Abstract

Background: South Africa's health care system is facing numerous challenges; such as a high burden of infectious diseases, restricted resources and limited manpower within the public sector. These health care challenges have not fully allowed the successful implementation of early identification of hearing loss. This may place children at a higher risk of late identification of possible hearing developmental delays, and appropriate developmental surveillance systems are not evident. In addition, different risk factors may demonstrate variable expressivity over time, and thus, it is important to monitor the development of children who were classified as high-risk at birth.

Aims: The main aim of the current study was to determine the developmental outcomes of children who were considered high-risk at birth and previously enrolled in a risk-based newborn hearing screening programme.

Method: This study was a descriptive, cross-sectional, prospective cohort design with an integration of retrospective aspects. Data was collected through a general development screening measure (the Parents' Evaluation of Developmental Status), a hearing and communicative checklist, and a hospital file review. Sixty seven caregivers of children who were part of a risk-based newborn hearing screening study were purposefully selected. Data was analysed using descriptive and statistical analysis. Statistical analysis included the Fisher's exact test.

Results: The most frequently occurring case history factors in the current study sample included; preterm birth (100%), low birth weight classes (100%), prolonged hospital stay (95.5%), increased bilirubin levels (neonatal jaundice and hyperbilirubinemia) (86.6%), ototoxic medication (79.1%) and mechanical ventilation (26.9%). Results from the Parents' Evaluation of Developmental Status (PEDS) revealed caregivers most commonly expressed concerns relating to behaviour (25.4%), expressive language (20.9%) and social-emotional development (11.9%). A significant proportion of children in the current study did not meet their fine motor milestones (68.7%), followed by receptive language (44.8%) and expressive language milestones (40.3%). Statistically significant relationships were established between the PEDS measure and bilirubin treatment (p=0.048), and ototoxicity (p=0.008). Furthermore, the relationship between APGAR scores and gross motor milestones (p=0.002), and length of hospital stay and receptive language milestones (p=0.039) was considered statistically significant. Of the four children who did not meet their audiological milestones, all presented

with one or more of the following case history factors; preterm birth, low birth weight classes, prolonged hospital stay, neonatal jaundice mostly requiring phototherapy treatment, HIV exposed infected/ exposed uninfected, mechanical ventilation, ototoxic medication and respiratory distress syndrome.

Conclusion: Findings from the current study may be used to inform risk-based surveillance protocols at follow-up clinics. Clinical implications include suggesting case history factors which are possibly associated with delayed general and hearing development outcomes. Findings may include strengthening the collaboration between paediatricians, audiologists and other allied healthcare professionals when conducting developmental monitoring. In addition, it may aid in encouraging audiologists to monitor certain risk factors more than others in an overburdened healthcare system. Findings may also inform the feasibility and possible time periods to conduct risk-based surveillance programmes within the South African context.

Key words: Development, Risk Factors, Delayed-Onset, Hearing Loss, Risk-Based, Surveillance, Monitoring, Screening, South Africa.