Newborn Hearing Screening Program in Korea

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Background & Objectives

- **Basic Statistics of South Korea**
  - Child birth: about 450 thousand/year
  - Korea has very low birth rate and our fertility rate is the lowest in the world.
  - There are about thousand women’s clinics. As lower birth rates, the number of clinic is decreasing. Small women’s clinics with very low birth number(<100/yr) are still about 37% of total clinics.

- **Evolution of NHS program in South Korea**
  - **2006~2007**: Incidence study of congenital hearing impairment in Korea: nationwide survey
  - **2007~2008**: The 1st & 2nd National Pilot NHS project in 16 and 32 selected areas
  - **2009~2013**: The National Pilot NHS project of low-income class newborn in Korea (8% of all newborn)

- In South Korea, UNHS is not yet performed but several national pilot NHS projects were implemented from 2007 to now. The aim of this study is to investigate of the results and effectiveness of NHS in the national project from 2007 to 2013.

Subjects & Methods

- **Period**: 2007 ~ 2013 (7 years)
- **Participation institute and hospitals (Based on 2009 year)**
  - Total National Public health centers : N = 253
  - Authorized screening centers: N = 352
  - Women’s clinics: 284 (81%)
  - General hospitals available ENT dept.: 40 (11%)
  - Other local clinics: 28 (8%)
- **Screening method by hospital type**

<table>
<thead>
<tr>
<th></th>
<th>AABR</th>
<th>AOAEB)</th>
<th>AABR(A)OAE</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women's clinics</td>
<td>232</td>
<td>(79%)</td>
<td>3 (1%)</td>
<td>295</td>
</tr>
<tr>
<td>General hospital ENT</td>
<td>27</td>
<td>(60%)</td>
<td>1 (2%)</td>
<td>45</td>
</tr>
<tr>
<td>Other local clinics</td>
<td>12</td>
<td>(39%)</td>
<td>1 (3%)</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td>271</td>
<td>95</td>
<td>5</td>
<td>371</td>
</tr>
</tbody>
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(Units: number of hospital, %: occupied rate within each hospital type)

- **Screening Flow and Data Collection using Tracking system with baby proper coupon ID number from 2009**

- **Costs of screening test**
  - Automated ABR (AABR): 22.82₩, Automated OAE (AOAE): 8.45₩
  - (All costs were covered by Korean Ministry for Health Welfare in low-income group)
  - Traditional Costs of NHS in private clinics is about 42~90$ for AABR or AOAE
- **Costs of Diagnostic ABR**
  - 45.33₩ (53,820 Won)
  - (30% is covered by health insurance) → actual payment is 31.73₩(37,534 Won)

Conclusions

- The incidence of hearing loss (HL) ≥ 40dBnHL including unilateral HL was about 4~6‰ from 2007 to 2013.
- The overall referral rate of NHS is 1.7% and that of high risk babies was 5.9~10.1%.
  - For referral rate by screening mode, referral rate of AABR was 1.1~1.3% and that of AOAE was 1.5~2.8%.
  - The hearing loss rate of well babies was 0.41% and that of high risk babies was 4.11%. High risk babies occurred about 10 times greater risk of hearing loss.
- According to Korean CDC data, Korean actual hearing screening coverage was about 75% but only 8~10% of the total newborns until now. UNHS and quality control, the computerization of the NHS system is urgently needed. We anticipate launching a nationwide mandatory UNHS program as soon as possible.

Acknowledgment

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