Identification of communication disorders among Egyptian Arabic-speaking nursery schools’ children

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Abstract Background: Identification of communication disorders during the first years of child’s life leads to early intervention and prevents their negative impact on the child development. To the best of our knowledge, the statistical information that estimates the magnitude of communication disorders among Egyptian children is scarce.

Objectives: The aim of this prospective study was to identify communication disorders among nursery schools’ children at Dakahlia governorate, Egypt (as a representative sample) in order to estimate the size of the problem among Arabic-speaking Egyptian children.

Material and methods: A cross-sectional descriptive research design was used to include 852 nursery school children aged between three and less than 6 years from both urban and rural areas and from governmental and private nurseries. Two structured questionnaire sheets were designed to identify different types of communication disorders from caregiver and teacher perspectives separately besides their socio-demographic data.
1. Introduction

Communication is fundamental to human functioning; it is a process of interchange thoughts, opinions, or information by speech, writing, or signs from a sender to a receiver via some media towards a mutually accepted goal or direction. The development of communication skills begins in infancy, before the emergence of the first word and is essential to playing, thinking, learning and engaging in social interaction throughout every aspect of a child’s life.

Communication disorders, in preschoolers, include any atypical disorders in comprehension or production of speech sounds (i.e., consonants and vowels), words, phrases, or sentences. Communication disorders are the most prevalent symptom in young children with developmental delays. However, most children with communication disorders are not identified until at least 2-3 years of age, especially in the absence of significant medical risks or cognitive disabilities.

US department of education reported that 10% of preschool children have some problem with communication. Meisels and Fenichel reported that communication disorders occur in approximately 8% of all young children. It may impact a child’s social and emotional skills, cognitive skills and the acquisition and mastery of academic skills. Even if a delay is transient, a communication delay at a young age may have a negative impact on a child’s overall development. Communication disorders may be developmental or acquired. They include delayed language development (DLD) due to e.g., hearing loss, brain damage, attention deficit disorders (ADD), Autistic spectrum disorders (ASD) . . . ; speech disorders e.g., articulation errors, fluency disorders, resonance disorders . . . and voice disorders due to organic or non-organic causes.

Communication development in the early years is closely linked to and dependent up on the input and stimulation received from parents and other primary caregivers. The disturbed interactions between the caregiver and child place the infant at risk for a communication disorder. Primary caregivers and teachers play an important role in the early identification of communication disorders as they have the intimate close relation with the children. Any speech or language problem is likely to have a significant effect on a child’s social and academic skills and behavior therefore, the earlier the identification and treatment of a child’s speech and language problems, the less likely they will persist or worsen and help children later with reading and writing, in school and with interpersonal relationships.

Results: The caregiver responses revealed that 30.8% of the children had language disorders, 2.8% had learning disability, 24% had articulation errors, 17.8% had dysfluency, 2.8% had resonance disorder, and 2.4% had voice disorders with a total of 44.4% of the studied sample had communication disorders. A discrepancy was found between the responses of the caregivers and teachers with a total of 30.9% of the children that were identified with a communication problem as reported by their caregivers—are missed by teachers.

Conclusions: The previous figures reflect the magnitude of the problem of communication disorders among a sample of Egyptian pre-school children which necessitates special attention from different disciplines.

Public health nurse is among the first professionals who have a primary role in early identification of communication disorders through their contact with care givers in primary care setting. She can depend on the parent interview as a source of accurate information about a child behaviors and routines. The nurses should be well trained to administer physical examinations while obtaining case history information from the parent or caregiver. Beyond the physical examination, nurses are expected to assess the developmental communication and cognition status of their young patients and determining if a more thorough evaluation is warranted. In that case, the nurse can suggest the parent seek a full further assessment by a phoniatrician or other developmental specialist.

To the best of the authors’ knowledge, the statistical information that estimates the magnitude of communication disorders among Egyptian Arabic-speaking children is scarce. So, the aim of this prospective study was to identify communication disorders among nursery schools’ children at Dakahlia governorate, Egypt (as a representative sample) in order to estimate the size of the problem among Arabic-speaking Egyptian children.

2. Materials and method

2.1. Materials

Research Design. A cross sectional descriptive research design was used.

Setting. The study was conducted at twelve nursery schools that are located at four districts of Dakahlia Governorate in Egypt.

Sampling technique. Multi-stages stratified random sampling was used.

Stage 1. Dakahlia Governorate was divided into 16 localities according to its geographical map. The Governorate was classified into four parts namely north part (North East containing five localities, North West containing two localities), middle part containing six localities and south part containing three localities.

Stage 2. One locality from the mentioned four parts was selected randomly (Mansoura which represent the middle part, Belkase represent north west part, Met Salsil represent north east part and Aga represent the south part). Mansoura is the only locality that was classified into east, west districts and center.
Stage 3: Nursery schools of the highest attendance rate of each center were classified into governmental and private. Highest attendance rate refer to nursery school contain more than 60 children.

Stage 4: Two nursery schools (one governmental and one private) were selected randomly from each locality according to the highest attendance rate. Six nursery schools were selected randomly from Mansoura locality to represent its east, west and center districts (Two nursery containing one governmental and one private represent the three districts) (Table 1).

Stage 5: Proportional allocation method was used to select the representative sample of children.

Stage 6: The classes were selected that cover the number of children inside the nursery schools randomly.

Sample size of 852 children of both sexes was calculated using EPI info program (version 6.02) after taken into consideration the total number of children attending nursery schools at Dakahlia governorate (59,000), the prevalence of communication disorders in preschoolers (10%)\(^6\), study power of 80%, confidence interval 95% and relative precession of 15%. The studied preschool 852 children are 447 males and 405 females with their ages ranged between 3 to less than 6 years of age (mean age 4.24 ± 1.39 years) (Table 2).

2.1.1. Tools

Data were collected using two tools (questionnaire sheets) in order to achieve the aim of the study. These tools were directed to parents/primary caregivers and teachers to identify children with communication disorders.

**Tool I:** Structured questionnaire sheets were designed to collect data from children’ primary caregivers/parents and teachers. It included the following two parts:

1. Socio-demographic data of both child and his/her primary caregivers/parents such as (child age, birth order and residence and father and mother education).
2. Socio-demographic data of teachers such as (age, gender, level of education, marital status and residence).

**Tool II:** Two structured questionnaire sheets were designed and directed to the primary caregivers (Appendix A) and teachers (Appendix B) separately to identify types of communication disorders in the studied children in the form of yes/no questions. The question items covered different communication disorders e.g.

1. Language disorders such as (delayed language development due to different etiologies) and learning disability.
2. Speech disorders such as (articulation errors, fluency disorder and/or resonance disorders).
3. Voice disorders (dysphonia).

The tools (questionnaire sheets) were submitted to five experts from different fields (three experts in phoniatrics, one expert in community health nursing and one expert in nursing administration) and they all approved the content validity of the questionnaire items.

2.2. Method

The necessary official permissions from different authorities were obtained before the conduct of the study. A written Table 1: Selection of the studied children sample in nursery schools of Dakahlia Governorate, Egypt.

<table>
<thead>
<tr>
<th>Name of localities</th>
<th>Name of nursery school and number of children</th>
<th>Total No. of children</th>
</tr>
</thead>
<tbody>
<tr>
<td>El-Mansoura</td>
<td>Algamia EL-sharia</td>
<td>240</td>
</tr>
<tr>
<td></td>
<td>El salam</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Al reaia Al egtmaia in Mahalet Damana</td>
<td>92</td>
</tr>
<tr>
<td>Belkase</td>
<td>Gameiat Reait El tofola</td>
<td>71</td>
</tr>
<tr>
<td>Aga</td>
<td>El-baraa</td>
<td>63</td>
</tr>
<tr>
<td>Met Salsil</td>
<td>Met salsil nursery</td>
<td>11</td>
</tr>
<tr>
<td>Total number of studied children = 852</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of localities</th>
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<tbody>
<tr>
<td>El-Mansoura</td>
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<td>240</td>
</tr>
<tr>
<td></td>
<td>El salam</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Al reaia Al egtmaia in Mahalet Damana</td>
<td>92</td>
</tr>
<tr>
<td>Belkase</td>
<td>Gameiat Reait El tofola</td>
<td>71</td>
</tr>
<tr>
<td>Aga</td>
<td>El-baraa</td>
<td>63</td>
</tr>
<tr>
<td>Met Salsil</td>
<td>Met salsil nursery</td>
<td>11</td>
</tr>
<tr>
<td>Total number of studied children = 852</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Distribution of children according to their socio-demographic characteristics.

<table>
<thead>
<tr>
<th>Items</th>
<th>((N = 852))</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age category</strong></td>
<td></td>
</tr>
<tr>
<td>3–4 years</td>
<td>259</td>
</tr>
<tr>
<td>&gt;4–5 years</td>
<td>367</td>
</tr>
<tr>
<td>&gt;5-less than 6 years</td>
<td>226</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>447</td>
</tr>
<tr>
<td>Female</td>
<td>405</td>
</tr>
<tr>
<td><strong>Child live with</strong></td>
<td></td>
</tr>
<tr>
<td>Parent</td>
<td>826</td>
</tr>
<tr>
<td>Family member(^a)</td>
<td>26</td>
</tr>
<tr>
<td><strong>Language used at home</strong></td>
<td></td>
</tr>
<tr>
<td>Arabic</td>
<td>852</td>
</tr>
<tr>
<td><strong>Kin relation ship between parents</strong></td>
<td></td>
</tr>
<tr>
<td>Alone</td>
<td>319</td>
</tr>
<tr>
<td>Have sister and brothers</td>
<td>533</td>
</tr>
<tr>
<td><strong>Number of sisters and brothers</strong></td>
<td></td>
</tr>
<tr>
<td>– Alone</td>
<td>319</td>
</tr>
<tr>
<td>– Have sister and brothers</td>
<td>533</td>
</tr>
<tr>
<td><strong>Child birth order</strong></td>
<td></td>
</tr>
<tr>
<td>– 1st sibling</td>
<td>328</td>
</tr>
<tr>
<td>– in between</td>
<td>453</td>
</tr>
<tr>
<td>– The last sibling</td>
<td>71</td>
</tr>
<tr>
<td>Child has a twin</td>
<td>45</td>
</tr>
<tr>
<td><strong>Residence</strong></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>246</td>
</tr>
<tr>
<td>Urban</td>
<td>606</td>
</tr>
</tbody>
</table>

\(^a\) Grand mother, grand father, uncle.
consent was obtained from children’s primary caregivers and teachers to participate in the study including the explanation of the aim of the study and the confidentiality of obtained data. Then the designed questionnaires were tested for their reliability. This was achieved through application of the tools on 10% of the sample size i.e. 85 children. These pilot-study children were chosen randomly and excluded from original sample to test practicability, clarity, and feasibility of the questionnaire items. Based on the findings, necessary modifications were applied. The alpha reliability of tools was (91%).

The first author met the primary caregivers and teachers of selected children at nursery schools to distribute questionnaire sheets and to explain the questionnaire items. Data collection was done over 5 months’ period extending from November 2010 to March 2011.

2.2.1. Data analysis

The data were collected; tabulated and analyzed using SPSS statistical package Version 16 for windows. Quantitative data were presented as numbers and corresponding percentages. The non-parametric Chi-square test was used to compare between the differences between the caregivers’ and teachers’ responses. P value was considered statistically significant if <0.05 and highly significant if <0.01.

### Table 3 Distribution of teachers according to their socio-demographic characteristics.

<table>
<thead>
<tr>
<th>Items</th>
<th>(N = 12)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>12</td>
<td>100.0</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-30 years</td>
<td>7</td>
<td>58.3</td>
</tr>
<tr>
<td>30-40 years</td>
<td>5</td>
<td>41.7</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>7</td>
<td>58.3</td>
</tr>
<tr>
<td>Married</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>Married and have children</td>
<td>4</td>
<td>33.4</td>
</tr>
<tr>
<td>Residence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>9</td>
<td>75.0</td>
</tr>
<tr>
<td>Rural</td>
<td>3</td>
<td>25.0</td>
</tr>
<tr>
<td>Level of education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High education</td>
<td>12</td>
<td>100.0</td>
</tr>
<tr>
<td>Years of experience of teaching at nursery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 year</td>
<td>7</td>
<td>58.3</td>
</tr>
<tr>
<td>&gt; 3–5 years</td>
<td>5</td>
<td>41.7</td>
</tr>
<tr>
<td>Years of experience of teaching for children with special needs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 1 year</td>
<td>2</td>
<td>16.7</td>
</tr>
<tr>
<td>Training courses in communication disorders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>12</td>
<td>100.0</td>
</tr>
<tr>
<td>Type of nursery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Governmental</td>
<td>6</td>
<td>50.0</td>
</tr>
<tr>
<td>Private</td>
<td>6</td>
<td>50.0</td>
</tr>
<tr>
<td>Location of nursery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>2</td>
<td>16.7</td>
</tr>
<tr>
<td>Urban</td>
<td>10</td>
<td>83.3</td>
</tr>
<tr>
<td>No. of student in class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40–50</td>
<td>3</td>
<td>25.0</td>
</tr>
<tr>
<td>&gt; 50–60</td>
<td>9</td>
<td>75.0</td>
</tr>
</tbody>
</table>

3. Results

3.1. The socio-demographic data

The socio-demographic characteristics of children revealed that the birth order of 53.2% of them was between the 1st and last sibling, 23% of their parents are relatives and 71.1% were living at urban areas and 28.9% were living at rural area (Table 2).

Socio demographic characteristics of teachers revealed that all of the teachers (100.0%) were females and highly educated with their ages ranged from 20 to 40 years. Only two out of the twelve teachers (16.7%) had experience of teaching for children with special needs with experience less than 1 year but none of them received training courses in communication disorders (Table 3).

3.2. Distribution of communication disorders

The responses of the primary caregivers to the questionnaires that aims to identify communication disorders among their children revealed that 19.7% of the studied samples had delayed language development (DLD) without apparent cause, 7% had DLD due to ADHD, 2.8% had DLD due to ASD, and 1.3% had DLD due to hearing impairment with a total of 30.8% out of the studied sample had delayed language development and 2.8% had learning disability. The questionnaire items that targeted identification of speech disorders from caregivers’ responses perspective revealed that 24.1% of the studied samples had articulation errors, 2.8% had resonance disorder and 17.8% had dysfluency with a total of 44.8% out of the studied sample had speech disorders. Finally, 2.4% of the studied samples had change of voice. The total number of the children having communication disorders is 379 (44.4% of the studied sample) as reported by their caregivers (Tables 4–6).

It is obvious that 71.5% of children with delayed language development, 54.2% with learning disability, 58.7% with articulation errors, 1.7% with resonance disorders, 59.9% with dysfluency and 38.1% with change of voice (dysphonia) – that were reported by their primary caregivers – are missed by teachers.

4. Discussion

Communication skills are central to a child’s social-emotional and psychological development and even the most minor of impairments can have a negative effect. Communication prob-
### Table 4  Distribution of delayed language and learning disabled children according to their socio-demographic characteristics.

<table>
<thead>
<tr>
<th>Item</th>
<th>Delayed language and learning disabled children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Idiopathic DLD $N = 168$ ADHD $N = 60$ Autistic behavior $N = 24$ Hearing impairment $N = 11$ Learning disabilities $N = 24^*$</td>
</tr>
<tr>
<td></td>
<td>$N$</td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>3-less than 4 years</td>
<td>55</td>
</tr>
<tr>
<td>4-5 years</td>
<td>80</td>
</tr>
<tr>
<td>&gt;5-less than 6 years</td>
<td>33</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>86</td>
</tr>
<tr>
<td>Female</td>
<td>82</td>
</tr>
<tr>
<td>Child birth order</td>
<td></td>
</tr>
<tr>
<td>1st sibling</td>
<td>59</td>
</tr>
<tr>
<td>In between</td>
<td>104</td>
</tr>
<tr>
<td>The last sibling</td>
<td>5</td>
</tr>
<tr>
<td>Residence</td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>100</td>
</tr>
<tr>
<td>Rural</td>
<td>68</td>
</tr>
<tr>
<td>Mothers education</td>
<td></td>
</tr>
<tr>
<td>Educated</td>
<td>120</td>
</tr>
<tr>
<td>Non-educated</td>
<td>48</td>
</tr>
<tr>
<td>Father education</td>
<td></td>
</tr>
<tr>
<td>Educated</td>
<td>92</td>
</tr>
<tr>
<td>Non-educated</td>
<td>76</td>
</tr>
<tr>
<td>Nursery type</td>
<td></td>
</tr>
<tr>
<td>Governmental</td>
<td>97</td>
</tr>
<tr>
<td>Private</td>
<td>71</td>
</tr>
</tbody>
</table>

### Table 5  Distribution of speech and voice disordered children according to their socio-demographic characteristics.

<table>
<thead>
<tr>
<th>Item</th>
<th>Speech and voice disordered children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Articulation errors $N = 206$ Stuttering $N = 152$ Resonance $N = 24$ Voice change $N = 21$</td>
</tr>
<tr>
<td></td>
<td>$N$</td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>3-less than 4 years</td>
<td>70</td>
</tr>
<tr>
<td>4-5 years</td>
<td>99</td>
</tr>
<tr>
<td>&gt;5-less than 6 years</td>
<td>37</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>111</td>
</tr>
<tr>
<td>Female</td>
<td>95</td>
</tr>
<tr>
<td>Child birth order</td>
<td></td>
</tr>
<tr>
<td>1st sibling</td>
<td>103</td>
</tr>
<tr>
<td>In between</td>
<td>87</td>
</tr>
<tr>
<td>The last sibling</td>
<td>16</td>
</tr>
<tr>
<td>Residence</td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>158</td>
</tr>
<tr>
<td>Rural</td>
<td>46</td>
</tr>
<tr>
<td>Mothers education</td>
<td></td>
</tr>
<tr>
<td>Educated</td>
<td>195</td>
</tr>
<tr>
<td>Non-educated</td>
<td>11</td>
</tr>
<tr>
<td>Father education</td>
<td></td>
</tr>
<tr>
<td>Educated</td>
<td>192</td>
</tr>
<tr>
<td>Non-educated</td>
<td>14</td>
</tr>
<tr>
<td>Nursery type</td>
<td></td>
</tr>
<tr>
<td>Governmental</td>
<td>139</td>
</tr>
<tr>
<td>Private</td>
<td>67</td>
</tr>
</tbody>
</table>
lems that remain unaddressed leave children at a developmental, educational and social disadvantages, and delays in treatment results in a longer and more difficult process to overcome these challenges. The researches have shown that when a child’s treatment is delayed until their kindergarten age they usually do not have normal speech outcomes before they enter the first grade, and as many as 72% will still have speech and/or language problems at age of 12 years\textsuperscript{17}. Thus, delays in identification and in starting treatment prolong the process of addressing these disorders\textsuperscript{18}. These problems can lead to a series of frustrations that cause children to act out in ways that are destructive to themselves and others. Early identification leads to early intervention, which costs the government less in the long run and offers dramatically better quality of life for those children and families that receive timely and appropriate services\textsuperscript{19}.

The present study demonstrated that about one third of the studied children had delayed language, less than half had speech disorders while only 2.4% had a voice disorder with the total percentage of 44.4% of the studied sample had communication disorders as reported by their primary caregivers. Aboul-Oyun\textsuperscript{16} performed an epidemiological study of communication disorders in Assiut, Upper Egypt on 3171 individual. He found that the overall prevalence of communication disorders was 7.9% and it was more common in rural areas (9.9%) than urban areas (5.1%). The most common diagnoses were delayed language development, dyslalia, and voice disorders with DLD came first in order in urban population while DLD came first in rural areas\textsuperscript{16}. On the other hand, Somefun et al. reported that 70% of preschool Nigerian children who referred to Lagos University Teaching Hospital had delayed language and speech disorders and 2.2% had voice disorders which mostly depend on parents observation\textsuperscript{20}. However, we cannot generalize or compare their findings with our findings as the previous authors conducted their survey on the referred children to the hospital seeking professional advice and treatment indicated by the presence of the problem.

A closer look to the distribution of different types of delayed language developed children according their socio-demographic data, we found that most of them have no apparent cause (168 out of 263 child identified with DLD, representing 63.9%), with nearly equal percentages found in males versus females, urban versus rural areas and in governmental versus private nurseries. Our figures for children with DLD without apparent cause (19.7%) are close to those of Sallam\textsuperscript{21}, screening epidemiologic study on monolingual Arabic speaking kindergarten children aged 3–6 years in Cairo area, Egypt. The later author found that 17% of the 800 children screened had specific language impairment (SLI).

The socio-demographic data of the identified ADHD children revealed that less than half of them are in the age range between 4 and 5 years, and the majorities are males, first siblings, in urban area and belong to educated parents. Our age range of children with ADHD identified by their parents are in contrast with Smith\textsuperscript{6} findings who believes that ADHD can be reliably identified and diagnosed in children as young as 3 years and reported that the symptoms of ADHD appeared at or before age of 4 years in two-thirds of her studied children according to their mothers reports\textsuperscript{22}.

Another interesting finding in this study is that more than half of children who suspected to have autism were located at urban areas. This is in agreement with Tsuang\textsuperscript{3} study who reported that the prevalence of autism among Japanese preschoolers is consistently higher in urban than in rural areas\textsuperscript{23}. Also all the hearing impaired children reported by the caregivers in our study reside in the urban areas. This could be attributed to the reluctance of the parents in rural areas to engage their hearing impaired children in the mainstream education. This necessitates a further investigation.

The most recent report (September, 2011) of the national institute of neurological disorders and strokes (NINDSs) stated that 8–10% of American children under 18 years of age have some type of learning disability. Learning disabilities are disorders that affect the ability to understand or use spoken or written language, do mathematical calculations, coordinate movements, or direct attention. Although learning disabilities occur in very young children, the disorders are usually not recognized until the child reaches school age\textsuperscript{24}. The learning disabled children without an apparent cause that are reported by the caregivers in our study are 2.8% of the studied sample. If we added to the previous figure the children who are suffering from DLD due to different etiologies, we get 33.6% of the studied sample have learning disability according to the NINDS definition.

The largest percentage of the identified communication disorder reported by the caregivers in our study is the articulation errors that are often easily corrected in a short time. Another speech disorder reported by the caregivers is the fluency problem. The dysfluent males are more than twice the dysfluent females (2.3 male:1 female). This was in agreement with Proctor

### Table 6 Differences between primary caregivers’ and teachers’ responses to identification of communication disorders among studied sample (n = 852).

<table>
<thead>
<tr>
<th>Items</th>
<th>Care givers identification response</th>
<th>Teachers identification response</th>
<th>Differences</th>
<th>$X^2$</th>
<th>$P$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delayed language development</td>
<td>263 (30.8%)</td>
<td>75 (8.8%)</td>
<td>188 (71.5%)</td>
<td>2.515</td>
<td>0.000**</td>
</tr>
<tr>
<td>Learning difficulties</td>
<td>24 (2.8%)</td>
<td>11 (1.3%)</td>
<td>13 (54.2%)</td>
<td>5.583</td>
<td>0.018*</td>
</tr>
<tr>
<td>Articulation errors</td>
<td>206 (24.1%)</td>
<td>85 (10.0%)</td>
<td>121 (58.7%)</td>
<td>89.816</td>
<td>0.000**</td>
</tr>
<tr>
<td>Resonance disorder</td>
<td>24 (2.8%)</td>
<td>17 (2.0%)</td>
<td>7 (29.1%)</td>
<td>1.043</td>
<td>0.000**</td>
</tr>
<tr>
<td>Fluency disorder</td>
<td>152 (17.8%)</td>
<td>61 (7.2%)</td>
<td>91 (59.9%)</td>
<td>1.624</td>
<td>0.000**</td>
</tr>
<tr>
<td>Change of voice (dysphonia)</td>
<td>21 (2.4%)</td>
<td>13 (1.5%)</td>
<td>8 (38.1%)</td>
<td>3.364</td>
<td>0.000**</td>
</tr>
<tr>
<td>Total number of children with Communication disorders</td>
<td>379 (44.4%)</td>
<td>262 (30.8%)</td>
<td>117 (30.9%)</td>
<td>4.711</td>
<td>0.000**</td>
</tr>
</tbody>
</table>

Non-parametric Chi square test.

* $p$ significant ($< 0.05$) and.

** $p$ highly significant ($< 0.01$).
et al., study who reported a prevalence of fluency problem in African American preschool children aged between 2 and 5 years to be 2.52% more in boys than girls. One of the interesting finding in this study is that most of the children having a voice problem came from private nurseries. This could be attributed to more activities in these nurseries than the governmental ones regarding singing songs and rhymes with the bad habit of children of shouting, instead of singing, to dominate each other.

Another domain of this study is to survey the teachers’ identification of communication disorders among their classes. Our study revealed that there are great discrepancies between primary caregivers’ and teachers’ responses to the questionnaire items for the same sampled children. There are statistically highly significant differences between the two parties in all reported communication disorders with a total of 30.9% of the children that were identified with a communication problem – as reported by their primary caregivers – are missed by teachers. This discrepancy could be attributed to the large number of children in the class with the difficulty in observing or assessing every child in the class.

Another issue is that the majority of the nursery teachers surveyed do not have kids and none of them received training courses in communication disorders and/or special needs education.

One limitation that faced the authors was that the reported children with communication disorders were scheduled to be referred for further professional Phoniatric evaluations to confirm the diagnoses. However, many parents were reluctant, underestimating the problem and/or refused to go through further medical evaluations. These professional evaluations should be considered for future survey studies.

To the best of the authors knowledge, this the first field study that addressing the size of communication disorders problem among Egyptian pre-school children. The previous figures addressed reflect the magnitude of the problem of communication disorders among pre-school children in our locality that are representative of Egyptian Arabic speaking children that necessitates a special attention from different disciplines including the ministry of education and ministry of health and many other governmental and non-governmental organizations. A special training program should be directed to the nursery school teachers with the aim to teach them how to spot these children for further management procedures as the teachers are the first persons that have the second immediate contact with the child after his/her parent. Also the school nurses working at primary health care settings should be trained to differentiate between various communication disorders among pre-school children in order to empower their role of early identification and to guide parents for further medical diagnosis and management.

The authors recommend a national screening of pre-school children for the communication disorders in order to identify those who are susceptible as early as possible and to prevent negative consequences of these disorders on the child development, academic and social skills.

Appendix A

(Summarized questionnaire for caregivers)

Appendix B

(Summarized questionnaire for Teachers)
References

22. Smith B. ADHD among preschooler: Identifying and treating attention deficit hyperactivity disorders in very young children requires a different approach. Am Psychol Assoc. Monitor Psychol. 2011;42(7);50.