who had undergone HIV-related training tended to report significantly less stigmatising attitudes ($\beta = -0.10$), and those who perceived higher risk of infection at work were more likely to display higher levels of stigmatising attitudes ($\beta = 0.84$).

HIV training was the most important predictor of perceived institutional support ($\beta = 0.21$). In addition, older respondents were shown to report stronger institutional support of their work with PLWHAs ($\beta = 0.57$). In the final and complete regression model of discrimination at work, opinions and stigmatising attitudes against PLWHAs were the most important factors in predicting discrimination at work, as the stronger the stigmatising attitudes, the more frequent or intense the discrimination ($\beta = 0.13$).

**DISCUSSION**

Although AIDS-related stigmatisation poses significant risk to the physical and psychosocial well-being of PLWHAs, our current understanding of the extent of the problem among healthcare providers working within primary healthcare centres in Nigeria is based on a few studies. 24-33 The current study of primary health centres in Lagos, Nigeria, helps fill this knowledge gap by examining PMTCT service providers’ stigmatising attitudes,
perceived risk of infection and discriminatory behaviours towards patients living with HIV.

Contrary to earlier studies of HIV/AIDS stigmatisation in the healthcare setting in Nigeria and elsewhere, our study revealed low levels of AIDS-related stigmatisation by health workers who provide PMTCT services in Lagos. Overall, we found low levels of secondary stigmatisation and fewer negative attitudes and opinions towards PLWHAs. We also found that most health facilities had policies and procedures that dealt with informed consent, confidentiality and antidiscriminatory practices. Our analysis revealed that HIV training of PMTCT service providers was associated with reduced perception of risk of HIV infection and less stigmatising attitudes and opinions against PLWHAs.

The generally low levels of AIDS-related stigmatisation observed among the study participants could be explained by several factors. First, as antiretroviral therapy (ART) becomes more widely available, stigmatising attitudes may decrease in the population in general and among health workers. Poor access to care has been associated with AIDS-related stigma. Analysis of Demography and Health Survey (DHS) data from 18 countries in SSA found that for every 10-percentage-point increase in the proportion of PLWHAs on ART, reported HIV stigmatisation decreased to 2.3–2.8 percentage points. Health workers may feel more empowered, less burdened and less resentful towards PLWHAs when they have the means to provide treatment to them. Earlier studies have shown that lack of available resources and treatment for patients with HIV in healthcare settings was associated with an increased sense of despair among health workers, resentment towards patients with HIV and feelings of vulnerability to infection.

In January 2017, Nigeria adopted the 90–90–90 plan announced by the UNAIDS to ensure that, by 2020, 90% of all people living with HIV will know their HIV status; 90% of all people with diagnosed HIV infection will undergo sustained ART; and 90% of all people undergoing ART will have viral suppression. Although there is still a huge unmet need for ART in about a third of the states, the number of persons currently on ART has increased from less than 25% in 2014 to 30% in 2017. Second, the Lagos state government and the US implementing partners, including the Centers for Disease Control and Prevention, the USAID and other local and US non-governmental agencies, are actively overseeing PMTCT implementation. In fact, during field data collection, we witnessed several PHCs that were implementing training sessions facilitated by partner agencies. Extensive literature supports the association between HIV/AIDS training and awareness and reduced AIDS-related stigmatisation.

Third, we found that most of the health workers were aware of the HIV/AIDS policies at their centres. Participants noted that they would be disciplined if they were discovered engaging in behaviours that were contrary to policy provisions. HIV antidiscriminatory policies in healthcare settings have been shown to be positively associated with reduced stigmatisation and discrimination against PLWHAs by health workers.

While government oversight and supporting partnerships are encouraging, it should be noted that 30% of the respondents indicated that they did not have adequate supplies to reduce their risk of becoming infected with HIV. The shortage of supplies to support universal safety measures is a common challenge in many healthcare facilities in low-income and middle-income countries, potentially leading to avoidance of PLWHAs and contributing to a preference not to provide services to PLWHAs and key populations. During data collection visits, we noted that most of the primary healthcare centres were not supplied with electricity, a perennial problem in Nigeria. Each PHC received roughly 10000 naira (US$30) monthly for gasoline to power standby generators; however, in Nigeria, gasoline is expensive and often in short supply. We observed instances in which health workers contributed out-of-pocket money to purchase gasoline for their standby generators. At night, many facilities also used rechargeable battery-powered emergency lanterns, including in delivery rooms. Such work conditions could have implications for job dissatisfaction, resulting in discrimination against PLWHAs.

Strengths of the study
This study has several notable strengths. First, we used a reliable standardised instrument for assessing AIDS-related stigmatisation within the healthcare setting that incorporates relevant constructs and demonstrates discriminant validity. Second, this study supports the utility of the USAID instrument in assessing AIDS-related stigmatisation in primary healthcare centres and related non-hospital settings in low-income countries. Third, unlike previous studies, our analysis identified factors that mediate AIDS-related stigmatisation in primary healthcare centres, including training and policies. As countries continue to implement task shifting of services to increase access to antiretroviral treatment, further studies should assess the relationship between AIDS-related stigmatisation in primary healthcare centres and uptake of counselling, testing, enrolment into care and retention.

Limitations
This study has some limitations. First, it was conducted in one state in Nigeria. Thus, the findings are likely to be context specific and may not be generalisable to other low-income countries. Second, findings from this study were based on self-reported stigmatising attitudes and discriminatory behaviour and may therefore be subject to social desirability bias. The questions on discriminatory behaviour, however, provided an opportunity for respondents to indicate observance of discrimination against PLWHAs by other workers, a measure that would presumably be less prone to social desirability bias than evaluation of their own behaviour. Still, the reported discrimination was low. Future studies of stigmatisation by health workers would benefit from use of direct
observation and patient-reported measures to explore whether providers’ perceptions of their attitudes and actions are in alignment with patients’ and third-party observers’ accounts. Even in the absence of such information, providers’ perceptions can be used to inform the development of provider trainings that are responsive to the proficiencies and deficits that providers have identified for themselves.

Results of this study showed that most of the participants were women and nurses. In healthcare facilities in Nigeria, most healthcare workers are nurses who are usually women. This sample is in accordance with the expected population of healthcare workers in public health facilities in Nigeria. A study conducted by Andrewin and Chien in Belize showed that women and non-religious healthcare workers showed more stigmatising behaviour in attitudes of blame/judgement. However, in the present study, we did not demonstrate that gender influenced stigmatisation by health workers, and we know of no cultural norms that would suggest otherwise. Nevertheless, future studies to investigate the influence of gender on stigmatising attitudes and behaviours among healthcare workers may be important. We also did not have enough cadres of other health workers to facilitate an investigation of whether stigmatising behaviours varied by professional cadre.

CONCLUSIONS

This study provides information that can be cascaded into an overall strategy to reduce AIDS-related stigmatisation in the healthcare setting. There is a need to further elucidate issues related to professional resistance and fear of HIV infection among healthcare workers. Issues related to health workers’ values and professional ethics also deserve attention. Since personal attributes predict stigmatising behaviour, the values and beliefs of healthcare workers should be explored and integrated into future AIDS stigma trainings. The finding regarding attitudes towards care provision for key populations also calls for emphasis on professional codes of conduct and ethical provision of care to all deserving clients, irrespective of their status in society or other personal attributes.

Finally, it is important to have documented policies that reduce stigmatisation against PLWHA in the healthcare setting. However, such policies should be supported with the provision of basic resources for infection control. This may help to reassure healthcare workers of government’s commitment to their health and safety and may help to address fear of contagion and professional resistance to care for individuals that are perceived to be at high risk of HIV.

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Contributors

All authors made significant contributions to the study and manuscript preparation. JEE conceptualised and designed the study; JEE and VY collected the data; JEE and MRB administered the study; HSA analysed the data; HSA, JEE and Ji interpreted the data; HSA, JEE, VY, NA-ZK and BEL drafted the original manuscript; and JEE, HSA, Ji, MRB, NA-ZK, BEL and DA reviewed and edited the manuscript.

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Competing interests

None declared.

Patient consent for publication

Not required.

Ethics approval

The Nigeria Health Research Ethics Commission approved the study. Additional permissions were obtained from the Lagos State Ministry of Health and the Lagos State Primary Health Care Board.

Provenance and peer review

Not commissioned; externally peer reviewed.

Data sharing statement

Data for this study were collected through a survey of health workers who provided prevention of mother-to-child transmission services at primary health care centres in the western and eastern districts of Lagos. All relevant summary data are provided in this paper. Interested readers may request data without restriction from the lead author, and Fulbright US Scholar to the University of Lagos (2016-2017), Professor John E Ehiri (ehiri@email.arizona.edu).

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