ORIGINAL RESEARCH ARTICLE

Utilization of HIV Testing and Counseling in Ghana: Implications for Universal Coverage

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Abstract

HIV testing and counselling (HTC) is a gateway to all systems of AIDS-related care. This study examined national programme data to highlight gaps in HTC service utilization, regional differences and differential use of various HTC programs in Ghana in the period, 2007-2010. Analysis showed HTC increased rapidly across the country, however the increase was not uniform across the 10 regions. Also huge differential use of current HTC programs (Diagnostic Centre(DCs), Know Your Status campaigns(KYS) and PMTCT Centres) emphasized differential preferences of various testing programmes. Testing through KYS was substantially higher than testing done at DCs. However, HIV positive test rates at DCs were comparatively higher across the regions than those of KYS. KYS thus attracts and conducts huge numbers of HIV tests, yet it captures relatively low HIV positives. A well structured and more targeted expansion of facility-based HTC services to capture most vulnerable population groups is needed. *(Afr J Reprod Health 2014; 18[1]: 145-155).*

Keywords: HIV testing and counseling, HIV testing programs, regional differences, National AID/STI Control Program, Ghana

Résumé

Le dépistage et le conseil (DC) à l'égard du VIH est une passerelle vers tous les systèmes de soins liés au sida. Cette étude a examiné les données des programmes nationaux de mettre en évidence des lacunes dans l'utilisation des services de DC, les différences régionales et de l'utilisation différentielle des divers programmes DC au Ghana dans la période 2007-2010. L'analyse a montré que le DC a augmenté rapidement à travers le pays, mais l'augmentation n'est pas uniforme dans les 10 régions. En plus, l'utilisation différentielle énorme des programmes actuels de DC (Centre de diagnostic (CD), les campagnes « Connaissez votre statut immunologique » (CVS) et des Centres de la (PTME) ont souligné les préférences différentielles de divers programmes de dépistage. Le dépistage à travers le CVS était sensiblement plus élevé que les dépistages effectués aux CDs. Toutefois, les taux de dépistages positifs pour le VIH dans les pays en développement ont été relativement plus élevés à travers les régions que celles de CVS. Le CVS attire donc et effectue un très grand nombre de dépistage du VIH, mais il capte la séropositivité relativement faible. Il faut une expansion bien structurée et plus ciblée des services de DC dans des établissements de santé pour capturer les groupes de population les plus vulnérables. *(Afr J Reprod Health 2014; 18[1]: 145-155).*

Mots-clés: dépistage du VIH et de conseil, programmes de dépistage du VIH, différences régionales, programme national de contrôle du SIDA / IST, Ghana

Introduction

HIV testing is known to profoundly reduce AIDS-related morbidity and mortality[1-4], by functioning as gateway to all systems of AIDS-related care, from prophylactic treatment of opportunistic infections and screening for immune status, to the eventual use of anti-retroviral therapy (ART)[5-7]. Knowing one's sero-status offers opportunity for early medical intervention[3,8,9], and there is undeniable evidence that antiretroviral therapy decreases mortality and morbidity in persons living with HIV[11]. ART also reduces the likelihood of forward transmission, whether through sex,

delivery, or breastfeeding[11-13] by lowering plasma HIV-RNA[14,15]. In Ghana, although HIV testing is encouraged among the general population, focus must be on at risk populations considering the nature of the epidemic in the country.

HIV epidemic in Ghana is described as a mature and mixed epidemic with the prevalence among the general population ranging between 1.9 and 1.5 for the past five years (2007 to 2011)[16,17]. However, prevalence among some groups and some geographic locations in the country is much higher. For instance, about 25% of female sex workers (FSW) and men who have sex with men (MSM) are HIV positive[17]. Also, in 2010, the Eastern regional HIV prevalence was 3.2%, and Agomenya an urban site in the region recorded the highest HIV prevalence of 7.8% in adult (15+years) population in the country[18]. In 2011, the Central region recorded the highest HIV prevalence of 4.7% in the country[18].

Significant investments have been made by the Ghanaian government and their international partners in capital infrastructure and human resources to increase access across the country for HIV testing over the past decade[19]. In 2009, funds expended by Ghana Health Service/National AIDS/STI Control Program (NACP) on HIV services excluding the cost of ART was more than seven million US$. Almost half of this amount went into training health personnel for the provision of HIV Testing and Counseling (HTC) and ART[20]. Despite these high investments, as exist in other African countries inequalities exist in the distribution of testing programs and facilities across the 10 administrative regions of Ghana. In addition, several studies not only suggest differential use of testing programs, but there are also concerns that facility-based HTC is under-utilized among various sub-populations[5,7,9,21-24].

To achieve its target of universal HIV testing coverage by the year 2015 and ensure easy access to HTC across the country the Ministry of Health/Ghana Health Service requires the implementation of a structured and targeted HTC approach based on empirical evidence[20]. It is necessary for the government to critically assess not only the ability of each testing program to capture high HIV positives, but also consider the location and establishment of these testing programs and facilities in the under-served and high HIV prevalent geographical areas of the country.

The objective of this study was to examine NACP facility records over a four year period, to highlight gaps in HTC service utilization, regional differences and differential use of various HIV testing programs in Ghana. This study also examines the proportion of HIV positive results across different testing services in Ghana, to determine which HTC outlets in Ghana more effectively capture HIV positives in the country. This research can inform Ministry of Health/Ghana Health Service in its quest to improve access to HTC, as universal access is a key component of the Ministry of Health's second Five-Year Ghana Health Sector Strategic Framework (2006-2010) and the National Strategic Program (2011-2015)[17,19].

Methods

Data Source

We review NACP facility-based service data across the ten administrative regions in Ghana over a four year period (2007-2010).

National AIDS Control Program (NACP) Data Sources

A review of NACP's HTC service provision records from January 2007 to December 2010 was undertaken in April 2011. These are the first four years of the second five-year Health Sector Strategic Framework (2006-2010). The NACP is responsible for coordination and implementation of HIV and AIDS related aspects of the Ghana Health Strategic Framework under the Disease Control and Prevention Department of the Public Health Directorate, Ghana Health Service[19]. This allows for comparability of data across the ten administrative regions in Ghana. These service provision data are routinely collected from all health facilities in the country, including community and sub-district health facilities; and district, regional, and Teaching Hospitals. These are computerized data aggregated at regional level, and submitted quarterly to NACP. Computerized

records are accompanied by hard copies verified and certified by the Regional HIV Coordinator. For quality assurance purposes, service provision data is cross checked by the NACP, using such indicators as the actual numbers of HIV test kits supplied[19].

NACP Testing Services

Currently, NACP offers three avenues for HTC in Ghana, including facility-based Diagnostic Centers (DC); outreach services called *Know Your Status* Campaigns (KYS); and testing through Prevention of Mother-to-Child Transmission (PMTCT) services.

Diagnostic Centers (DC) are health facility-based locations where people can access information on HIV and check their sero-status. DCs are located in all 170 districts and most sub districts of the country. The distribution of DC's is purposeful, and based on getting a DC into each sub-district within the districts. Distribution of these centers have been part of activities of the NACP geared towards universal access since its establishment in 1987, and at the end of the year 2010, over 1,000 DCs were functional in Ghana[20]. The majority of HIV tests done within DCs are through referrals by health practitioners. This referred sub-population is clinically selected, and usually has a high probability of being HIV positive. In addition, individuals may voluntarily walk-in to check their status at the DCs, i.e. self referrals. The number of individuals tested at these centers between 2007- 2010 was over 600,000.

Know Your Status Campaign (KYS) services were initiated in all 10 regions of Ghana in 2007 to encourage the general public to know their sero-status. All public and some private health facilities, as well as mission and faith-based health facilities, are supported by NACP to undertake outreach HTC in their catchment communities. These efforts are organized under the KYS campaign for adults 15 years and above. The KYS offers equal HTC opportunities for all community members (men and women) outside the health facility. KYS are organized at static locations or as mobile testing services within the community; the number of KYS stations depends on size and population of target community. Health workers usually stay at the static locations for a day or more depending on the patronage and time available for the campaign. While clients self-select for testing through KYS, there is general encouragement for all community members to test, irrespective of personal risk for HIV. Data from DCs in 2007 and 2008 included those tested through KYS in each region. However, from 2009 the KYS data were disaggregated and shown as a separate category from the DC.

Prevention of Mother-to-Child Transmission (PMTCT) Services. Although Ghana adopted a policy of using combination antiretroviral therapy for all pregnant women carrying HIV since 2006, PMTCT has been provided since initiation of ART in 2003. PMTCT centers are provided as part of reproductive health services (antenatal care and deliveries), at all levels in the public and private health sector. It offers an opportunity for all pregnant women to know their sero-status and for eventual anti-retroviral therapy if needed. Although HTC is encouraged at all PMTCT centers women can opt-out. At the end of 2010 over 1,200 PMTCT centers were functional, making PMTCT available in all districts and most sub-districts in the country[20].

Outcome measures

Total counts of testing from January to December of each year 2001-2010 were captured from the national database. Since records are aggregated over the entire twelve (12) months of each year, seasonality of testing could not be addressed. Data included number of HIV tests conducted and number of positive test results obtained. In addition, data was collected for 2010 (based on the national population and housing census) on total regional population aged 15 years or more[25], total HTC conducted per region among those aged 15 years or more, % of regional population aged 15 years or more tested for HIV and regional HIV Prevalence among those 15 years and above. Missing data was not systematic across the various sources, in that it did not cluster in DCs, KYS or PMTCT. Therefore data from all these centers were included in the analysis. Missing data were minimal accounting for less than 1% of data source and was noticed in only one of the ten

regions.

Data Analysis

Descriptive statistics of annual testing for DCs, KYS and PMTCT were generated by region, and the proportion of HIV positive tests presented separately for DCs, KYS and PMTCT. Records are compared and trends over time examined. Data were entered into Excel files (Microsoft Excel 2007) and imported into SPSS (version 19) for analysis.

Results

Overall annual HTC across the regions, 2007-2010

HIV testing and counseling from all locations (DC, KYS and PMTCT) increased over the four year period, 2007 to 2010 and showed fluctuations across the ten regions, and over time as illustrated in Figure 1. There were minimal increases in the number of tests conducted from 2007 to 2008. Considerable increases occurred across all 10 regions between 2008 and 2009. The dramatic increase is due to the large number of HTC through the KYS campaign. High increases in HTC corresponded with regions with high populations across the country; the Ashanti region which is the most populous region had the highest increase in HTC while the Greater Accra region (the second most populous region) had the second highest increase in HTC over the four year period. The Western region had the lowest number of HTC conducted over the period although it is the fourth most populous region.

Apart from the Ashanti region, all the other regions showed diminished progression in HTC from 2009 to 2010. Two regions (Central and Brong Ahafo regions) actually experienced declined in HTC from 2009 to 2010. Compared to 2007, HTC conducted showed wider disparities in 2010 and suggests growing inequities on the use of testing.

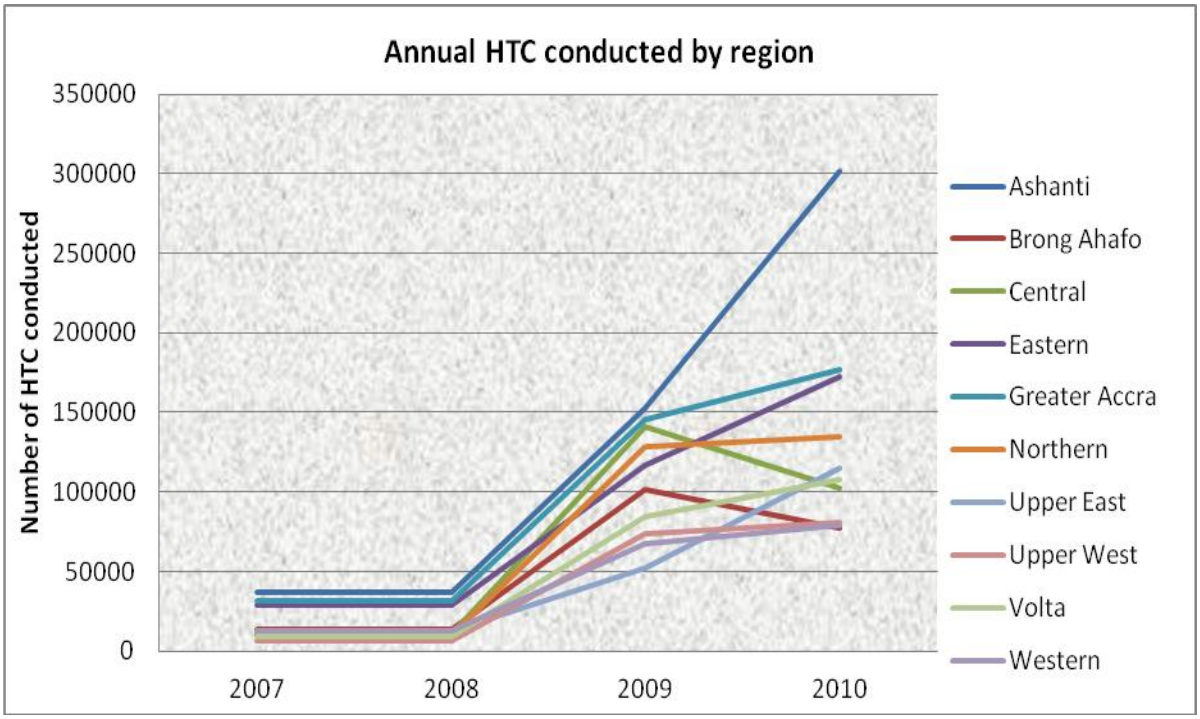

Figure 1: HTC from all locations (DCs, KYS and PMTCT) in the 10 regions of Ghana, from 2007 – 2010.

Proportion of regional population (15 years and above) tested for HIV

Table 1 illustrates the proportion of regional populations 15 years and above, (based on 2010 National population and housing census) and the proportion of the regional population tested for HIV in 2010. The total number of HTC conducted were higher for the densely populated regions Ashanti, Greater Accra, Eastern, Western and Brong Ahafo, however the proportion of the total population tested for HIV in 2010 were all less than 12% in these five densely populated regions. The Western region despite being the region with the fourth highest population 15 years and above had the lowest coverage for HTC. It is important to note that these five regions with the highest populations are the regions with high HIV prevalence of 3.0%, 2.6%, 3.2%, 2.4% and 2.0% respectively. The Upper East and Upper West region had relatively low absolute number of HTC conducted but this translated into very high percentage of HTC coverage of 22.4% and 22.5% respectively. The Upper West region had the highest proportion of the population tested for HIV but was actually the region with the second lowest HIV prevalence (1.7%).

Table 1: HIV testing in those aged 15 years and above in the 10 regions of Ghana in 2010

Region	Regional Population (aged 15 years and above)*	Total HTC conducted (aged 15 years and above)	% of regional population (aged 15 years and above) tested for HIV	Regional HIV Prevalence (among those 15 years and above)
Ashanti	2,662,672	301434	11.3	3.0
Brong Ahafo	1,224,821	77490	6.3	2.0
Central	1,180,199	102687	8.7	1.7
Eastern	1,450,868	172653	11.9	3.2
Greater Accra	2,530,344	177011	7.0	2.6
Northern	1,209,977	134276	11.1	0.7
Upper East	514,900	115220	22.4	2.4
Upper West	360,885	81049	22.5	1.7
Volta	1,171,393	108033	9.2	1.8
Western	1,299,683	79225	6.1	2.5
Total	**13,636,329**	**1349078**	**9.9**	**2.0**

*Regional Population is based on 2010 National Population and Housing Census

Testing at DCs

There was rapid increase in the number of HIV tests conducted at DCs in all 10 regions of the country from 2007 to 2010 as in Table 2. The overall number of tests done in 2008 was more than double the number in 2007, and the percentage increase overall in number of tests, (2007-2010) was 276.4%. All regions showed progressive increases in number of HIV tests conducted. The highest percentage increase was in the Volta region (845.6%) and lowest was in Ashanti region (122.5%). Also, there was an increase in number of DC locations established in all districts and sub-districts. Percentage increase overall in DCs was 219.0 % over the four year period.

Data from Table 2 indicates that the numbers tested is closely aligned with the number of DC sites available – i.e. both increased by more than 200%. However, the relative increase over this period differed across the regions. For example, the percentage change in number of HIV tests varied from 845% in the Volta region to only 123% in the Ashanti region, while the percentage change in number of DC sites varied from 500% in

the Eastern region to only 68% in Greater Accra region. Also, the concordance between number tested and number of facilities was not at all consistent across the regions. For example, in the Upper West, testing sites increased by only 92% (still almost doubling), but perhaps because the starting number was so small (38), that change wrought a massive increase in the number of tests (percentage change of 563%). A similar pattern occurred in Northern and Volta region as well. – where just over tripling the number of facilities rendered more than 800% increases in the number of tests in each of these regions.

Table 2: Overall number of HIV tests conducted through DC's for each region of Ghana and percent change in the annual number of tests conducted (2007 to 2010)

Region	**Total HIV tests conducted in DC services, and *number of DC facilities.***							
	2007 HIV tests (n)	*# of DCs*	2008 HIV tests (n)	2009 HIV tests (n)	2010 HIV tests (n)	*# of DCs*	% change in number of annual HIV tests 2007-2010	*% change in number of DCs 2007-2010*
Ashanti	8915	*58*	16530	23377	19832	*145*	+122.5	*+150.0*
Brong Ahafo	5872	*37*	10263	12493	18556	*117*	+216.0	*+216.2*
Central	4828	*28*	8857	24291	18268	*112*	+278.4	*+300.0*
Eastern	12563	*49*	18539	35982	37042	*294*	+194.8	*+500.0*
Greater Accra	10611	*69*	12027	27208	30760	*116*	+189.9	*+68.1*
Northern	2061	*45*	11410	18238	19112	*159*	+827.3	*+253.3*
Upper East	2027	*42*	3599	7945	16479	*138*	+713.0	*+228.6*
Upper West	1858	*38*	4611	12257	12310	*73*	+562.5	*+92.1*
Volta	3102	*23*	35178	27163	29332	*74*	+845.6	*+221.7*
Western	5725	*33*	10591	14284	14963	*118*	+161.4	*+257.6*
Total	57562	*422*	131605	203238	216654	*1346*	+276.4	*+219.0*

Testing at KYS

A total of 1,065,868 HIV tests were conducted through KYS campaigns during 2009 and 2010 (Table 3). The overall percentage increase from 2009 to 2010 was 38.5%. There were variations in the number of tests done over the two years and across the regions. For example, the Upper East recorded the highest periodic increase (252.2%) with three regions recording negative growth (Brong Ahafo, -78.6%; Central -53.8%; Northern, -19.7%). Data from Table 3 also indicate that Ashanti region had massive numbers of HIV tests through KYS totaling one third of all tests performed in 2010 (Although Ashanti is the most populous region in Ghana, its population constitutes less than 20% of the national population[24].

Table 3: Overall number of HIV tests conducted through Know Your Status Campaigns in each region of Ghana, in 2009 and 2010, and the percent change in the number of tests from 2009 to 2010.

Region	**KYS testing (from 2009 to 2010), by region**		
	2009 HIV tests (n)	**2010 HIV tests (n)**	*% Change in the number of tests conducted 2009-2010*
Ashanti	**76440**	**204566**	*+167.6*
Brong Ahafo	**55486**	**11857**	*-78.6*
Central	**74577**	**34489**	*-53.8*
Eastern	**33093**	**65883**	*+99.1*
Greater Accra	**47574**	**67291**	*+41.4*

Northern	**50883**	**40840**	*-19.7*
Upper East	**19651**	**69203**	*+252.2*
Upper West	**40754**	**58444**	*+43.4*
Volta	**35339**	**47513**	*+34.4*
Western	**13180**	**18805**	*+42.7*
Total	**446977**	**618891**	*+38.5*

Testing at PMTCT services

There has been a rapid increase in the number of HIV tests performed in both public and private PMTCT centers from 2007 to 2010 as illustrated in Table 4, with an overall increase of 348% nationwide, and increases above 100% in all 10 regions of the country. The greatest increase was in the Northern region (838.2%) and the smallest in the Upper West region. The increase in testing reflected the 222% increase in the number of functional PMTCT centers over the same period, suggesting that facilities are greatly expanding access and utilization. The highest change was in the Eastern region (488.0%) while the lowest change (123.1%) was in Greater Accra, the region of the capital city, Accra.

Even though, data from Table 3 suggests that the numbers tested is aligned with the number of PMTCT centers available, the concordance between number tested and number of facilities was not consistent across the regions. For example, in the Eastern region, testing sites increased by 488% and recorded just over a tripling of number of tests compared to the Northern region where only 137% increase in PMTCT centers generated a massive increase in the number of tests (percentage change of 838%). A similar pattern occurred in Central region – where just over a tripling of the number of facilities rendered more than 700% increases in the number of tests.

Table 4: Overall HTC from all PMTCT centers and percentage change in number tested and functional PMTCT centers in the 10 administrative regions in Ghana, from 2007 to 2010.

Region	**PMTCT testing (from 2007 to 2010), by region**							
	2007 HIV tests (n)	*# of PMTCT centers*	**2008 HIV tests (n)**	**2009 HIV tests (n)**	**2010 HIV tests (n)**	*# of PMTCT centers*	**% change in number of annual HIV tests 2007-2010**	*% Change in Number of PMTCT centers 2007-2010*
Ashanti	**27950**	*55*	**62996**	**53169**	**77036**	*152*	**+175.6**	*+176.4*
Brong Ahafo	**7821**	*36*	**19992**	**33892**	**47077**	*117*	**+501.9**	*+225.0*
Central	**6023**	*27*	**27083**	**42360**	**49930**	*112*	**+729.0**	*+314.8*
Eastern	**16539**	*50*	**22815**	**47713**	**69728**	*294*	**+321.6**	*+488.0*
Greater Accra	**20799**	*52*	**51762**	**70550**	**78960**	*116*	**+279.6**	*+123.1*
Northern	**7922**	*67*	**31833**	**58887**	**74324**	*159*	**+838.2**	*+137.3*
Upper East	**10299**	*47*	**6895**	**24392**	**29538**	*138*	**+186.8**	*+193.6*
Upper West	**4669**	*35*	**14441**	**20984**	**10295**	*73*	**+120.5**	*+108.6*
Volta	**5596**	*21*	**15124**	**21534**	**31188**	*74*	**+457.3**	*+252.4*
Western	**6985**	*30*	**11193**	**40276**	**45457**	*118*	**+550.8**	*+293.3*
Total	**114603**	*420*	**264134**	**413757**	**513533**	*1353*	**+348.1**	*+222.1*

HIV+ test results among persons tested in HTC locations across the country

The NACP data also provided information on the testing outcomes of all tests performed, and the percentages of HIV positive results from DCs were notably higher than KYS and through PMTCT. Within DC services, HIV+ test rates for all clients was as high as 21.5% in 2007, as shown in Table 5. As testing expanded, the proportion of all tests that were HIV+ declined; the percentage of HIV positive tests decreased from 21.5% in

2007 to 8.9% in 2010. Reflecting the recruitment of low risk persons into community-based KYS testing, there was a low yield of HIV+ results through this service; the HIV positive rates were 1.1% in 2009 and 1.4% in 2010. The percentage of HIV positive tests among pregnant women testing through PMTCT services decreased from 3.0% (2007) to 1.8% (2009) and increased marginally to 2.0% in 2010.

Table 5: HIV positive tests rates in all HTC locations (DC, KYS and PMTCT) in all 10 regions, from 2007 to 2010.

Category of testing	% HIV positive test results			
	2007	2008	2009	2010
DC	21.5	14.6	9.7	8.9
KYS	---	---	1.1	1.4
PMTCT	3.0	2.4	1.8	2.0

Discussion

This study reviewed NACP facility records from the 10 administrative regions of Ghana over a four year period, 2007 to 2010. This review is used to highlight differences in HIV testing and counseling (HTC) service utilization, differential use of various HIV testing facilities, and examine differences in proportion of HIV positive results from different testing services. Overall there was rapid increase in HTC across all 10 administrative regions in Ghana. Increase in HTC corresponds with national efforts toward achieving universal HTC access in Ghana[19]. Universal access has been a major component of the Second Five- Year Ghana Health Sector Strategic Framework. To achieve universal access, the National AIDS/STI Control Program (NACP) set a target of getting 400,000 people to know their sero-status by the end of 2010[19]. This increase in HTC at Diagnostic centers (DCs) and Know Your Status (KYS) indicated that NACP exceeded the set target. The establishment of HTC centers across the country is a strategic response to needs of high HIV prevalence geographic areas. For instance, the percentage changes for both DC and PMTCT were highest in the Eastern region which has for the past few years recorded HIV prevalence of 5% and above[17]. Whereas the rapid increases in HIV tests and establishment of testing centers evidences wide scale-up efforts toward achieving universal access, regional disparities signal inequities in HIV-related healthcare provision that must be interrogated. Findings from this study indicate that in the year 2009, the NACP exceeded its HIV testing target. However regional differences, in both HIV tests and establishment of sites, raise concerns about access and distribution of HIV testing across administrative regions of the country. For instance, the capital region of Greater Accra, the relative increase in sites was low, and the relative increase in the number of tests was low – reflecting a much earlier deployment of DC's before 2007 (Greater Accra had more than 10,000 HIV tests already in 2007). While Upper West region had less than 2000 HIV tests in 2007– and increased their sites only as much as the Greater Accra – a massive increase of over 500% of HIV tests was garnered. Similar findings were noted in the Upper East and Northern regions. This suggests that while Greater Accra region was already saturated with sites in 2007 – the three northern regions (Upper West, Upper East and Northern) were not at all. Interestingly, the three northern regions are the least developed of the ten regions in Ghana, and it is essential to consider access to testing in underserved areas of the country as a policy measure of the national response to the HIV epidemic.

In addition, this study indicates in 2010, regions with high population densities - Ashanti, Greater Accra, Eastern, Western and Brong Ahafo- had less than 12% of the population aged 15 years and above tested for HIV. Interestingly these four regions had relatively higher HIV prevalence compared to the other six regions. Also, Western region, despite being the region with the fourth highest population of those 15 years and above, had the lowest coverage for HTC among the 10 regions. These identified differences in HIV prevalence and population sizes on one hand, compared with those testing raises the question whether current distribution of HIV tests allows the system to function as the primary gateway to all forms of AIDS-related care across the country. Ensuring the use of ART, for instance, through HTC is crucial as a previous study observed differential use of ART across the country[26].

The data also indicate that testing through KYS was substantially higher than testing done at DCs. In 2009 and 2010, testing through KYS was double, and triple the number tested at DCs, respectively KYS organized as community outreach service, outside the health facilities, attracts more people than DCs. Indications of differential use has been reported by previous research. For instance previous studies indicate that a particular HTC programme may be attractive to a specific group of people depending on its structure: KYS may be more attractive to males, due to its disassociation from the health facility and itinerant nature[27], whereas DCs and KYS are attractive to females[21,28].

High female testing from DCs and KYS and preference for particular HIV testing programmes compare with previous studies conducted in Ghana and other African countries[9,21-23,28,29]. In the 2008 Ghana Demographic and Health Survey respondents were asked the question, 'Have you ever been tested and received results?' In response to this question, female to male ratio of 1.4 was recorded[29]. Several studies from Africa have suggested differential use of HTC by sex, with several studies highlighting greater use by females in southern African countries[5,9,21-23] but higher use by males in Ethiopia, Nigeria, Tanzania, and Zambia[28,30,31]. Concerns have also been raised that facility-based HTC is under-utilized[7,19].

Findings from this study also suggest policy attention must be given to differential use of the various HTC programmes considering that HIV+ test rates differed at the DC, KYS and PMTCT. Comparatively, DCs recorded overall HIV positive test rates across the 10 regions that were higher than those of KYS. Between 2007 and 2010, this inordinately high HIV positive test in DCs dramatically decreased; it was 21.5% in 2007 and decreased to 8.9% in 2010. A potential explanation for this change may be the increased investment of resources in KYS[19]. This increase has created greater opportunity for capturing high risk groups in the communities through KYS, besides DCs alone. Consequently, the high risk cohort testing through DCs has declined. Also, with investment in training and increased awareness among health practitioners, threshold for referring clients into the DC's could have declined, such that younger clients, not necessarily ill, or have AIDS clinical conditions are referred to the DC with consequent reduction in the HIV risk pool[19,20]. Even though mortality and migration might be possible explanations for these declines, further investigations may be required. Also, it is important to note that, although KYS attracts and conducts huge numbers of HIV tests, it captures relatively low HIV positives. In the era of limited and dwindling resources for HIV related activities and for achieving universal coverage for those most at risk, an important policy is to target and capture the vulnerable population groups in the regions and locations with high HIV prevalence.

This study reviewed NACP facility records from the 10 administrative regions of Ghana over a four year period, 2007 to 2010. This analysis demonstrates differences in HIV testing and counselling (HTC) service utilization, differential use of various HIV testing programs and differences in proportion of HIV positive results from different testing services. The limitations however, are that testing at the DCs and KYS do not directly correspond to the number of individuals tested and hence there is the possibility of retesting of the same individual over the four year period. This retesting of individuals is similar for females testing through the PMTCT as well; since an individual could be pregnant more than once within the four-year period. However, it must be noted that regional comparisons were done annually to limit the effect of retesting and there is no evidence to show that retesting is higher for any particular region in Ghana.

Conclusion

During the period under review HTC increased rapidly across the country. However, indications of differential use of testing services, utilization of HTC across administrative region compared with the HIV prevalence suggests the need for a well structured and more targeted expansion of facility-based facilities and access to HTC across the country. This will be crucial for achieving universal coverage in a resource limited setting such as Ghana. In such a venture geographic areas like the Western region should be given a special attention by the Ghana Health Sector Strategic

Framework considering the recent discovery of oil in commercial quantities in the region.

Also, to realize the full public health benefits from huge HTC investments in Ghana, KYS should be targeted more at the most at risk population groups. Establishment of health facility-based testing centres (DCs) which tends to capture relatively high HIV positives should receive more policy attention. The establishment of these centres should be more focused and targeted to capture all high risk referred or suspected HIV cases especially for the most at risk populations in the regions with high population densities and relatively high HIV prevalence. Moreover, we also suggest that further studies should be conducted to determine if indeed regions with high HIV testing and high HIV prevalence is coupled with high utilization of ART services. This will help us determine if testing is serving as the primary gateway to AID-related services.

Disclaimer

The views expressed in this paper are those of the authors. No official endorsement by GHS/NACP is intended or should be inferred. There is no conflict of interest associated with this work.

Contribution of Authors

Alfred Yawson and Phyllis Dako-Gyeke conceived and designed the study and data used was provided by Nii Akwei Addo, Stephen Ayisi Addo and Bernard Dornoo. Alfred Yawson analysed the data and all five authors worked on and prepared the manuscript. All the authors read and approved the final draft of the manuscript.

Acknowledgement

We are grateful to Dr. Rachel Snow of the Department of Health Behavior and Health Education, University of Michigan, Ann Arbor, MI, USA for providing guidance on the concept and development of the paper. We are also grateful to all health providers working in the field of HIV in Ghana to provide relief for the many persons who require them. We are grateful to all staff of NACP, especially to Mr. Kwadwo Asante and Mr. Ekow Wiah.

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