

Research Paper

A Thematic Qualitative Single Case Study on Functional and Social Skills Training in An Adult with Birth Asphyxia

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ABSTRACT

This thematic qualitative single-case study explores the outcomes of a 25-day structured functional and social skill training program for a 24-year-old male adult with a history of birth asphyxia. The research was conducted at the Association for Early Intervention for Children with Disabilities in Oman, a rehabilitation and vocational training center for individuals with developmental challenges. Using a single-case qualitative design, the study examined behavioral, cognitive, and adaptive changes through daily observations, reflective documentation, and thematic analysis. Findings indicate significant improvement in communication, task persistence, and social responsiveness following structured intervention, reinforcement, and environmental support. The research underscores the effectiveness of individualized, multi-sensory, and routine-based programs in fostering independence and adaptive growth among adults with neurodevelopmental impairments resulting from birth asphyxia.

Keywords: Birth Asphyxia, Functional Skills, Thematic Analysis, Adaptive Behavior, Social Learning, Rehabilitation, Cognitive Training

Birth asphyxia, also referred to as perinatal asphyxia, is a condition that occurs when an infant's brain and other organs are deprived of oxygen before, during, or immediately after birth. This oxygen deprivation can lead to serious neurological impairments with lifelong implications, including cognitive deficits, motor delays, and communication challenges. Research suggests that survivors of birth asphyxia often display varying degrees of developmental delays that affect their academic, occupational, and social functioning throughout life. While medical interventions during infancy are well-documented, the long-term rehabilitation needs of adults with birth asphyxia remain under-researched. This study responds to that gap by examining the behavioral and functional outcomes of a structured 25-day intervention focusing on communication, adaptive, and vocational skills.

Study Purpose

The primary purpose of this study is to evaluate the effectiveness of a structured functional and social skill training program designed for an adult with developmental impairments resulting from birth asphyxia. It aims to understand how consistent reinforcement, structured

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routines, and social engagement contribute to improved adaptive behavior, task persistence, and self-help capabilities.

Objectives

1. To assess baseline social, cognitive, and adaptive functioning in the participant.
2. To design and implement a 25-day structured intervention program emphasizing social and functional skills.
3. To identify emergent themes reflecting developmental progress through qualitative observation.
4. To recommend strategies for sustainable adaptive skill development and policy integration.

REVIEW OF LITERATURE

Research on perinatal asphyxia has primarily focused on neonatal outcomes and early childhood development, with limited studies addressing long-term rehabilitation. Shankaran (2012) identified birth asphyxia as a major cause of neonatal encephalopathy, while Laptook and Shankaran (2018) highlighted that cognitive impairments can persist into adulthood. Donders et al. (2010) found that hypoxic brain injury impacts executive functioning and working memory, contributing to learning and adaptive challenges. Interventions emphasizing repetition and structure have shown significant promise in improving self-regulation (Schultz et al., 2011). Matson and Neal (2019) demonstrated that individuals with intellectual disabilities benefit from functional skills programs that use visual and behavioral supports.

Guralnick (2011) emphasized the importance of early and continuous intervention across developmental stages, while Vygotsky (1978) and Bandura (1977) both underscored the role of social interaction and modeling in learning. Contemporary rehabilitation research (Spence et al., 2017; WHO, 2015) calls for inclusive community-based programs that integrate vocational readiness, adaptive skill training, and psychosocial support for individuals with disabilities. Collectively, these studies highlight the critical importance of structured, individualized interventions across the lifespan.

Adulthood with Asphyxia and Existing Research Gaps

Adults who have experienced birth asphyxia represent a population that has received comparatively little research attention in neurodevelopmental and rehabilitation studies. Birth asphyxia, which results from oxygen deprivation before or during delivery, can lead to long-term neurological sequelae, including intellectual disability, learning difficulties, and adaptive behavior deficits. While many studies have explored neonatal and early childhood interventions, few have followed these individuals into adulthood to assess their social, vocational, and psychological outcomes.

In adulthood, individuals with a history of birth asphyxia often face persistent challenges in memory, attention, and executive functioning, which limit their ability to live independently or maintain employment. Research by Donders et al. (2010) and Laptook and Shankaran (2018) indicates that hypoxic brain injury may lead to lasting cognitive inflexibility, slower processing speed, and reduced adaptive performance. Furthermore, these adults may exhibit behaviors similar to those seen in developmental conditions such as autism spectrum disorder (ASD), including limited social reciprocity, difficulty with transitions, and

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dependence on structured environments. Despite these overlaps, the adult rehabilitation literature on asphyxia remains sparse compared to research on ASD or cerebral palsy.

Existing studies primarily focus on medical management or early developmental outcomes, leaving significant gaps in understanding the long-term psychosocial and vocational implications of perinatal hypoxia. Very few studies have examined how adults with asphyxia-related cognitive impairment respond to structured behavioral, functional, or vocational training. Most intervention models cease after adolescence, creating a critical discontinuity in care during the transition to adulthood.

Moreover, there is a notable lack of culturally contextualized research, particularly in non-Western settings such as the Middle East, where community-based rehabilitation systems are still developing. This gap highlights the need for qualitative case studies and longitudinal research exploring adult functional skills, adaptive behavior, and life satisfaction following birth asphyxia.

The present thematic qualitative case study contributes to filling this gap by examining how a structured 25-day intervention program focusing on social and functional skills can promote independence and engagement in an adult with developmental impairments resulting from perinatal asphyxia. By documenting changes in communication, attention, and daily living abilities, this study adds valuable insight to the underrepresented field of adulthood rehabilitation for individuals affected by early neurological injury.

Gaps in Literature

Existing literature predominantly addresses the neonatal and early childhood stages of asphyxia recovery. However, there is a notable lack of longitudinal and adult-based studies that explore how structured rehabilitation influences social and functional adaptation. Moreover, thematic analyses focusing on individualized adult intervention within Middle Eastern contexts are particularly scarce. This study attempts to fill that gap by documenting the real-time progress of an adult with birth asphyxia through qualitative, thematic analysis.

Theoretical Framework

This study is grounded in Bandura's Social Learning Theory (1977), which emphasizes learning through observation, imitation, and reinforcement. The use of modeling, visual cues, and structured feedback aligns with Bandura's principle of vicarious reinforcement. Vygotsky's Sociocultural Theory (1978) complements this framework by explaining how social interaction and guided participation support skill development. The combination of these theories provides a strong basis for understanding how structured environments, social models, and positive reinforcement promote learning among adults with cognitive impairments.

RESEARCH METHODOLOGY

Research Design

The research adopted a qualitative, single-case study design using thematic analysis. The 25-day intervention was implemented within a rehabilitation center setting, where the participant engaged in structured daily activities focusing on communication, vocational tasks, and adaptive living routines. Data collection methods included participant observation, reflective journals, and daily behavioral tracking. Thematic analysis was applied to derive patterns of change and emerging behavioral themes.

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Participant Profile

The participant was a 24-year-old male diagnosed with developmental delay due to birth asphyxia. He presented with mild intellectual disability, delayed speech, and challenges in social communication and task completion. Strengths included high cooperativeness, expressive enjoyment in music and drama, and strong family involvement. Limitations involved low working memory, delayed attention span, and reliance on prompts for self-care tasks.

Data Collection and Analysis

Data were gathered through structured daily observations, therapist journals, and reflective summaries. Qualitative coding was conducted to identify recurrent patterns related to behavioral engagement, communication, and adaptive functioning. Braun and Clarke's (2006) six-step thematic analysis approach guided the interpretation of data, leading to the emergence of five major themes:

- 1. Structured routine engagement:** The participant showed better focus and reduced anxiety when activities followed a consistent, predictable daily routine. Regular scheduling helped him transition smoothly between tasks and improved overall task completion.
- 2. Reinforcement-driven learning:** Immediate verbal praise and token rewards effectively motivated participation and improved task accuracy. Positive reinforcement strengthened learning retention and encouraged self-initiated engagement.
- 3. Social participation:** Gradual exposure to group activities enhanced the participant's comfort in social settings. He began initiating brief interactions, showing greater cooperation and enjoyment during peer-based sessions.
- 4. Communication growth:** The participant demonstrated noticeable progress in expressive and receptive language. He responded more promptly, used short phrases spontaneously, and displayed improved understanding of social cues.
- 5. Adaptive independence:** The participant demonstrated noticeable progress in expressive and receptive language. He responded more promptly, used short phrases spontaneously, and displayed improved understanding of social cues.

Ethical Considerations

Informed consent was obtained from the participant's guardian prior to data collection. Ethical approval was secured from the institutional review board. All identifying information was anonymized. Confidentiality and non-maleficence were strictly maintained throughout the research process. The principle of non-maleficence was maintained, with interviews paced according to the parents' comfort, ensuring the research did not create additional burden.

RESULTS: THEMATIC FINDINGS

The analysis revealed five prominent themes that captured the participant's developmental trajectory throughout the intervention period:

- 1. Structured Routine Engagement** – Establishing consistent routines enhanced predictability and participation, reducing anxiety and improving attention.
- 2. Reinforcement-Driven Learning** – Immediate praise and token rewards increased motivation and sustained task completion rates.
- 3. Social Participation** – The client exhibited growing engagement in peer and group activities, transitioning from observer to active participant.

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4. Communication Growth – Expressive language improved, with more spontaneous responses and appropriate social gestures observed.
5. Adaptive Independence – Progress was seen in hygiene routines, snack preparation, and independent task initiation with fewer prompts.

DISCUSSION AND CONCLUSION

The findings align with existing theories suggesting that consistent reinforcement, modeling, and environmental structure are key to improving functional independence in adults with cognitive impairments. The client's increased participation and motivation reflect the impact of applied behavioral reinforcement. This study also emphasizes the importance of family involvement, peer interaction, and individualized attention as major factors influencing skill acquisition.

Overall, the intervention demonstrated measurable progress in communication, adaptive functioning, and self-confidence. These results support continued integration of structured, routine-based rehabilitation for adults with developmental disabilities stemming from early-life neurological injury.

Implications for Practice and Policy

Practitioners should emphasize the use of step-by-step visual aids, positive reinforcement, and collaborative family participation in intervention programs. Policy frameworks must prioritize inclusive vocational centers that accommodate adults with lifelong developmental challenges, ensuring access to structured skill-building opportunities that extend beyond childhood rehabilitation.

Limitations and Future Research

The study is limited by its single-case design, which restricts generalization. Future research should include comparative case analyses, quantitative measures, and long-term follow-up to assess sustainability of gains. Expanding this thematic framework to group interventions may reveal broader applicability.

Conclusion

This thematic study highlights the transformative potential of structured functional and social skills training in adults with birth asphyxia. Through visual reinforcement, social modeling, and consistent routines, the participant achieved notable gains in independence and adaptive behavior. Continued research and policy advocacy are essential to ensure lifelong support for adults living with the long-term effects of early neurological injury.

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Conflict of Interest

The author(s) declared no conflict of interest.

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