Introduction

Early diagnosis is difficult to detect in very young children on clinical assessment or using standard diagnostic instruments.\(^1\) The average earliest age of diagnosis is approximately four or five years, although there is a trend towards earlier diagnosis in the pre-school age range.\(^2\) Even with relatively earlier diagnosis, there is usually a gap (typically between 24 and 30 months duration) between the child's age when the parents first raise concerns, and the child's age at clinical assessment.\(^3\) Delays in diagnosis disrupt the child and parents' lives, and delay the implementation of support services.\(^4\) Evidence suggests early diagnosis and intervention greatly enhance long-term prognosis.\(^5\)

Given the importance of early diagnosis, a screening instrument that can be easily administered to large samples of very young children would help identify those at-risk for autism. The Checklist for Autism in Toddlers (CHAT) addresses the need for earlier screening and identification for autism diagnosis beginning at 18 months.\(^6\) A screening instrument was administered to infants at 18 months of age. Primary health care providers can administer the CHAT. Therefore it can be used to screen for autism with the CHAT instrument used on infants around 12 months of age and again at 18-month developmental assessment in the UK,\(^7\)\(^8\) and has been shown to identify potential cases of autistic spectrum disorder for full diagnostic assessment. The CHAT instrument has not been widely used in this age group in Ireland to date. The report findings from a population based screening study using the CHAT instrument in a sample of 2117 infants presenting to public health nurses for 18-month developmental assessment.

Methods

Sample Group

We used a cross-sectional study design. All Public Health Nurses (PHNs) who worked in counties Cork and Kerry during the target period were invited to participate. A letter was sent to all PHNs asking them to attend one of seven half-day training sessions offered at various locations in counties Cork and Kerry by members of the research team. PHNs at each site were calibrated in the administration and scoring of the CHAT instrument, given a presentation on childhood autism, and the study protocol was thoroughly discussed. A total of 164 PHNs attended a training session and 95% agreed to assist with data collection (n=156).

CHAT Instrument and Fieldwork

The CHAT instrument was employed in data collection. This is a 14 item interviewer-administered instrument divided into two sections: A includes 9 items administered to the parent and Section B includes 5 items based on interviewer observations of the infant.\(^9\) The PHNs collected additional socio-demographic data including data on parents' occupation(s), parents' birth order and child's birth status (single or twin).

Participating PHNs administered the CHAT at the 18-month developmental check. The socio-demographic questionnaire was self-completed. The social class distribution of the study sample relative to the Southern Health Board (Cork & Kerry) based on 2002 census data was coded on the basis of the higher of the parents social class categories. Each completed CHAT was scored by the PHN into one of three categories: high, medium or low risk for autism, based on a standard scoring system. If an infant scored medium or high risk for autism at the first administration, a second screening was administered approximately one month later. All second screenings were administered by the same PHN that conducted the first screening. PHNs were trained to code the socio-demographic questionnaire. The social class distribution of the former Southern Health Board area (Cork & Kerry) based on 2002 census data was coded on the basis of the higher of the parents social class categories.

Data were analysed using SPSS version 9.0. The main outcome measures were a medium or high-risk score following two administrations of the CHAT screening instrument and a positive diagnosis of autism after clinical assessment.

Results

A summary of screening outcomes at the first screening, second screening and the outcome of clinical assessment is provided in Figure 2. A total of 29 infants from the study sample of 2117 were characterised as Medium\(^9\) or High\(^9\) at first screening: an estimated prevalence rate of 251 per 10,000 (95% CI: 226 to 274) following the first screening. Three of the 29 first screen positive infants were diagnosed with autism, one with learning disability and the remaining three were found to be at low risk for autism. On clinical assessment of five of the ten infants whose parents declined second screening, four were found to have autism and one no diagnosis. Thus following the first screening, 137.0 per 10,000 (95% CI: 91.9 to 196.1) of 7 children received a diagnosis of autism: an overall prevalence rate for autism of 251 per 10,000 (95% CI: 226 to 274) following the first screening. The yield in terms of autism cases can be detected.

The average earliest age of diagnosis is approximately four or five years, although there is a trend towards earlier diagnosis in the pre-school age range.\(^2\) Even with relatively earlier diagnosis, there is usually a gap (typically between 24 and 30 months duration) between the child's age when the parents first raise concerns, and the child's age at clinical assessment.\(^3\) Delays in diagnosis disrupt the child and parents' lives, and delay the implementation of support services.\(^4\) Evidence suggests early diagnosis and intervention greatly enhance long-term prognosis.\(^5\)

The involvement of public health nurses in routine clinical practice, but with formal training in the use of the CHAT instrument, represents a significant strength of the study. However the relatively small sample size is a significant limitation. Although a good response rate for first-time screening was achieved (79%), the sample was small for the relatively rare condition of autism. The prevalence estimate of the CHAT instrument was not applied to the entire population. Thus the estimate is an overestimate of the true rate of autism in the catchment area could not be derived from the study.

Furthermore the diagnostic test performance of the CHAT instrument limits the accuracy of the prevalence estimate of autism. It is reported to have a sensitivity of 38% and specificity of 98% for identifying autism in this age group.\(^9\) The performance of the CHAT instrument has not been widely used in this age group. To determine the efficacy of the CHAT instrument, the Modified and Initial Results of the Modified Checklist for Autism in Toddlers (M-CHAT) suggest this instrument may have higher test performance but has not been comprehensively evaluated in a general population sample.\(^9\) In conclusion this represents significant progress in the early detection of autism and pervasive developmental disorders and we should prioritize work on the evaluation of this instrument in routine developmental assessments in Ireland.

The use of the CHAT within the broader context of developmental infant screening deserves further consideration. For example Ronda and Shimizu\(^10\) reported very good detection rates for autism in serial screenings of infants at 18-months and 24-months of age in Japan. A second screening instrument was administered first to identify infants who were likely to have developmental problems not specific to autism. Children testing positive were subsequently followed-up with more specific instruments.

In summary, we have shown that the CHAT instrument, administered by public health nurses at the 18-month developmental assessment, represents a potentially feasible strategy for the early diagnosis of autism. It is an inexpensive, quick...
and simple instrument for PHNs to use. Given the evidence that early diagnosis improves prognosis in autism\(^{20}\) there is a clear need for further work addressing the use of the CHAT instrument in routine developmental assessment in Ireland.

References


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Other References: No References<br>

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