Highly active antiretroviral therapy adherence among perinatally infected HIV adolescents at a teaching hospital in Ghana

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Highly active antiretroviral therapy adherence among perinatally infected HIV adolescents at a teaching hospital in Ghana


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ABSTRACT
Increased accessibility to Antiretroviral Therapy (ART) has resulted in the decline of deaths among children with Perinatally Infected Human Immunodeficiency Virus (PIHIV). Their adherence to Highly Active ART (HAART) is vital for their survival and quality of life. This study aimed at determining HAART medication adherence among adolescents with PIHIV. The study was cross-sectional conducted from September 2015 to January 2016 at a teaching hospital in Ghana. It involved 106 adolescents aged 10–20 years. Morisky’s eight-item medication adherence scale was adapted and used to determine the adherence level. Factors influencing adherence were also determined by interviewing the adolescents. EpiData 3.1 and Stata version 12 were used for data entry and analysis respectively. There was low adherence in 76.4% of the adolescents, and the HAART regimen associated with high medication adherence was tenofovir, lamivudine and efavirenz combinations (p = .011). Forgetfulness (p = .001) and inability to come for refill (p = .013) were the main factors associated with low adherence. However adherence was not significantly associated with a lack of medication supply or stigmatization. Addressing the modifiable factors found in this study to be associated with low adherence are essential interventions for their long-term quality of life.

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KEYWORDS
Adherence; adolescent; HAART; HIV; perinatal

Introduction
The introduction and increased access to Antiretroviral Therapy (ART) has considerably decreased the deaths of Perinatally Infected Human Immunodeficiency Virus (PIHIV) children. HIV has become a chronic condition for these children as they grow into adolescents and young adults (Brady et al., 2010). The adolescents must therefore strictly adhere to daily ART medication regimen to ensure reduced viral load. This will help them maintain a relative healthy life and lower the risk of transmission of HIV (Blumenthal, Haubrich, Jain, Sun, & Dube, 2014; Eley et al., 2004; Paterson et al., 2000).

Research into medication adherence by HIV-infected adolescents has revealed that despite reported higher adherence in sub-Saharan region compared with others, poorer adherence pattern may exist in this region (Adejumbo, Malee, Ryscavage, Hunter, & Taiwo, 2015). Furthermore, numerous barriers to medication adherence among HIV-infected adolescents have been reported in literature (Buchanan et al., 2012; Nyogea et al., 2015). The major barriers to medication adherence were also reported to be similar for perinatally and behaviourally infected youth even though more barriers were reported by perinatally infected youth (MacDonell, Naar-King, Huszti, & Belzer, 2013). However, data on the adherence level of PIHIV adolescents and the factors associated with medication adherence among them is limited in Ghana and non-existent in our clinic. Service delivery interventions to enhance ART adherence are also not clearly defined. This study therefore, sought to determine the adherence level and identify the factors influencing adherence among adolescents with PIHIV.

Method
Study design
This was a cross-sectional study conducted from September 2015 to January 2016.

Study setting
Komfo Anokye Teaching Hospital (KATH) is the only teaching hospital in the Ashanti Region of Ghana and
the second largest in Ghana. It has 1200 beds capacity and is a major referral centre for the northern sector of the country.

The adolescent HIV clinic of KATH was created in March 2011 from the paediatric HIV clinic. This was because as the children grew into adolescents, the paediatric clinic could not cater for their social and medical needs. Moreover, the PIHIV adolescents were also not comfortable at the adult HIV clinic. Currently, about 160 PIHIV adolescents attend the clinic. This number keeps increasing as the children in the paediatric clinic are transferred to the adolescent clinic when they turn 10 years.

Participants and procedures

The adolescents aged 10–20 years were randomly selected through their medical records. The adolescents who were unaware of their HIV status were excluded. They were interviewed during their clinic visits to determine the extent to which some selected barriers to medication adherence influence their medication taking. Morisky’s eight-item adherence scale (Morisky, Ang, Krousel-Wood, & Ward, 2008) was adapted for the assessment of the adherence level. A score of 8 or 7 was classified as high adherence. A “yes” or “no” response was elicited for selected barriers to medication adherence.

The data collected was coded and entered into Epi-Data 3.1. Stata version 12 was used to analyse the data. Chi-square and Fisher’s exact test (variables less than 5) was used to test for associations. Multivariate analysis was also conducted to adjust for differences in confounding between different adherence factors. The study was approved by the Committee on Human Research, Publications and Ethics, School of Medical Sciences, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana and Institutional Review Board of KATH, Ghana.

Table 1. Factors associated with ART medication adherence.

<table>
<thead>
<tr>
<th>Adherence factors</th>
<th>Adherence</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High n (%)</td>
<td>Low n (%)</td>
</tr>
<tr>
<td><strong>Forgetfulness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>22 (20.7)</td>
<td>22 (20.7)</td>
</tr>
<tr>
<td>Yes</td>
<td>3 (2.8)</td>
<td>59 (55.7)</td>
</tr>
<tr>
<td><strong>Lack of medication supply</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>25 (23.6)</td>
<td>70 (66.0)</td>
</tr>
<tr>
<td>Yes</td>
<td>0 (0.0)</td>
<td>11 (10.4)</td>
</tr>
<tr>
<td><strong>Inability to come for medication refill</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>25 (23.6)</td>
<td>64 (60.4)</td>
</tr>
<tr>
<td>Yes</td>
<td>0 (0.0)</td>
<td>17 (16.0)</td>
</tr>
<tr>
<td><strong>Stigmatization</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>11 (10.4)</td>
<td>43 (40.6)</td>
</tr>
<tr>
<td>Yes</td>
<td>14 (13.2)</td>
<td>38 (35.8)</td>
</tr>
</tbody>
</table>

Results

Adherence level and ART regimen of PIHIV adolescents

The total population of adolescents in the study was 106. Adherence to ARTs was low in 81 (76.4%) of the PIHIV adolescents. The commonest ART regimen among the adolescents was zidovudine, lamivudine and efavirenz combination (55.7%). The tenofovir, lamivudine and efavirenz combination was however significantly associated with high adherence ($p = .011$).

Factors influencing ART adherence

Factors such as forgetfulness ($p = .001$) and inability to come for medication refill ($p = .013$) were significantly found to be associated with low adherence to ARTs. Lack of medication supply and stigmatization were however not significantly associated with adherence (Table 1).

Discussion

Results from this study indicates that there is low adherence to ART medication regimen among PIHIV adolescents at KATH, Ghana, contrary to other studies done in some African countries (Kim, Gerver, Fidler, & Ward, 2014). The commonest ART regimen found in this study was zidovudine, lamivudine and efavirenz combination (55.7%). This regimen is part of the first-line ART medication combinations in Ghana. This observation indicates that, despite the long exposure of some of the adolescents to this first-line medication, there has not been a change to the second-line regimen for half of the adolescent population. A high medication adherence was associated with the single dose regimen comprising tenofovir, lamivudine, and efavirenz. This may give credence to the fact that single dose regimen improve adherence (Rosso et al., 2012).

Furthermore, the results also show that low medication adherence was associated with forgetfulness and inability to come for medication refill. This suggests the PIHIV adolescents might have difficulty remembering to take their medications. This may be due to busy daily schedules of the PIHIV adolescents and/or caregivers inability to remind them (Biressaw, Abezag, Abebe, Taye, & Belay, 2013). The inability to come for medication refill also suggests difficulty in honouring clinic appointments. This may be due to the frequency of such clinic visits and some caregivers with long working hours may not have time to honour clinic appointments (White et al., 2008). Contrary to other studies (Inzaule, Hamers, Kityo, Rinke de Wit, & Roura, 2016; Katz et al., 2013), we found that stigmatization and
lack of medication supply were not associated with adherence. This could be as a result of less guilt associated with the condition by the adolescents due to social support groups created among them and improved supply of ARTs to the clinic respectively. The exclusion of those who did not know their HIV positive status due to the caregivers’ unwillingness to disclose for fear of stigmatization or guilt was a limitation as we could not elicit their perspectives. Again, our inability to determine viral loads or CD4 levels to confirm adherence to highly active ART (HAART) was also a limitation of the study, since the quantitative values would have supported claims of high or low adherence. Finally, the self-reported adherence is subject to recall bias.

Conclusion

This study has shown low adherence to HAART medication regimen among PIHIV adolescent at KATH, hence, the need to review medication refill schedules for the adolescents based on their individual needs. Also, interventions to improve adherence should target forgetfulness. Finally, capacity of the caregivers, school teachers and health workers should be built to overcome these factors that contribute to low adherence.

Disclosure statement

No potential conflict of interest was reported by the authors.

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References


