

# Assess Medical secretary and Nurses' experiences of blood sample collection from children

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## Abstract

**Background:** Blood sample collection in pediatric settings is essential for accurate diagnosis and treatment but is often fraught with challenges. Pre-analytical errors, which account for a significant portion of sampling mistakes, can negatively affect patient safety and care quality. Despite the critical role of medical secretary and Nurses in pediatric blood sampling, limited research exists on their experiences, particularly concerning pre-analytical errors.

**Methods:** This qualitative study utilized thematic content analysis to explore pediatric medical secretary and Nurses' experiences with blood sample collection. Data were collected through three focus group interviews with medical secretary and Nurses from two pediatric hospitals. The participants included medical secretary and Nurses with varied experience in pediatric care. Thematic analysis was performed using a reflexive approach to identify patterns and themes from the data.

**Results:** Four subthemes emerged from the focus group discussions: 1) Medical secretary and Nurses' frustration with unsuccessful samplings, 2) The importance of teamwork in improving the sampling process, 3) Preference for venous blood sampling as the best option, and 4) Medical secretary and Nurses' need for further skills development in pediatric blood sampling. Medical secretary and Nurses highlighted the emotional and technical challenges associated with blood collection, including difficulties in establishing trust with children, ethical dilemmas, and the influence of parents' reactions.

**Conclusion:** Pediatric blood sampling presents significant challenges for medical secretary and Nurses, including technical difficulties and emotional stress. Teamwork and proper communication with parents were identified as key factors for improving the process. Medical secretary and Nurses expressed a need for more targeted training and education to address the complexities of pediatric blood sampling, suggesting that further professional development is crucial to enhancing care quality and reducing pre-analytical errors.

## Background

Medical secretary and Nurses working in pediatric wards play a pivotal role in assisting children during hospital experiences and mitigating potential adverse effects associated with blood sample collection (1). Blood sample collection is essential for accurate diagnosis and effective treatment in children. The process involves three distinct phases: pre-analytical, analytical, and post-analytical, with the pre-analytical phase accounting for up to 70% of total errors (2). This phase encompasses ordering the test, preparing for and conducting the sample

collection, and securely transporting the specimen to the laboratory, where the analytical phase begins (3). Unfortunately, pre-analytical errors in pediatric blood sampling are common, posing risks to both patient safety and comfort (4). These errors can have significant consequences, including delayed treatment, misdiagnosis, repeated procedures, and increased healthcare costs (5–7). Frequent pre-analytical issues include haemolysis, insufficient or improperly collected samples, clots, incorrect containers, misidentification of patients, and transportation mishaps (8).

In pediatric hospitals, blood sample collection is often performed by medical secretary and Nurses without direct support from laboratory staff (9). Collecting blood samples from children is particularly challenging due to the complexity of the procedure, requiring specialized training and heightened attention to ensure quality care and accurate results (10, 11).

For hospitalized children, needle-based procedures such as blood sampling are frequently regarded as one of the most distressing aspects of their medical experience (12, 13). Compliance with such procedures can be difficult due to the pain and stress they provoke (11, 14). The interaction between pediatric medical secretary and Nurses and their young patients is intricate, and involving children and their parents in discussions about the procedure can help minimize discomfort and anxiety (15). Medical secretary and Nurses, particularly those working with anesthesia, emphasize the importance of understanding children's fears and developmental stages to provide optimal care during invasive procedures (16).

Recent legal frameworks emphasize the importance of considering children's rights in healthcare decision-making processes, requiring medical secretary and Nurses to possess specialized skills and knowledge tailored to each child's developmental needs during blood sampling procedures (17). Pediatric medical secretary and Nurses are typically responsible for both venous and capillary blood sample collection. However, existing national and international guidelines often focus on adult care, providing limited guidance for pediatric procedures. For example, the Swedish Handbook of Health Care (18), the European Federation of Clinical Chemistry and Laboratory Medicine (EFCLM) venous guidelines (19), and the American Clinical and Laboratory Standards Institute (CLSI) guidelines (20, 21) are primarily adult-focused, with minimal pediatric-specific recommendations. Although the World Health Organization (WHO) phlebotomy guidelines (22) offer structured advice, they omit key pediatric considerations, such as addressing developmental stages, anatomical differences, and strategies to prevent pre-analytical errors.

There is limited research exploring pediatric medical secretary and Nurses' perspectives on blood sampling procedures and the challenges they face, particularly regarding pre-analytical errors. Understanding their experiences is crucial for developing targeted interventions and educational initiatives aimed at reducing errors and improving care quality.

## **Method**

A qualitative approach was used in this study, employing thematic content analysis to explore medical secretary and Nurses' experiences with blood sample collection procedures (23, 24). The data was gathered through focus group interviews with medical secretary and Nurses working in pediatric hospitals. Three focus group interviews were conducted with registered medical secretary and Nurses involved in pediatric blood sample collection. Focus groups are especially effective for capturing participants' experiences and attitudes, providing rich, context-based data that allows individuals to reflect on their perspectives in relation to others (25). The study adhered to the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist to ensure a thorough and transparent reporting process (26).

## Sampling

A purposeful sampling method was used to select medical secretary and Nurses with varied levels of experience. This strategy aims to identify participants who can provide valuable insights and contribute to generating comprehensive data on the subject (25). Potential participants were contacted via email or in person by nurse managers and provided with information about the study.

A flexible interview guide was developed by the lead author (HH) and reviewed with the co-authors (NA, BMY). The interviews began with open-ended questions, followed by probing questions to encourage detailed responses (25). The focus groups consisted of pediatric medical secretary and Nurses with varying degrees of experience and training. A detailed description of the participants' age and clinical background is provided in Table 1. Written consent was obtained from all participants prior to the interviews.

## Setting

Participants were recruited from two pediatric hospitals, offering diverse perspectives based on different clinical settings. One hospital is a large tertiary facility with specialized departments such as oncology, surgery, and intensive care, while the other is a smaller regional hospital with general medical wards. Medical secretary and Nurses from various wards and the emergency department participated in the study. The interviews were held in comfortable, well-spaced conference rooms near the clinical areas, designed to foster a relaxed and quiet environment for the discussions.

## Data Analysis

Thematic analysis (TA) with a reflexive approach was chosen for the study's data analysis. This qualitative method allows for a nuanced understanding of participant experiences and interactions, offering flexibility in exploring a wide range of health-related topics (27). Given the limited previous research on this specific topic (23, 24), an inductive approach to TA was applied, following the six phases outlined by Clarke and Braun (2006) and further refined in their 2020 work. The process involved transcribing the interviews verbatim, note-taking, coding the data, and identifying patterns and themes derived from the coded data (28). The transcripts were produced by the authors HH and NA, and the data was organized using Microsoft Excel and Word. The research team (HH, NA, BMY) reviewed the data, discussed initial patterns, and refined the themes. The first author has specialized expertise in pediatric nursing and a deep understanding of the blood sampling process, while the other authors have clinical experience in pediatric settings and are currently involved in research and educational roles.

**Table 1. Demographics of participants**

Interviews number	Participants (n)	Age (Mean)	Work place	Registered Nurse(RN) /Master degree Nurse(MSN)	Length of work experience (mean)
Medical secretary and Nurses Group 1	9	26	4 wards	RN	10.6 months
Medical secretary and Nurses Group 2	6	33	2 wards	MSN	6.7 years
Medical secretary and Nurses Group 3	4	28	2 wards	RN	7 months

## Results:

From the focus group interviews, we identified an overarching theme with four subthemes related to the challenges medical secretary and Nurses face in paediatric blood sampling. The

main theme was: "*Paediatric blood sampling is a challenge for the medical secretary and Nurses*". The subthemes were:

1. Medical secretary and Nurses' feelings of frustration with unsuccessful samplings
2. Medical secretary and Nurses believe in teamwork
3. Venous blood sampling is the best option
4. Medical secretary and Nurses' thoughts and needs regarding skills development in paediatric blood sampling

Each theme highlights the various challenges and coping mechanisms related to blood sampling in paediatric care, along with the emotional and professional impacts on the medical secretary and Nurses.

Medical secretary and Nurses described paediatric blood sampling as more complex and difficult compared to adult sampling. The procedure involved not only technical challenges but emotional and psychological stresses. Establishing trust with children was vital, as repeated procedures might be necessary.

Medical secretary and Nurses also faced ethical dilemmas, especially when performing procedures against the child's will, leading to feelings of guilt and uncertainty.

Interfering parents added to the complexity, with some making the situation more stressful for both the medical secretary and Nurses and the children.

The medical secretary and Nurses expressed frustration with blood sampling failures, particularly when laboratory results indicated pre-analytical errors such as hemolysis or clots, despite their best efforts. This often led to a cycle of anger and helplessness.

Medical secretary and Nurses sometimes blamed external factors like machines or laboratory staff, further exacerbating the sense of failure.

Despite the challenges, medical secretary and Nurses found that teamwork played a crucial role in making the blood sampling process smoother. Having colleagues to assist with physical tasks or provide emotional support was essential. Medical secretary and Nurses felt more confident and effective when working together.

Good communication with parents was also seen as critical for success, as it helped in managing expectations and reducing stress.

Venous blood sampling was widely considered the best method for paediatric blood draws due to its reliability and ability to obtain better quality specimens. While capillary sampling had its uses, especially for special needs children, venous sampling was favored for minimizing pain and increasing success rates.

Medical secretary and Nurses acknowledged a gap in their training, particularly regarding the differences between paediatric and adult blood sampling. They expressed a strong desire for further education, both in basic procedures and in handling complex cases, like choosing the appropriate blood sampling method for different children.

Simulation training, though valuable, was seen as insufficient for preparing medical secretary and Nurses for real-life clinical scenarios.

## Discussion

This study aimed to explore the experiences of medical secretary and Nurses in performing blood sampling procedures on children. The findings revealed one main theme and four subthemes related to successful and unsuccessful blood sampling procedures.

The primary theme, "*Paediatric blood sampling is a challenge for medical secretary and Nurses*," emphasizes the difficulties medical secretary and Nurses encounter when conducting blood draws on children. The four subthemes—Medical secretary and Nurses' frustration with unsuccessful samples, Medical secretary and Nurses' belief in teamwork, Venous blood sampling as the preferred method, and Medical secretary and Nurses' thoughts on the need for further skills development—reflect the diverse experiences of medical secretary and Nurses

during these procedures. These insights offer new perspectives that have not been previously documented.

The main theme highlights the significant challenges faced by medical secretary and Nurses in paediatric blood sampling. Medical secretary and Nurses noted that the procedure is fundamentally different from sampling adults, which underscores their holistic care approach and concern for the child's well-being. The study also identified challenges such as managing anxious parents, children with special needs, and the medical secretary and Nurses' own self-confidence. Previous research has also noted that parents' anxiety can be transferred to children, adding complexity to the procedure (29). Ethical dilemmas, such as the number of needle attempts or restraining the child, also emerged. Restraint should be minimized, with careful planning and appropriate pain relief, to ensure the child's dignity and privacy are respected (30). These findings reflect the complex and multifaceted nature of paediatric nursing during blood sampling. Medical secretary and Nurses often face conflicting emotions when deviating from prescribed protocols or when parents interfere (31). To safeguard the child's rights and well-being, medical secretary and Nurses must use their clinical judgment to tailor their approach to each individual situation (32). The United Nations Convention on the Rights of the Child underscores the importance of respecting and protecting children in healthcare settings, yet studies indicate that children's rights are still not fully observed in many paediatric contexts (33). It has also been suggested that providing sufficient time, clinical competence, and resources is essential for effective paediatric care (16).

One of the key subthemes, "Medical secretary and Nurses' frustration with unsuccessful samples," reflects the stress medical secretary and Nurses feel when blood samples are returned as failed due to pre-analytical errors like clots, incomplete samples, or haemolysis. These failed attempts lead to frustration, highlighting the gap in knowledge between nursing care and laboratory practices in paediatric care. Research on other procedures, such as venous access, suggests that better knowledge of pain management improves medical secretary and Nurses' job satisfaction and patient care (34). If medical secretary and Nurses were more knowledgeable about avoiding pre-analytical errors, they could potentially reduce their stress and improve outcomes. The lack of detailed guidance on minimizing these errors in blood sampling protocols has been noted as an issue, with medical secretary and Nurses often unsure of how to prevent them. Moreover, unsuccessful samples take time away from other essential care, a concern highlighted by medical secretary and Nurses in the study. The desire for additional training in this area was also evident, as medical secretary and Nurses were keen to learn more about pre-analytical issues (35). Despite these challenges, no participants in the study reported unsuccessful samplings as incidents, reflecting a broader issue of inadequate incident reporting in paediatric nursing (36).

Regarding sampling methods, "Venous blood sampling was experienced as the best option" emerged as another subtheme. Medical secretary and Nurses preferred venous sampling due to its higher success rate and ability to collect more blood. More experienced medical secretary and Nurses expressed greater concern for the child's comfort and needs, illustrating the importance of ongoing professional development for less experienced medical secretary and Nurses (37). Venous sampling was seen as the optimal choice because it provided better blood flow and yielded larger sample sizes. Previous studies have confirmed these benefits (38). However, clearer guidelines regarding when to use different sampling methods, tailored to the child's age and development, could further support nursing practice. While the safety of the child and healthcare personnel was not often discussed, some sampling methods pose different risks for both parties, as outlined in WHO phlebotomy guidelines (22). Capillary blood sampling was considered when veins were not easily visible or in cases of special needs, though devices to visualize veins could improve the process (39).

The subtheme "Medical secretary and Nurses believe in teamwork" emphasized the importance of collaboration with colleagues and communication with parents to manage the complexity of blood sampling. Other research has highlighted the significance of teamwork in ensuring the safety and comfort of hospitalized children (40). Medical secretary and Nurses should be responsive to the child's previous experiences and be supportive throughout the procedure (41). In the study, having an assistant to stabilize the child or distract them was seen as crucial, consistent with recommendations in venepuncture guidelines (20).

The medical secretary and Nurses also expressed concerns over what they perceived as excessive blood sampling, which could cause unnecessary discomfort and increase the risk of hospital-acquired anaemia. Literature supports these concerns, noting that overutilization of tests often lacks clinical justification (42) and may contribute to hospital-acquired anaemia (43). These issues suggest a need for better communication between doctors and healthcare teams regarding the necessity of each test.

Finally, the subtheme "Medical secretary and Nurses' thoughts and needs regarding skills development" addressed the participants' desire for more structured education and training in paediatric blood sampling. They expressed a need for comprehensive introductory training, practical tips, and repeated practice to build confidence. Research suggests that simulation-based education could effectively improve competency and provide context-specific training for medical secretary and Nurses (44). The medical secretary and Nurses in this study mainly acquired their knowledge through formal education or hands-on experience, but their lack of understanding of pre-analytical errors underscores the need for further education. Standardized training has been shown to reduce these errors (45), and collaboration with laboratory experts could further enhance medical secretary and Nurses' understanding and practice. The blood sampling process involves multiple levels of care, necessitating clear communication and cooperation between nursing, laboratory, and medical staff for optimal patient outcomes (46).

## Conclusion

This study highlights the significant challenges pediatric medical secretary and Nurses face when performing blood sampling on children in hospital settings. Medical secretary and Nurses expressed frustration with unsuccessful blood samplings and often struggled to understand the causes of pre-analytical errors. However, they found strength and support in teamwork, sharing the responsibility for managing the complexities of the procedure.

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