Sexual Education for Senior Age: Continuous Increase Inreported Cases of HIV in Brazil - 2005/2015

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Received: January 29, 2018; Published: February 21, 2018

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Introduction

The economic development in emerging countries promoted an increase of access for new medical technologies and services which improve the life expectancy of your population at last 10 years [1]. In Brazil, the increase of senior group is accompanied by new demands for a better quality of life, based on the interaction and social integration of the elderly [2]. However, this social renaissance may be followed by agents that did not represent a risk for this group [3]. Either by lack of preventive knowledge or by the cultural conduct to not use condoms, in the past, of this generation. Our study assessed the number of HIV-infected from Brazilian Ministry of Health public database (DATASUS) during the last 10 years. We focused on analyzing the frequency in senior age group, which was divided in the following distribution by age: 60-64, 65-69, 70-74, 75-79 and 80+ years old. We compared the price’s evolution from the two main drugs for erectile dysfunction (Drug 1 and Drug 2) at Agência Nacional de Vigilância Sanitária - ANVISA database in the last 10 years. Today, there are ~36.7 million people infected by HIV in the world, whereas in Brazil there was an increase in estimated number of people (all ages) living with HIV (n~700,000 in 2010/ n~830,000 in 2015) in Brazil, with an estimative of ~15,000 deaths/year [4].

In Brazil, the group from 60 to 64 years old (Table 1A) initially presented a considerable number of HIV reported cases (n=5069 - 2005) by different transmission routes of infection including sex and still concern after 10 years in this specific age group (n=7797 - 2015) with an increase of 53.82%. The last age group (80+ years) presents a considerable estimated prevalence of HIV (n=2,112 in 2005/n=3,308 in 2015) in Brazil, with an estimative of ~15,000 deaths/year [4].

Table 1A: Estimated Prevalence of HIV in Elder People-Brazil.

<table>
<thead>
<tr>
<th>Year</th>
<th>60 - 64</th>
<th>65 - 69</th>
<th>70 - 74</th>
<th>75 - 79</th>
<th>80+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>5,069</td>
<td>4,063</td>
<td>2,989</td>
<td>2,133</td>
<td>2,112</td>
<td>16,367</td>
</tr>
</tbody>
</table>

Considering the diversity of drugs for erectile dysfunction available in the market and their relative decrease in price over the last 10 years in Brazil, allied to the growing participation of old group in dating apps (56 to 64 year olds - doubled the use of online dating services from 2013 to 2015) (Table 1C) [5]. The estimative of individuals living with HIV in all old age group in Brazil (60 to 80 years old - n=23,940 in 2015), and the constant increase of reports at last 10 years (>86.17%), may be consider as a consequence from an unexpected problem (Figure 1). Probably, the monogamous behavior induced by social and religious precepts protected this population at past, but in the search for a new companion, they may develop unprotect sex because contraception was the big problem at their young age, and disregard the dangers of sexually transmitted diseases, since they were a problem related only to people with “questionable character”, as drug addicts [6]. Emerging countries have similar growth of their elderly population and may present the same problems with considerable development of sexually transmitted diseases in the senior age. We may consider urgent a sexual education program for this special age group, and maybe a more specific palliative method in the sale of these drugs to this group, due to this continuous increase in HIV prevalence in old age.

Table 1B: Price Evolution (BRL Currency*) - Erectile Dysfunction Drugs.

<table>
<thead>
<tr>
<th>Year</th>
<th>Drug 1 25mg 4Pills</th>
<th>Drug1 50 mg 1Pill</th>
<th>Drug1 50 mg 4Pills</th>
<th>Drug1 100mg 4Pills</th>
<th>Drug1 20mg 1Pill</th>
<th>Drug2 20mg 2Pills</th>
<th>Drug2 20mg 4Pills</th>
<th>Drug 20mg 8 Pills</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>106.01</td>
<td>-</td>
<td>116.54</td>
<td>182.47</td>
<td>-</td>
<td>69.92</td>
<td>139.83</td>
<td>279.68</td>
</tr>
<tr>
<td>2006</td>
<td>107.08</td>
<td>-</td>
<td>117.72</td>
<td>184.29</td>
<td>-</td>
<td>70.62</td>
<td>141.23</td>
<td>282.47</td>
</tr>
<tr>
<td>2007</td>
<td>107.08</td>
<td>-</td>
<td>117.72</td>
<td>184.29</td>
<td>-</td>
<td>70.62</td>
<td>141.23</td>
<td>282.47</td>
</tr>
<tr>
<td>2008</td>
<td>116.25</td>
<td>-</td>
<td>127.8</td>
<td>200.08</td>
<td>-</td>
<td>76.67</td>
<td>153.34</td>
<td>306.67</td>
</tr>
<tr>
<td>2009</td>
<td>116.25</td>
<td>-</td>
<td>127.8</td>
<td>200.08</td>
<td>-</td>
<td>76.67</td>
<td>153.34</td>
<td>306.67</td>
</tr>
<tr>
<td>2010</td>
<td>121.43</td>
<td>-</td>
<td>133.48</td>
<td>208.98</td>
<td>-</td>
<td>80.08</td>
<td>160.15</td>
<td>320.32</td>
</tr>
<tr>
<td>2011</td>
<td>62.86</td>
<td>17.28</td>
<td>138.21</td>
<td>108.19</td>
<td>-</td>
<td>82.93</td>
<td>165.82</td>
<td>331.66</td>
</tr>
<tr>
<td>2012</td>
<td>66.54</td>
<td>18.29</td>
<td>146.29</td>
<td>114.52</td>
<td>-</td>
<td>87.77</td>
<td>175.52</td>
<td>351.07</td>
</tr>
<tr>
<td>2013</td>
<td>70.75</td>
<td>19.44</td>
<td>155.53</td>
<td>121.75</td>
<td>46.66</td>
<td>93.32</td>
<td>186.59</td>
<td>373.22</td>
</tr>
<tr>
<td>2014</td>
<td>74.77</td>
<td>20.55</td>
<td>164.36</td>
<td>128.66</td>
<td>49.31</td>
<td>98.61</td>
<td>197.19</td>
<td>394.43</td>
</tr>
<tr>
<td>2015</td>
<td>78.51</td>
<td>21.58</td>
<td>129.76</td>
<td>101.58</td>
<td>46.65</td>
<td>93.37</td>
<td>186.57</td>
<td>373.19</td>
</tr>
</tbody>
</table>

Increase (%) >53.82% >43.83% >36.37% >36.57% >56.63% >46.26%

Figure 1: If the overall slopes were identical, there is less than a 0.01% chance of randomly choosing data points with slopes this different. We can conclude that the differences between the slopes are extremely significant. Because the slopes differ so much, it is not possible to test whether the intercepts differ significantly.
### Table 1C: HIV Positive Cases Reported/ Age - Brazil - 2005/2016.

<table>
<thead>
<tr>
<th>Year</th>
<th>&lt; 1</th>
<th>1-4</th>
<th>5-9</th>
<th>10-14</th>
<th>15-19</th>
<th>20-29</th>
<th>30-39</th>
<th>40-49</th>
<th>50-59</th>
<th>60-69</th>
<th>70-79</th>
<th>80 &gt;</th>
<th>NC***</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>288</td>
<td>329</td>
<td>277</td>
<td>221</td>
<td>584</td>
<td>8.239</td>
<td>13.288</td>
<td>9.633</td>
<td>3.937</td>
<td>1.075</td>
<td>258</td>
<td>34</td>
<td>0</td>
<td>38.163</td>
</tr>
<tr>
<td>2009</td>
<td>265</td>
<td>322</td>
<td>208</td>
<td>202</td>
<td>674</td>
<td>8.895</td>
<td>13.590</td>
<td>10.099</td>
<td>4.463</td>
<td>1.358</td>
<td>255</td>
<td>37</td>
<td>0</td>
<td>40.368</td>
</tr>
<tr>
<td>2013</td>
<td>199</td>
<td>250</td>
<td>119</td>
<td>133</td>
<td>952</td>
<td>9.981</td>
<td>13.402</td>
<td>9.995</td>
<td>5.130</td>
<td>1.681</td>
<td>353</td>
<td>60</td>
<td>11</td>
<td>42.266</td>
</tr>
<tr>
<td>2014</td>
<td>212</td>
<td>212</td>
<td>120</td>
<td>117</td>
<td>1.000</td>
<td>9.807</td>
<td>12.867</td>
<td>9.468</td>
<td>5.109</td>
<td>1.657</td>
<td>363</td>
<td>71</td>
<td>4</td>
<td>41.007</td>
</tr>
<tr>
<td>2015</td>
<td>199</td>
<td>182</td>
<td>96</td>
<td>88</td>
<td>951</td>
<td>9.546</td>
<td>12.165</td>
<td>8.771</td>
<td>5.028</td>
<td>1.683</td>
<td>342</td>
<td>62</td>
<td>0</td>
<td>39.113</td>
</tr>
</tbody>
</table>

### Acknowledgment

The authors wish to acknowledge the assistance from Institute de Medicina Tropical de São Paulo - USP, LIM – 49 / LIM – 52 - HCFMUSP, FAPESP and CAPES.

### References