Navigating the complexity: unraveling the implementation of youth care guidelines

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NAVIGATING THE COMPLEXITY

Unraveling the Implementation of Youth Care Guidelines

Evelien Dubbeldeman

NAVIGATING THE COMPLEXITY

UNRAVELING THE IMPLEMENTATION OF YOUTH CARE GUIDELINES

Eveline M. Dubbeldeman

Navigating the Complexity: Unraveling the Implementation of Youth Care Guidelines

The work in this thesis was conducted at the Department of Public Health and Primary Care of the Leiden University Medical Center

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NAVIGATING THE COMPLEXITY

UNRAVELING THE IMPLEMENTATION OF YOUTH CARE GUIDELINES

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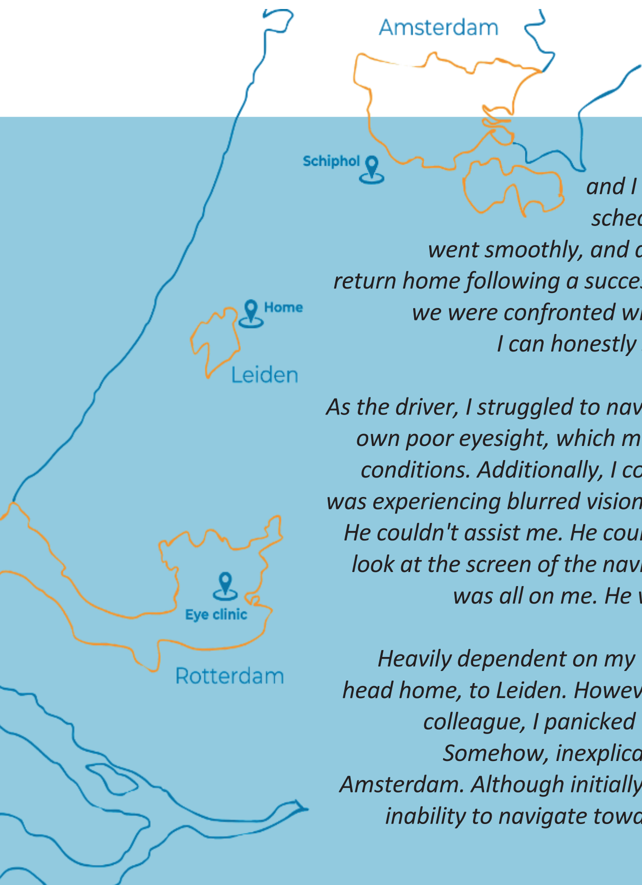
Chapter 1

General introduction



Years ago, on a cold December day, my partner and I visited an eye clinic in Rotterdam, where he was scheduled for laser eye surgery. The outward journey went smoothly, and after a long day at the clinic, we were allowed to return home following a successful operation. However, during our way home, we were confronted with heavy rain and poor visibility as darkness fell. I can honestly say I had never driven in such heavy rain before.

As the driver, I struggled to navigate through the downpour, especially with my own poor eyesight, which made it particularly challenging in rainy nighttime conditions. Additionally, I couldn't rely on my partner, my "colleague," as he was experiencing blurred vision due to the surgery and had to wear sunglasses. He couldn't assist me. He couldn't even see where we were going. He couldn't look at the screen of the navigation system. He couldn't see the road signs. It was all on me. He was my colleague, but now I was working alone.

Heavily dependent on my "guideline," our navigation system, we aimed to head home, to Leiden. However, due to the extreme rainfall and my unhelpful colleague, I panicked and was unable to properly follow my guideline. Somehow, inexplicably, we found ourselves on the road to Schiphol, Amsterdam. Although initially frustrated about the prolonged journey and my inability to navigate towards home, there was suddenly a sense of calm... Yes, Schiphol, this is familiar, we can go home!

This unexpected detour, turning what should have been a 30-minute journey into two hours, serves as a metaphor for the complexities of implementing guidelines within youth care. Just as we relied on navigation during our journey, guidelines provide direction in the practice of child welfare. However, various challenges can disrupt even the best-laid plans, requiring adjustments and support to overcome obstacles towards the common goal, whether this is finding your "home" or improving the well-being of children.

Youth care guideline implementation

Implementation is defined as: ‘the degree to which settings and staff members deliver a program or apply a policy as intended’ [1]. The implementation of guidelines is inherently challenging, and this complexity is increased in the context of care for children. The interdisciplinary nature of the field, the requirement to address sensitive topics with vulnerable families, and the additional pressure from growing waiting lists, increased administrative burdens, and a persistent personnel shortage all contribute to the increased difficulty of effective

implementation [2, 3]. Suboptimal implementation of youth care guidelines may lead to critical issues being overlooked, inaccurately assessed, or neglected. Ensuring early identification and intervention is crucial to safeguard children's well-being and mitigate long-term problems [4, 5]. Given these challenges, this dissertation aims to investigate the persistent issue of suboptimal implementation of youth care guidelines and explore potential strategies to address this.

Youth care and youth care guidelines

The Convention on the Rights of the Child affirms that all children have the right to express themselves and voice their opinions. It guarantees their rights to equality, health, education, a clean environment, a safe living environment, and protection from all forms of harm [6]. It provides a comprehensive framework to promote and protect children's rights, guiding governments, organizations, and individuals in their efforts to create a world where every child can flourish, develop, and realize their full potential. In striving to uphold these principles, nations face numerous challenges in ensuring the well-being and protection of children. Within this context, organizations dedicated to care for children play a crucial role, offering a wide range of interventions, services, and supports aimed to safeguard children's rights and promoting their development.

Youth assistance	Juvenile probation	Youth protection
Focuses on mental health issues, intellectual disabilities, and parenting problems	Focuses on the rehabilitation of young offenders.	Deals with protecting children from neglect, abuse, or unsafe living conditions.
Therapy, family counseling, and early interventions to prevent further complications.	*Supervision, probation, and support aimed at reintegration into society.*	*Foster care, legal measures, and intervention by social workers or the court system.*
Without residential care • Neighborhood or community team • On-site ambulatory or day assistance • Support in the network With residential care • Foster care • Family-oriented care • Placement in a closed institution • Other residential assistance	• Forced supervision and guidance • Voluntary supervision and guidance • Individual trajectory guidance	• Supervision order • Custody
Executed by youth care providers	*Executed by certified institutions*	*Executed by certified institutions*
Funded by the government, but arranged by municipalities to meet local needs.		

Figure 1. Youth care in the Netherlands, adapted from Dutch Social Work [8].

Various terms are used to describe the services and support systems aimed to address the needs of children and their families. In the Netherlands, 'youth care' encompasses a comprehensive range of services aimed at supporting children and their families through various challenges (**Figure 1**) [7]. These services are provided through three main forms of care: youth assistance,

youth protection, and juvenile probation [8, 9]. While government funding primarily supports these initiatives, municipalities have the authority to customize services to meet local needs while adhering to national standards. While government funding primarily supports these initiatives, municipalities have the authority to customize services to meet local needs while adhering to national standards. Although the legal framework and system for organizing and delivering services to children and families may vary between countries, they share a common goal: ensuring the well-being, development, and protection of children, as well as providing support to families when needed. In this dissertation, we employ the term 'youth care' to refer to the extensive array of services and interventions tailored to enhance the well-being and support of children and their families.

Youth care guidelines

Guidelines are essential tools within youth care, addressing the various problems encountered by children, such as child abuse and neglect [10, 11] and internalizing and externalizing problems [12-14]. These guidelines offer care professionals (CPs) structured guidance and recommendations based on scientific research, practical knowledge of CPs, and the experiences of parents and children. They include guidance on identification, screening and assessment, interventions and treatments, collaboration and coordination, and aftercare and follow-up [15]. Together, these aspects form a comprehensive framework that ensures effective care and support for children in youth care. By providing a structured approach, guidelines can promote positive outcomes and well-being for children and their families.

Societal urgency

Using guidelines within youth care can have several societal benefits. They facilitate the early identification of issues such as abuse and neglect, ensuring that these problems are addressed before they escalate, thereby protecting vulnerable children [16]. Guidelines also ensure the application of timely and tailored interventions, which help children achieve their full potential and enhance their long-term integration and productivity in society [17]. Furthermore, guidelines provide tools and resources that can strengthen parental skills and reduce family stress, fostering nurturing environments essential for child development [18]. Additionally, they can prevent the development of more severe problems, potentially reducing the need for extensive and costly treatments. Effective implementation of these guidelines may also enhance trust in healthcare systems and government institutions by demonstrating a commitment to evidence-based, structured care. The importance of youth care guidelines has become even more evident through recent national policy initiatives such as the 'Kansrijke Start' (Solid Start) program, which focuses on the first thousand days of a child's life to lay a healthy and safe foundation for their development [19]. 'Kansrijke Start' highlights the need for early intervention, integrated care, and comprehensive support for young families. The implementation of relevant guidelines is crucial for achieving the program's goals, ensuring that

(future) parents in vulnerable situations receive timely and appropriate care and support, and giving children a better chance at a healthy start.

Guideline implementation and implementation research

Despite the availability of evidence-based guidelines in youth care, implementing them into practice remains challenging. While CPs may be aware of these guidelines, their implementation often falls short, revealing a notable discrepancy between awareness and actual implementation in practice [20]. When challenges encountered by children and their families are left unaddressed, they can hinder a child's development and lead to severe consequences like school dropout [21], antisocial or delinquent behaviour [21-23], severe psychological disorders [21, 23-26], and child abuse [27]. These issues in childhood can further lead to health and social problems in adulthood [28, 29]. Research indicates that children with externalizing problems are more likely to experience depression, anxiety, and psychosomatic conditions later in life [30]. Additionally, adverse childhood events such as child abuse and parental drug use are negatively associated with their future family health and healthcare utilization [31, 32]. Ensuring children receive adequate care is essential to safeguard their right to a secure and healthy upbringing from childhood to adulthood, emphasized by the Convention on the Rights of the Child.

Implementation research

In recent years, there has been a growing emphasis on addressing the challenges associated with (guideline) implementation. Various theoretical frameworks and taxonomies have been developed to guide and facilitate the implementation process, concentrating on determinants [33-35] and implementation strategies [36]. Determinants, often called barriers and facilitators, are factors believed or empirically shown to influence implementation. Examining implementation determinants is crucial as it offers valuable leads for developing implementation strategies. By identifying the root causes and contributing factors driving the implementation problem, strategies can be developed to address these, leading to more effective and sustainable solutions [34]. Implementation strategies are defined as approaches used to enhance the adoption, implementation, sustainment, and scale-up (or spread) of innovations [37]. Implementation strategies such as local consensus discussions and the use of opinion leaders aim to address implementation determinants and optimize implementation [36]. Despite the advancements in implementation research, there are considerations that need to be addressed when utilizing existing frameworks and taxonomies. These considerations revolve around two main knowledge gaps.

First, the specific impact of these strategies on determinants and their potential role in either implementation success or failure remains unclear. For example, strategies like educational outreach visits, learning collaboratives, and educational materials are considered effective when aiming for skill development [38]. Yet, the success of these strategies is not solely dependent on

the strategies themselves; it is the components within these strategies, specifically designed to induce behaviour change, that determine their effectiveness. These components, known as Behaviour Change Techniques (BCTs), are irreducible, observable, and replicable techniques within an intervention or strategy designed to change behaviour, including action planning, providing instructions on how to perform behaviours, and using prompts or cues [39]. While strategies and BCTs have proven effective, the optimal combination that significantly influences implementation outcomes remains unclear. Therefore, there is a critical need for a comprehensive understanding of how strategies and BCTs collectively influence determinants and impact implementation outcomes [40].

Second, previous studies often focused on determinants in isolation, such as the availability of resources, self-efficacy, and guideline complexity. While each of these determinants are undoubtedly important, they only provide a partial understanding of the challenges and dynamics involved in implementation [41, 42]. Successful implementation is not a straightforward process determined by the presence or absence of determinants in isolation; rather, it depends on the complex interaction and synergist relationships between these determinants [35, 42]. For example, while lack of time is often perceived as a barrier to implementation, it can result from various factors such as, insufficient leadership, low service priority, or inappropriate workflow. Addressing time constraints effectively requires tailored strategies that address all determinants involved rather than treating the determinant in isolation. Additionally, CPs and care settings exhibit considerable diversity in their implementation determinants and organizational contexts. This diversity underscores the need for tailored implementation approaches that capture to the unique needs of different groups of CPs.

Understanding the relationships between determinants, strategies, BCTs, and implementation (**Figure 2**) enables the development of more effective strategies. Moreover, by tailoring strategies to the unique needs of different implementers and settings, resources can be directed where they are most needed, maximizing the impact of implementation efforts and ultimately improving outcomes for children and families.

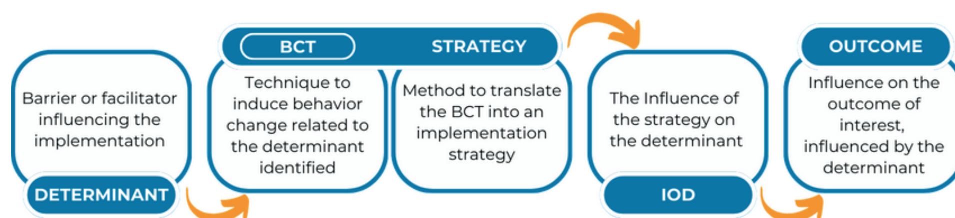


Figure 2. Key elements within the implementation process. IOD: influence on determinant.

Objective and outline of this dissertation

The objective of this dissertation is to unravel the process of youth care guideline implementation. Specifically, we aim to gain a deeper understanding of the relationships between determinants, strategies, BCTs, and the implementation of youth care guidelines. Furthermore, we aim to identify subgroups of implementers based on their unique profiles of implementation determinants.

This dissertation primarily focuses on the implementation of guidelines for child abuse (CAN) and domestic violence (DV), with particular emphasis on the Childcheck. Implementing these guidelines is challenging because they involve sensitive issues and span multiple domains, including healthcare, social services, and law enforcement, requiring effective collaboration. The Childcheck is particularly complex as it focuses on parent-related factors, such as mental health issues or substance abuse, rather than on characteristics of the child. Furthermore, as part of the national reporting code for domestic violence and child abuse, the Childcheck is applied in care contexts that are not specifically child-focused, such as adult mental health services and emergency departments. This requires CPs to possess additional skills to accurately assess risks to children in these non-child-specific settings.

Outline of this dissertation

Chapter 2 provides a comprehensive literature review on determinants influencing the implementation of CAN and DV guidelines, as reported by CPs. We identified implementation determinants, with a particular focus on variations across different guideline objectives and research methodologies. The determinants identified in this systematic review served, among others, as inputs for the subsequent Delphi study described in **Chapter 3**. This chapter outlines a modified Delphi study conducted in collaboration with implementation experts to develop hypotheses targeting relevant determinants for implementing youth care guidelines. These hypotheses outline how specific strategies, coupled with their corresponding BCTs, can influence determinants and, consequently, impact implementation performance. **Chapter 4** builds on the findings of **Chapter 3** by testing whether the anticipated changes from the proposed hypotheses were observed in youth care practice. It examines whether the hypothesized BCT-strategy combinations align with self-reported changes in determinants and implementation performance, offering insights into the practical impact of these hypotheses in real-world settings. **Chapter 5** draws upon the need for acknowledging the complex interactions among implementation determinants and heterogeneity in CPs and context. We identified distinctive subgroups of CPs based on their unique profiles of implementation determinants concerning the Childcheck. We also explored the influence of organization type on subgroups of CPs with specific implementation characteristics (subgroup membership) and assessed their relationship to CPs' implementation level.

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Chapter 2

Determinants influencing the implementation of child abuse and neglect and domestic violence guidelines: a systematic review

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Children and Youth Services Review 2024 169, 108110

Abstract

Introduction

Despite ongoing effort, the implementation of child abuse and neglect, as well as domestic violence guidelines by care professionals, remains challenging. Various determinants influence guideline implementation, which may vary depending on research methods, guideline objectives, and contextual factors such as organization type or discipline of the implementer. The primary aim of this systematic review is to identify determinants influencing the implementation of child abuse and neglect and domestic violence guidelines. The secondary aim is to identify (differences in) determinants across specific contexts, guideline objectives, and research methods. Furthermore, we aim to assess the relative importance of identified determinants.

Methods

Seven electronic databases were searched for papers on determinants influencing child abuse and neglect as well as domestic violence guidelines implementation by care professionals Data extraction was guided by the Consolidated Framework for Implementation Research. We utilized a star score system and evidence index to evaluate the relative importance of identified determinants.

Results

Sixteen papers met the inclusion criteria, with nine employing quantitative research methods, six using qualitative methods, and one employing a mixed-method approach. Overall, the quality of the included papers was moderate. Due to the diverse organization types and disciplines represented in the studies, creating meaningful comparable groups was challenging. Furthermore, within the studies, data from various perspectives were combined during the analysis, which made it challenging to stratify and explore contextual differences. We stratified the results by guideline objective and research method. Availability of resources, knowledge about the innovation, self-efficacy and skills, complexity, and interorganizational networks were identified as the most important determinants influencing guideline implementation.

Conclusion

Our findings emphasize the need for further research on contextual differences, as they are rarely considered. The determinants identified differed between quantitative and qualitative methods. Mixed methods are needed to better understand which determinants, in which contexts, and to what extent, influence guideline implementation. Understanding what influences guideline implementation is an essential step toward developing tailored implementation strategies, which, in turn, may improve implementation performance.

Introduction

Child abuse and neglect (CAN) and domestic violence (DV) pose significant challenges in child welfare. Evidence-based guidelines exist to safeguard children's well-being and provide a framework for professionals and agencies to identify, respond to, and intervene in cases of CAN and DV [1, 2]. Over the years, efforts have been made to improve the effective implementation of these guidelines [3-6]. Implementation is defined as: 'the degree to which settings and staff members deliver a program or apply a policy as intended' [7]. Various strategies, including active promotion, tailored training and mentoring, and the establishment of a national support desk, have been used to facilitate guideline implementation [8, 9].

Despite ongoing effort, care professionals (CPs) still face challenges in implementing guidelines [10-14]. A study assessing adherence to a CAN guideline among CPs revealed self-reported implementation rates ranging from 19.5% to 42.7% [12]. These rates were notably low considering that 83.7% of the professionals were familiar with the guideline and its content. Several factors influence guideline implementation including CPs' concerns about their own [15-19] and the safety of their clients [15-17, 20]. These concerns have been identified as barriers in studies focusing on CAN and DV during pregnancy.

Identifying the determinants influencing guideline implementation is crucial for developing tailored implementation strategies that can ultimately improve implementation outcomes [21, 22]. Various frameworks have been developed to categorize determinants and guide implementation efforts [23, 24]. The Consolidated Framework for Implementation Research (CFIR) is commonly utilized for systematically identifying determinants that may influence implementation systematically. The CFIR demarcates five domains based on context, which is defined as, '…the set of circumstances or unique factors that surround a particular implementation effort'. These domains include: 1) the innovation, 2) the outer setting (the broader external environment in which an organization operates), 3) the inner setting (the setting in which the innovation is implemented), 4) the individual, and 5) the implementation process [25].

Providing care to support children and families in cases of potential CAN and DV is complex and often requires integrated care that encompasses processes across different contextual levels (e.g., interorganizational and interprofessional collaboration). However, such collaboration can encounter obstacles due to differing priorities and objectives, cultural and professional differences, or issues related to accountability and responsibility [26-28]. These challenges can hinder the implementation of CAN and DV guidelines [29].

Despite numerous studies investigating the determinants influencing guideline implementation addressing CAN and DV, several gaps remain. First, there is no comprehensive summary detailing the determinants influencing guideline implementation for CAN and DV across different studies. This gap makes it difficult to gain an overall understanding of the factors at play and hampers the development of effective, evidence-based implementation strategies. Second, , we know that implementation determinants may differ based on the research method used [30], the objective of the guidelines, organizational context (e.g., youth health care or social services), and the health discipline of the implementer (e.g., psychologists or medical doctors) [19]. However, these variations have not been systematically explored, leading to a fragmented understanding of how context influences implementation and determinants differs per research method. For example, in low-income countries, implementers may perceive determinants like resource availability and socio-cultural norms differently compared to those in high-income countries [31, 32]. Understanding these contextual nuances is important for interpreting and applying previous research findings effectively. By systematically reviewing determinants across various contexts and study designs, we seek to provide a more comprehensive understanding of implementation determinants. Last, no prior review has provided insights into the quality and relative importance determinants affecting CAN and DV guideline implementation. Understanding which determinants are most critical in guideline implementation is essential for prioritizing resources and efforts effectively. Our study aims to address these gaps by systematically reviewing the determinants influencing the implementation of CAN and DV guidelines. We will assess their quality and relative importance across different contexts and study designs. This approach will enable us to develop tailored strategies that account for these contextual nuances, thereby improving the effectiveness of interventions and ultimately enhancing outcomes for children and families affected by CAN and DV.

More specific, our primary aim is to:

- Identify determinants influencing the implementation of CAN and DV guidelines.

Our secondary aims are to:

- Identify (differences in) determinants for specific context and guideline objectives,
- Identify (differences in) determinants per research method used,
- Assess the relative importance of each determinant.

Methods

Search Strategy

On February 28, 2020, we conducted a literature search using the 'Perspective, Setting, Phenomenon of Interest, Environment, Control, Time, Findings' (PerSPECTiF) methodology (**Table 1**). This methodology is designed to enhance the inclusion of local context factors, such as setting, environment, and time, as well as perspectives from various stakeholders beyond the target population, in the search strategy [33]. We used search terms such as "(professional OR clinician) AND ((adoption OR dissemination) OR (child care OR community pediatric)) AND (determinant OR barrier) AND (care guideline OR health plan) AND (child abuse OR family violence)". Utilizing these criteria, we devised a search strategy for multiple databases including PubMed, Web of Science, PsychINFO, Social Services Abstracts, Sociological Abstracts, ERIC, Embase, Emcare, and the COCHRANE Library (**Appendix A**). These databases cover medical, psychological, social, educational, and allied health literature, providing a multidisciplinary approach to thoroughly explore the barriers and facilitators in implementing guidelines for CAN and DV. The review protocol was registered in PROSPERO (CRD42021223693) and adheres to PRISMA guidelines [34] (**Appendix B**).

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Table 1. Search terms based on the PerSPECTiF methodology

Per	S	P	E	(C)	Ti	F
Perspective	*Setting*	*Phenomenon of interest/problem*	*Environment*	*Comparison (optional)*	*Time/Timing*	*Findings*
From the perspective of health care professionals	In the setting of care for children and youth	What are barriers and facilitators	For the implementation of child abuse and neglect and domestic violence guidelines	Not applicable	During consultations and CP-client/parent interactions	Based on empirical research

Inclusion and exclusion criteria

We included papers that met the following criteria:

- Reported on determinants influencing the implementation of CAN and DV guidelines, including guidelines for conceived unborn children.
- Reported on a study performed in the member countries of 'Organization for Economic Cooperation and Development (OECD)' to ensure the selection of predominantly wealthy countries with comparable youth care.
- Reported on empirical research.
- Were written in English or Dutch.

- Published from the year 2000 onward, as this period marks the increased recognition of "implementation research" along with the development of systematic methodologies for identifying determinants and effective implementation strategies.

In addition to papers that did not meet the inclusion criteria, papers meeting the following criteria were also excluded:

- Focused solely on aspects of guideline implementation, such as implementation fidelity, and did not describe research on implementation determinants.
- Explored the potential/hypothetical implementation of guidelines (e.g., papers that explored guideline implementation and determinants based on vignettes).
- Focused solely on the mandatory aspect of reporting CAN and did not cover guideline implementation as a whole.

Selection of papers

After removing duplicates, title and abstract screening were conducted by one reviewer (EMD), while a second reviewer (RMJJK) screened a random sample of 20% of the articles. Inter-rater reliability was calculated at 0.77 (95% CI 0.71-0.82), indicating good reliability [35]. Full-text screening was performed by two researchers independently (EMD and ASA). Results were compared and discrepancies were resolved through discussion. Any discrepancies were resolved through discussion, with consultation from a third researcher (RMJJK) if consensus could not be reached. Endnote X9 was utilized to remove duplicates [36] and we performed title, abstract, and full texts screening using Covidence [37].

Quality assessment

Quantitative methods were evaluated using the Crowe Critical Appraisal Tool (CCAT), known for promoting validity and inter-rater reliability [38-40]. The CCAT evaluates eight categories: preliminaries, introduction, design, sampling, data collection, ethical matters, results, and discussion, encompassing a total of 22 items with 99 sub-items. Sub-items such as 'research design chosen and why' and 'method(s) to ensure/enhance quality of measurement/instrumentation' were evaluated by their presence, absence, or inapplicability. Each sub-item contributed to category ratings, which ranged from 0 to 5 based on their significance as outlined in the user manual. These ratings were then used to calculate an overall score for each category, with higher scores indicating better paper quality. The maximum achievable total score was 40.

We used the validated Critical Appraisal Skills Program (CASP) checklist to assess the quality of papers employing qualitative methods [41]. This checklist covers relevant quality indicators such as rigor, research methods, relevance, and research integrity. It comprises ten questions, such as ‘Was the research design appropriate to address the aims of the research?’ Each question was

answered with ‘yes’, ‘no’, and ‘can’t tell’. As the CASP does not offer an overall quality score, we decided to score each question as 0 (no), ½ (can’t tell) and 1 (yes). These scores resulted in a total score ranging from 0 to 10, with a higher score indicating higher paper quality.

Four researchers (EMD, MS, RMJJK, and MRC) independently conducted quality assessments. EMD assessed all papers, MS nine, and RMJJK and MRC four papers each. Inter-rater reliability was calculated, and results were compared. Any discrepancies were resolved through discussion, with a third researcher consulted to resolve disagreement.

Data synthesis

Data from each included paper was extracted using a data extraction sheet including the following characteristics: author name, institution, year of publication, country (location of study), funding source, study aim, study design, guideline description, measurement method(s), population description, setting, age, sex, occupation, years of working experience, and identified determinants (i.e., barriers and facilitators influencing guideline implementation).

In qualitative studies, determinants were identified through qualitative data analysis, whereas in quantitative studies, determinants were identified through statistical analysis, including significance tests or descriptive statistics. These identified determinants were categorized using the CFIR [25], which includes 39 constructs organized into five domains: innovation, outer setting, inner setting, individual, and implementation process (**Figure 1**). The CFIR outlines implementation determinants and acknowledges the importance of multiple levels of influence, from individual to organizational and external environmental factors. It has been widely applied in research identifying key determinants impacting implementation processes across diverse settings and target populations [25, 31, 42]. Constructs not aligning with any CFIR constructs were inductively coded. Additionally, the construct 'self-efficacy' was adjusted to 'self-efficacy and skills' due to the absence of a specific construct for skills in the CFIR. Determinants were classified as facilitators, barriers, or having no clear direction, indicating their influence without definitive roles established. For example, in regression analysis, the identified determinant's role as a barrier or facilitator cannot be definitively determined based solely on the analysis results. It remains an influential determinant, but the study does not provide conclusive evidence of its specific role. Additionally, the term can indicate that the determinant is identified as both a facilitator and a barrier within a single study.

The second objective was to analyze differences in determinants across guideline objectives, contexts, and research methods. However, variations among the papers, such as differences in organization type or implementer discipline, posed challenges to establish meaningful comparable groups and explore contextual differences. Furthermore, within individual papers, determinants from diverse implementer perspectives were combined in the analysis, rather than

conducting separate analyses per discipline or organization type. For this study, determinants were categorized solely based on research methods (quantitative and qualitative) and guideline objectives (CAN and DV). Data extraction was independently conducted by four researchers: EMD extracted data from all papers, MS from nine papers, and RMJJK and MRC from four papers each. Discrepancies were resolved with the assistance of a third researcher.

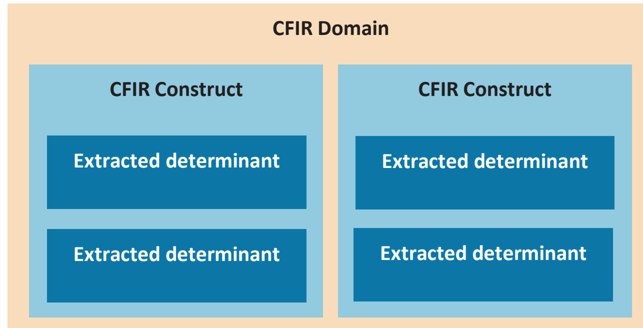

Figure 1. Classification of domains, constructs, and extracted determinants.

Star score system and evidence index

We did not exclude papers based on quality assessment; instead, we integrated the results of the quality assessment to evaluate the relative importance of determinants using a star score system and evidence index [43]. We chose this approach because it offers a novel way to assess the relative importance of determinants, which has not been extensively executed before. Developed by our research group, this method has been applied in previous studies [43, 44].

Firstly, we computed the mean score and standard deviation from the CCAT and CASP assessments. Based on these values, we assigned a star score to each paper. Papers with a quality score more than one standard deviation below the mean received one star. Those with a score between one standard deviation below the mean and the mean itself received two stars. Papers with a score between the mean and one standard deviation above the mean received three stars, while those with a score more than one standard deviation above the mean received four stars. Subsequently, we calculated an evidence index for each determinant by summing the star scores of all papers that identified that specific determinant. For instance, if a determinant was identified by three 1-star papers, one 2-star paper, and two 4-star papers, we calculated an evidence index of 13 points ([3*1] + [1*2] + [2*4]). A higher score on the evidence index indicates that the determinant in question was identified more frequently and/or in high-quality papers. In this study, we regarded determinants with a higher score in the evidence index as more important.

Results

Inclusion of papers

In total, 2854 unique papers were retrieved. Screening of titles and abstracts led to the exclusion of 2733 papers, while full-text screening resulted in the exclusion of another 105 papers. Consequently, sixteen papers were included in this review (**Figure 2**). Reasons for exclusion in full-text screening were mostly that papers did not focus on determinants (n=18), only focused on mandatory reporting (n=16), did not evaluate any guideline (n=15), or did not focus on CAN or SV guidelines (n=13). The main discrepancy in full-text screening involved papers addressing guidelines for the care of unborn children and whether these guidelines were considered relevant. Following discussion with the third reviewer, these papers were included.

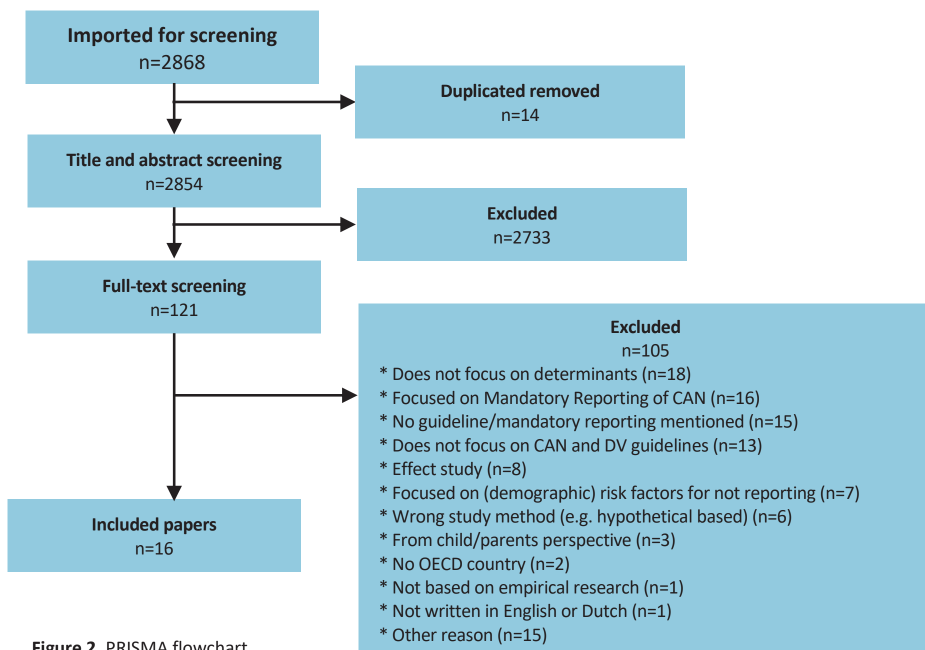

Figure 2. PRISMA flowchart.

General characteristics

The sixteen included papers were published between 2000 and 2019 (**Table 2**). Among them, nine employed quantitative methods; all employing a cross-sectional design based on questionnaires [12, 15, 16, 45-50]. In six papers, qualitative methods were used, involving semi-structured interviews [17, 18, 20, 51] and/or focus groups [18, 19, 52]. Additionally, one paper employed a mixed-method design, combining questionnaires and focus groups [53]. Ten papers evaluated guidelines regarding CAN [12, 15, 16, 19, 47, 49-53] and six regarding DV [17, 18, 20, 45, 46, 48].

Table 2. Characteristics of evaluated papers on barriers and facilitators to the implementation of CAN and DV guidelines

Study	Year	Country	Methods and techniques	Name of guideline	Guideline objective	Population (setting)	n	Objective
Chamberlain and Perham-Hester [41]	2000	United States	Quantitative: survey	The Diagnostic Guidelines and Treatment Guidelines on Domestic Violence	DV	Primary care physicians (private practices)	157	To examine physicians' screening practices for female partner abuse during prenatal visits and to identify barriers to screening.
Clarke et al. [16]	2019	United Kingdom	Quantitative: survey	Child Protection and the Dental Team	CAN	General dental practitioners (general dental practices)	36	To assess the experience of pediatric safeguarding reporting among GDPs in Greater Manchester and investigate the current barriers to reporting safeguarding concerns.
Diderich et al. [49]	2014	The Netherlands	Mixed method: survey and focus groups	The Hague Protocol	CAN	Emergency department doctors, nurses, and nurses in training (emergency departments and reporting centers for CAN)	76	To reveal facilitators and barriers to the countrywide implementation of the Hague Protocol.
Erickson et al. [42]	2001	United States	Quantitative: survey	Routine Screening According to Recommendation of American Academy of Pediatric	DV	Pediatric residents, family practitioners, and community pediatricians (not specified)	310	to determine what pediatricians and family physicians perceive as barriers to the American Academy of Pediatrics Recommendation on domestic violence Screening.
Gómez-Fernandez et al. [17]	2019	Spain	Qualitative: semi-structured interviews	Protocol for Detecting Gender Violence	DV	Midwives (primary care hospitals)	12	To use the reflections of primary care midwives to know the barriers and facilitators for detecting domestic violence during pregnancy.
Henricksen et al. [18]	2017	Norway	Qualitative: semi-structured interviews	National Guidelines on Domestic Violence	DV	Midwives (mother and child health centers)	8	To gain an in-depth understanding of midwives' experiences with routine enquiry for intimate partner violence during the antenatal period.
Konijnendijk et al. [48]	2014	The Netherlands	Qualitative: semi-structured focus groups	Child Abuse Prevention Guidelines	CAN	Health care doctors and nurses (preventive child health care organization)	3(14)#	To identify factors related to characteristics of the guidelines, the user, the organization, and the socio-political context that facilitate or impede adherence to the child abuse prevention guidelines.

Table 2. Characteristics of evaluated papers on barriers and facilitators to the implementation of CAN and DV guidelines [continued]

Study	Year	Country	Methods and techniques	Name of guideline	Guideline objective	Population (setting)	n	Objective
Konijnendijk et al. [12]	2016	The Netherlands	Quantitative: survey	Child Abuse and Neglect Guidelines	CAN	Child health care providers (well-baby clinics, school health care organization, and organizations that provide service to children of all ages)	164	To assess the adherence of Dutch child health care professionals to seven key activities described in a national guideline on preventing CAN. This study also examined the presence and strengths of determinants of guideline adherence.
Konijnendijk et al. [43]	2017	The Netherlands	Quantitative: survey	Child Abuse Prevention Guidelines	CAN	Physicians and nurses, specialized in public preventive health care for children (mother and child health centers)	154	To examine the presence and strengths of determinants associated with consultation of an in-house expert on child abuse and neglect by preventive child health care professionals who suspect CAN.
Louwers et al. [47]	2012	The Netherlands	Qualitative: semi-structured interviews	Protocol within the Child Abuse Framework	CAN	Emergency department staff and members of the hospital Board (emergency departments)	27	To identify facilitators of, and barriers to, screening for child abuse in emergency departments.
Lynne et al. [15]	2015	United States	Quantitative: survey	Office for Emergency Medical Services Policies for Reporting Child Maltreatment	CAN	Emergency department doctors (not specified)	444	To understand why emergency medical services professionals may fail to report suspicions of maltreatment.
Rideout [45]	2016	United Kingdom	Quantitative: survey	Shaken Baby Syndrome/Abusive Head Trauma Guideline	SBS/AHT	Nurses (birthing hospitals and birthing center)	155	To assess nurses' perceptions of barriers to and facilitators of implementation of the shaken baby syndrome/abusive head trauma public policy.
Roelens et al. [44]	2006	Belgium	Quantitative: survey	Abuse Assessment Screen form	DV	Obstetricians and gynecologists (hospitals)	249	To identify potential barriers to intimate partner violence screening in a context where no guidelines have been instigated yet.
Schols et al. [20]	2013	The Netherlands	Qualitative: focus groups	National Guidelines on Reporting Child Abuse	CAN	Public child health care providers and primary school teachers (local health service organizations and primary schools)	6(33)[#]	To investigate Dutch frontline workers' child abuse detection and reporting behaviors.

Table 2. Characteristics of evaluated papers on barriers and facilitators to the implementation of CAN and DV guidelines [continued]

Study	Year	Country	Methods and techniques	Name of guideline	Guideline objective	Population (setting)	n	Objective
Taylor et al. [19]	2007	United States	Qualitative: semi-structured interviews and focus groups	Best Practice Booklet for Prenatal Screening for Substance Use and Violence	DV and substance abuse	Obstetricians (not specified)	8, 4(28)#	To identity physician perceptions on the importance of screening, barriers to effective prenatal screening, awareness of resources from the Washington State Department of Health, and the effectiveness of various provider training strategies.
Wiβmann et al. [46]	2019	Germany	Quantitative: survey	National Guidelines on Child Abuse and Neglect	CAN	Primary care pediatricians and pediatric psychiatrists (private practices)	157	To examine pediatricians' reporting behavior in cases of CAN and what their attitudes are toward mandatory reporting.

DV=Domestic Violence; CAN=Child Abuse and Neglect; SBS/AHT=Shaken Baby Syndrome/Abusive Head Trauma; GDP=General Dental Practitioner; # number described as: focus groups(participants).

Quality assessment

The overall quality scores of the papers varied (**Tables 3 and 4**). Four papers were awarded a 4-star rating [17, 20, 47, 49], five a 3-star rating [12, 19, 45, 50, 52], three a 2-star rating [15, 16, 18], and three a 1-star rating [46, 48, 51]. The mixed method study conducted by Diderich [53] was awarded a 2-star rating for both its qualitative and quantitative components.

Among papers reporting quantitative research, seven lacked sufficient detail on ethical considerations [12, 15, 16, 45-48]: six did not describe informed consent procedures [15, 16, 45-48], and four did not report obtaining ethical approval [15, 45, 46]. Additionally, sampling methods were not reported in three papers [15, 46, 48]. Intraclass correlation coefficient between EMD and the other reviewers was 0.84 (95% CI 0.18-0.97), indicating good reliability [35].

Table 3. Quality assessment scores for quantitative methods using the Crowe Critical Appraisal Tool

	Total	Score*	Prelim	Intro	Design	Sample	Data	Ethics	Results	Discus
Erickson et al. [42]	16	★	3	1	1	2	2	1	3	3
Roelens et al. [44]	18		2	5	3	1	1	1	2	3
Clarke et al. [16]	19	★★	3	5	1	2	3	1	2	2
Diderich et al. [49]	22		3	3	3	3	3	3	2	2
Lynne et al. [15]	22		4	5	2	1	3	1	3	3
Wiβmann et al. [46]	26	★★★	4	3	3	4	3	3	3	3
Chamberlain and Perham-Hester [41]	27		3	5	3	3	3	2	4	4
Konijnendijk et al. [12]	27		3	5	3	3	3	2	4	4
Rideout [45]	28	★★★★	3	5	3	2	4	4	3	4
Konijnendijk et al. [43]	30		4	5	4	3	4	2	4	4

* One star=more than one standard deviation below average; two stars=between one standard deviation below average and average; three stars=between average and one standard deviation above average; four stars=more than one standard deviation above average. Prelim=Preliminaries; Intro=Introduction; Sample=Sampling; Data=Data collection; Discus=Discussion.

In papers reporting on qualitative research, none met Q6's criteria for considering the researcher-participant relationship. While all papers detailed research methods, only three justified their method choice [17, 19, 20]. Three papers lacked ethical detail: none described participant informed consent [18, 19, 51] and two omitted confidentiality/anonymity information [18, 51]. Regarding data analysis (Q8), four papers lacked sufficient supporting quotations [18, 51-53] and two omitted coding system and analysis details [51, 53]. Intraclass correlation coefficient between EMD and the other reviewers was 0.88 (95% CI 0.27-0.98), indicating good reliability [35].

Table 4. Quality assessment scores for qualitative methods using the Critical Appraisal Skills Program for Qualitative Methods

			Section A						Section B			Section C
	Total	**Score***	**Q1**	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**	**Q8**	**Q9**	**Q10**
Louwers et al. [47]	3.5	★	1	1	0	1	1	0	0	0	0	0
Diderich et al. [49]	5.5	★★	1	1	0	1	0.5	0	1	0	0.5	1
Taylor et al. [19]	5.5		1	1	0	1	1	0.5	0	0	0	1
Konijnendijk et al. [48]	7.5	★★★	1	1	0	1	1	0	1	0.5	1	1
Schols et al. [20]	8.5		1	1	1	1	1	0	0.5	1	1	1
Gómez-Fernandez et al. [17]	9	★★★★	1	1	1	1	1	0	1	1	1	1
Henriksen et al. [18]	9		1	1	1	1	1	0	1	1	1	1

* One star=more than one standard deviation below average; two stars=between one standard deviation below average and average; three stars=between average and one standard deviation above average; four stars=more than one standard deviation above average.

Determinants influencing guideline implementation

A total of 162 determinants influencing the implementation of CAN and DV guidelines were extracted from the included papers (**Appendix C**). After categorization, determinants were organized within 33 distinct constructs. The majority of determinants identified were organized in the domain of the individual professional (*n*=66), followed by the inner setting determinants (*n*=37), the outer setting (*n*=28), the innovation (*n*=18), and the process (*n*=13). The availability of resources was identified as the relatively most important construct across all domains (evidence index=50). This was followed by knowledge about the innovation (evidence index=36), self-efficacy and skills (evidence index=34), complexity (evidence index=29), and cosmopolitanism i.e., interorganizational networks (evidence index=24).

Determinants identified in papers regarding CAN and DV guidelines.

In CAN guidelines, 109 determinants were identified and in DV guidelines, 53 determinants were identified. These determinants were categorized into 30 and 22 distinct constructs respectively (**Appendix D**). **Table 5** presents the top five constructs for each guideline objective.

Table 5. Top five of constructs influencing the implementation of child abuse and neglect guidelines and domestic violence guidelines stratified by guideline objective

Child abuse and neglect guidelines (n=10)	**Evidence index**	**# determinants per star score**				**Direction of influence**		
		★	★★	★★★	★★★★	**Barrier**	**Facilitator**	**No direction***
Innovation characteristics								
Complexity	**17**		1	5		Lack of procedural clarity [20], poor concreteness of guideline [48], guideline too complex [48]	Procedural clarity [49]	Level of procedural clarity [48] and feasibility [48]
Outer setting								
Cosmopolitanism	**24**		2	6		Communication issues [12, 20], lack of confidence in external organizations [15, 20], not taken serious [20], poor bureaucracy [20]		Level of inter-agency cooperation [48, 49], level of inter-organizational communication [49]
Inner setting								
Available resources	**37**	3	4	6	2	Lack of time [15, 47-49], procedures [20] monetary [47, 49], human [49], privacy [47], and other resources [20]		Availability of time [45], procedures [48] and human [48] and other practical [45, 48] resources
Characteristics of the individual								
Knowledge and beliefs about the innovation [knowledge]	**23**	1	3	4	1	Lack of knowledge about guideline-related activities [15, 16, 47]	Knowledge about the guideline-related activities [43, 46]	Level of familiarity [48] and knowledge about the guideline and its use [20, 48, 49]
Self-efficacy and skills	**21**	2	2	5		Insufficient communication skills [20, 47], uncertain about their diagnosis [15, 16, 20, 46, 47], don't feel they can provide support [20]		Level of confidence in the ability to perform the behavior needed to use the guideline [48]

Table 5. Top five of constructs influencing the implementation of child abuse and neglect guidelines and domestic violence guidelines stratified by guideline objective [continued]

Domestic violence guidelines (n=6)	**Evidence index**	**# determinants per star score**				**Direction of influence**		
		★	★★	★★★	★★★★	**Barrier**	**Facilitator**	**No direction**
Outer setting								
Patient needs and resources1	13		1	1	2	Fear that women/child will suffer more harm [17, 18]	Believe in positive outcomes [19, 46]	
Inner setting								
Available resources	13	1			3	Lack of time [17, 18], and privacy [17]		Availability of referral resources [42]
Characteristics of the Individual								
Knowledge and beliefs about the innovation [knowledge]	13		1	1	2	Lack of knowledge about the guideline objective [18] and related activities [17, 19]	Knowledge about the guideline objective [41]	
Self-efficacy and skills	13	1			3	Don't feel they can provide support [18] or feel skilled enough to use the guideline [18, 44]		Communication skills [18]
Professional obligation	13		1	1	2		Moral and professionals duty [17-19, 41]	

Italicized determinants are inductively added to the CFIR [25]; CPS=Child Protection Services; * No direction means the determinant is 1) acknowledged as having an important influence, the study does not provide a clear indication of whether it hinders or supports the intended outcome or 2) identified as both a facilitator and a barrier within a single study; # This determinant is mentioned in both the quantitative as the qualitative part of the mixed-method study [49]; 1 Perceived need for the innovation based on the needs of those served by the organization and if the innovation will meet those needs; 2 Determinants related to barriers and facilitators of those served by the organization to participating in the innovation.

Cosmopolitanism emerged as important to the implementation of CAN guidelines (evidence index=22). A notable concern was the perceived lack of communication between the CP and external organizations (e.g., Child Protection Services or the Reporting Center for Child Abuse and Neglect) [12, 19, 53]. CPs also mentioned they were not taken seriously and expressed lack confidence in follow-up care when a client needs to be referred [15, 19]. No determinants related to cosmopolitanism were identified in papers reporting on DV guidelines. Additionally, complexity within CAN guideline was also identified as an important construct (evidence index=17). Complexity primarily referred to the guideline's content, such as procedural clarity [19, 52, 53] or concreteness [52]. In contrast, for DV guidelines, complexity referred to the context in which the guidelines were applied. CPs noted it is challenging to use the guideline and raise the topic when the partner is present at the consultation [17, 18, 20]. However, these complexities were not ranked among the top five most important determinants.

In papers on DV guidelines, determinants concerning client needs and resources1 were identified as important (evidence index=13). While some CPs believed clients will benefit [18, 50], others believed that using the guideline might yield adverse consequences [17, 20]. Furthermore, CPs' obligation, believing that DV screening is part of their moral and professional duty, was valued as important (evidence index=13). Determinants relating to client needs and resources1 and professional obligation were also identified for CAN guidelines, but were not ranked among the top five.

Determinants related to availability of resources emerged as important irrespective of guideline objective (evidence index CAN=37 and DV=13). Lack of time was often cited as a barrier to implementation [15, 17, 20, 49, 51-53]. CPs explained that the demanding workload impedes their capacity to integrate the guideline into daily practice [17, 49, 52] or to complete all steps included in the guideline [53]. Additionally, situations where clients disclosed issues or when CPs identified problems necessitated time for resolution –a resource often insufficient for comprehensive addressing [15, 20, 51]. Furthermore, knowledge was also identified as important regardless of whether the guidelines pertained to CAN (evidence index=23) or DV (evidence index=13) [15-20, 45, 47, 50-53]. CPs lacked a comprehensive understanding of the guideline objectives, including aspects such as prevalence rates and risk factors, along with knowledge about guideline-related activities such as referral procedures. Lastly, self-efficacy and skills was identified as an important construct in papers reporting on CAN (evidence index=21) and DV guidelines (evidence index=13). More specifically, CPs mentioned they lacked communication skills, [19, 20], were uncertain about their diagnosis [19, 51], and felt they were not able to provide support [19, 20].

Determinants identified in papers reporting on quantitative and qualitative research.

A total of 46 determinants were obtained through quantitative research methodologies, while 116 determinants were identified through qualitative research approaches. These determinants were categorized into 23 and 30 discrete constructs (**Appendix E**). **Table 6** shows the top five constructs, categorized by their corresponding research methods.

In quantitative research papers, the type of guideline emerged as an important construct (evidence index=8). CPs' perceived CA and DV as sensitive yet crucial topics [49]. The same concerns were also reported in qualitative research, although the evidence index in those studies was not sufficient to include these determinants in the top five. Additionally, client needs and resources[1] were identified as important (evidence index=7). While some CPs believed clients will benefit [50], others believed that using the guideline will have negative consequences [15, 16]. These concerns were also raised in qualitative research but did not reach the top five in terms of importance. Last, CPs' emphasized the importance of engagement though training (evidence index=7), including training related to guideline use [46, 53] and understanding guideline such as prevalence rates and referral procedures [45, 48]. Although determinants associated with engagement were identified in qualitative research, the evidence index was insufficient to include them among the top five determinants.

In papers reporting on qualitative research, client needs and resources[2] were identified as important (evidence index=18). More specifically, CPs mentioned that clients did not disclose issues around DV due to financial problems, shame [17], fear of reprisal from Child Protection Services, or the absence of a female CP [18]. No such determinants were identified in papers reporting on quantitative research. In addition, determinants regarding guideline complexity were also identified as important in papers reporting on qualitative research (evidence index=27) [17-20, 52]. In papers reporting on qualitative research, determinants relating to client needs and resources[2] and complexity were not identified.

CPs' self-efficacy and skills [15, 16, 19, 20, 46-48, 50, 51], knowledge [15-20, 45, 47, 50-53], and the availability of resources [15, 17, 20, 51-53] were identified as important irrespective of research method.

Table 6. Top five of constructs influencing the implementation of child abuse and neglect and domestic violence guidelines stratified by research methods research methods

Quantitative research methods (n=11)	**Evidence index**	**# determinants per star score**				**Direction of influence**		
		★	★★	★★★	★★★★	**Barrier**	**Facilitator**	**No direction***
Innovation characteristics								
Type of guideline	**8**				2	Sensitive topic [45]	Important topic [45]	
Outer setting								
Patient needs and resources[1]	**7**		2	1		Negative consequences for the child or family [15, 16]	Children will benefit [46]	
Inner setting								
Available resources	**11**	1	1		2	Lack of time [15]		Availability of time [45], brochures [45], and referral resources [42].
Characteristics of the individual								
Knowledge and beliefs about the innovation [knowledge]	**16**		3	2	1	Lack of knowledge about referral procedures [15, 16]	Knowledge about the guideline objective [41] and related activities [43, 46]	Level of knowledge about the objective and related activities [49]
Self-efficacy and skills	**8**	1	2	1		Uncertain about their diagnosis [15, 16, 46] or feel skilled enough to use the guideline [44].		
Process								
Engaging [training]	**7**	2	1	1			Training about the guideline objective [41]	Training about the guideline [42, 49] or guideline objective [44]

Table 6. Top five of constructs influencing the implementation of child abuse and neglect and domestic violence guidelines stratified by research methods [continued]

Qualitative research methods (n=8)	**Evidence index**	**# determinants per star score**				**Direction of influence**		
		★	★★	★★★	★★★★	**Barrier**	**Facilitator**	**No direction***
Innovation characteristics								
Complexity	29		3	5	2	Lack of procedural clarity [20], presence of partner [18, 19], poor concreteness of guideline [48], guideline too complex [48]	Procedural clarity [19, 49]	Level of procedural clarity [48] and feasibility [48], presence of partner [17]
Outer setting								
Patient needs and resources[2]	18		2	2	2	Parents' lack of motivation [20], financial constraints [17], shame [17], reprisal from CPS [19], no female nurse available [19]		Client cooperation [48]
Inner setting								
Available resources	39	3	3	6	3	Lack of time [17, 18, 47-49], privacy [17, 47], and procedures [20] and monetary [47, 49], human [49], and other practical resources [20]		Availability of procedures [48] and human [48]and other practical [48] resources
Characteristics of the individual								
Knowledge and beliefs about the innovation [knowledge]	20	1	1	3	2	Lack of knowledge about the guideline objective [18] and related activities [17, 19, 47]		Level of familiarity [48] and knowledge about the guideline objective [20] and its use [48]
Self-efficacy and skills	25	2		5	2	Insufficient communication skills [20, 47], uncertain about their diagnosis [20, 47], don't feel they can provide support [18, 20] or feel skilled enough to use the guideline [18]		Level of confidence in the ability to perform the behavior needed to use the guideline [48], communication skills [18]

CPS=Child Protection Services; * No direction means the determinant is 1) acknowledged as having an important influence, the study does not provide a clear indication of whether it hinders or supports the intended outcome or 2) identified as both a facilitator and a barrier within a single study; 1 Perceived need for the innovation based on the needs of those served by the organization and if the innovation will meet those needs; 2 Determinants related to barriers and facilitators of those served by the organization to participating in the innovation.

Discussion

The primary aim of this study was to review the determinants influencing the implementation of CAN and DV guidelines. Furthermore, we aimed to identify any differences in determinants across specific contexts, guideline objectives, and research methods, and to determine the relative importance of the identified determinants.

The majority of determinants identified belonged to the domain of the individual, followed by the inner setting, the outer setting, the innovation, and the process. The availability of resources (e.g., lack of time) was identified as the most important construct across all domains, followed by knowledge (e.g., about the guideline objectives and related activities), self-efficacy and skills (e.g., communication skills), complexity (e.g., procedural clarity), and cosmopolitanism (e.g., interorganizational communication and collaboration).

Findings compared with previous research

In this study, the availability of resources emerged as the most important construct. Specifically, time constraints were often cited as a barrier, consistent with findings from previous reviews [54, 55]. Screening for and managing child problems, as well as engaging in interprofessional collaboration, are activities that demand significant time. Addressing time constraints and ensuring the availability of supporting personnel are crucial steps in enhancing CPs' capacity to fulfill their roles in providing comprehensive and high-quality care to children in need.

Cosmopolitanism (i.e., interorganizational networks) was identified as important for the implementation of CAN guidelines, aligning with previous systematic review findings [32, 55]. Professional groups may vary in behaviors, norms, and values, making interprofessional collaboration challenging [28]. Boundaries between professional cultures and a lack of trust can hinder implementation progress [29]. Although guidelines concerning DV also involve interprofessional collaboration, it was not identified as a significant determinant. One possible explanation is that studies focusing on CAN guideline implementation employed frameworks, questionnaires, or interview topics explicitly mentioning or inquiring about interprofessional collaboration. In contrast, only one study regarding DV included this aspect in a questionnaire, where it was not identified as a barrier [46].

Other important constructs in this review were knowledge and skills, self-efficacy, and complexity, aligning with previous reviews concerning identification and managing CAN and DV [32, 55, 56]. In contrast, our study focusing exclusively on high-income countries found that determinants such as "societal attitudes enable blaming women" were less prominent [32]. By excluding low- and middle-income countries, we may have minimized the significance of these

determinants, which stem from societal beliefs that discourage women from reporting DV or seeking help from CPs. In such contexts, patriarchal gender norms, normalization of violence, and cultural expectations hinder reporting willingness. The variability in the organization type and discipline of implementers across studies was too heterogeneous to establish meaningful comparable groups. Additionally, within studies, determinants from different perspectives were explored and combined in the analysis, making it challenging to stratify and explore contextual differences. However, previous research has demonstrated that contextual differences in implementation determinants exist in implementation research [19, 29, 46]. A study on determinants influencing the identification and reporting of CAN by CPs and primary school teachers showed discrepancies between the two professions [19]. The authors showed that the most salient differences were related to attitude and skills. CPs stated they had sufficient communication skills to talk about CAN, while primary school teachers revealed it was challenging to raise the subject. Regarding attitudes, CPs were more proactive in identifying CAN compared to teachers. This reaffirms the critical role of context to understand the determinants influencing guideline implementation addressing CAN and DV.

Strengths and limitations

Using the CFIR as a guidance for data analysis is a strength of this review, ensuring systematic identification of implementation determinants [25, 42]. However, some remarks regarding the CFIR should be noted. For determinants that did not fit existing CFIR constructs, additional constructs were inductively coded. The CFIR construct 'other personal attributes' within the domain of the individual is broadly defined to include traits like tolerance of ambiguity, intellectual ability, motivation, values, competence, capacity, and learning style. We argue this construct is overly broad and lacks specificity to capture the unique aspects of individual implementation determinants. Consequently, we added six constructs to the domain of the individual (i.e., professional obligation, peer support, personal (dis)advantage, subjective norm, descriptive norm, and the relationship with client). This addition of sub-constructs may provide enhanced clarity and depth, as supported by findings from a systematic review on the combined use of the CFIR and the Theoretical Domains Framework (TDF). The review highlighted that combining frameworks complements the CFIR's focus on organizational context with the TDF's emphasis on individual behavior change, offering a more comprehensive understanding of implementation processes [57].

Another notable strength of our review is the absence of restriction on a specific research method during the search process. This approach allowed us to include papers employing a variety of methods, enriching the diversity of insights gathered. Consequently, we were equipped to stratify determinants based on papers employing both quantitative and qualitative methods, thereby enabling a more thorough analysis of potentially significant determinants.

Furthermore, integrating quality assessment into the data analysis can be considered a strength. This approach allowed us to assign greater importance to identified determinants when interpreting the results, rather than solely relying on descriptive interpretation and comparison.

Some limitations should be noted too. Although we assessed quantitative and qualitative research methods for methodological quality using the CCAT and the CASP, respectively, the resulting quality scores were treated equally when calculating the evidence index. As a result, we did not consider the level of evidence associated with the extracted determinants. To address this limitation, it would be beneficial to incorporate tools such as the Grading of Recommendations Assessment, Development, and Evaluation [58] and the Scottish Intercollegiate Guidelines Network [59], which assess confidence in the evidence. By combining these tools with those that evaluate methodological quality, we can enhance the interpretation of results by considering both quality and confidence in the evidence.

Additionally, our study lacked a clear differentiation between perceived implementation determinants and those statistically related to implementation performance. Determinants deemed important in descriptive analyses may lose their statistical significance when subjected to regression analysis. Furthermore, during the data extraction process involving both univariate and multivariate methods, we selectively retained only those determinants that maintained statistical significance in the multivariate model. It is plausible that certain variables lost their statistical significance due to potential interrelationships among determinants, a phenomenon known as multicollinearity. In the presence of strong correlations among determinants within a regression model, the model's capacity to discern their individual impacts on the studied outcome becomes compromised.

Another limitation is that a single researcher conducted the title and abstract screening, which could introduce subjectivity and errors in study selection. To mitigate this concern, a second reviewer independently screened a random sample of 20% of the studies to evaluate inter-rater agreement. Although this approach enhances the credibility of our results, the lack of dual screening for the entire set of studies is a limitation that readers should keep in mind when interpreting our findings.

Our search strategy, though extensive, may have overlooked relevant studies not indexed in the searched databases, potentially limiting the comprehensiveness and interpretation of our review findings. Including a wider array of databases and grey literature in future reviews could address this limitation and ensure a more thorough collection of relevant studies. Additionally, our focus on English and Dutch papers from OECD-affiliated countries may have excluded pertinent research from other languages and regions, restricting insights from diverse contexts and the applicability of our findings to developing countries with different healthcare systems. Future

research should strive to encompass studies in multiple languages and from a broader range of countries to enhance the global understanding of determinants influencing CAN and DV guideline implementation.

Implications for practice and future research

In addition to focusing on individual and inner setting characteristics (the setting where the innovation is implemented), this review emphasizes the critical role of the outer setting (the broader external environment in which an organization operates) during the implementation process. Simply ensuring that child CPs have adequate time, knowledge, self-efficacy, and skills is insufficient. Effective child and youth care requires seamless collaboration among multiple organizations to ensure comprehensive support for families. Challenges arise when organizations fail to collaborate, impacting CPs' ability to implement guidelines effectively. CPs have raised concerns about inadequate follow-up care, slow response times, unclear communication, and feeling disregarded, which can worsen a child's situation after reporting [19, 52]. Strategies such as setting shared goals, sharing information, and fostering collaborative problem-solving within and across organizations can promote better cooperation among stakeholders [60, 61]. However, additional research is needed to thoroughly understand the underlying issues and reasons behind interorganizational and interprofessional challenges. Future studies should prioritize exploring organizational culture and structure between inner and outer settings, engaging key stakeholders—from policymakers to frontline professionals—to illuminate barriers and facilitate the development of practical, policy-relevant solutions.

Managing child issues and promoting interprofessional collaboration require substantial time, a frequently cited barrier in guideline implementation. However, lack of time poses a significant challenge that proves difficult to address in practice [62]. Integrating a computerized support tool into electronic health records, as studied by Konijnendijk et al., did not show changes in actual guideline adherence, but significantly optimized time spent seeking information on CAN guidelines compared to controls [63]. This suggests digitalizing guidelines can save crucial time in a field often constrained by time limits. However, the impact of digitalization within youth care needs further exploration, especially in Dutch settings where fragmented organizational approaches prioritize regional over sector-wide collaboration, leading to disparities in funding and IT structures [64]. Other effective strategies include financial incentives, clear role definitions for professionals, and standardized procedures, all proven to mitigate time constraints and support guideline implementation [65, 66].

CPs often struggle with managing emotions and concerns of clients and their families addressing sensitive issues such as DV and CAN. Clients frequently withhold information due to shame, fear, lack of awareness, or financial constraints. This review emphasizes the critical role of CPs' self-efficacy and skills in effectively addressing these challenges. Notably, a significant barrier arises

from a lack of communication skills, particularly when parents are hesitant to cooperate [19, 51]. According to Perry and colleagues, dynamic and interactive trainings are most suitable to improve skills [67]. This is supported by previous research in the field of primary care and mental health care using standardized patients and role play. These training methods improved CPs' communication skills and confidence to use the skills in practice [68]. Importantly, improved communication skills are mediated by the amount of training received [69], which emphasizes the importance of ongoing training [60].

While addressing individual determinants offers potential benefits, it is essential to recognize that determinants are interconnected. As described in the previous section regarding communication skills and client cooperation, these factors can influence each other.. Recognizing this interplay is crucial. Various analyses, such as Latent Profile Analysis (LPA), can help identify distinct professional subgroups based on their determinant profiles [70]. In the realm of implementation research, different professional groups may exhibit diverse patterns or combinations of determinants. Addressing these determinants collectively within each subgroup can lead to more targeted, efficient, and effective implementation strategies.

As previously highlighted, to enhance our comprehension of the impact of context on implementation, researchers should incorporate contextual factors into study design, analysis, and interpretation. Including such contextual considerations will provide deeper insights into the dynamics influencing implementation processes and outcomes. For example, guidelines implemented in low-income countries may face different challenges compared to those in high-income countries, such as resource availability, community support systems, and socio-cultural norms [31, 32]. Additionally, healthcare systems may have different structures and priorities compared to social service agencies, affecting how guidelines are integrated into daily practice. The disciplinary background of CPs involved, whether they are psychologists, social workers, or medical doctors, can also impact their approach to implementing guidelines and addressing CAN and DV cases [19].

The identified determinants varied between quantitative and qualitative research methods, underscoring the importance of utilizing both approaches to comprehensively understand the barriers and facilitators to guideline implementation. Mixed-methods studies can employ different designs: 1) explanatory sequential design starts with quantitative data and uses qualitative data to explain; 2) convergent design validates findings by collecting qualitative and quantitative data concurrently; and 3) exploratory sequential design explores a phenomenon with qualitative data first, extending to quantitative data. The choice of design should be guided by the specific research question, the relationship between qualitative and quantitative data, and whether the researcher aims to explain, validate, or explore the research topic in depth [71].

Conclusion

This study enhances our understanding of the challenges CPs encounter in implementing CAN and DV guidelines, representing a crucial initial step in developing effective implementation strategies. Time, knowledge, skills, self-efficacy, and interprofessional collaboration have been identified as key determinants of CAN and DV guideline implementation. However, further research is necessary to fully elucidate the intricate interplay among these determinants. Additionally, current studies often neglect to incorporate contextual factors into their study designs, analyses, and interpretations, hindering a comprehensive understanding and the formulation of tailored strategies. The adoption of mixed methods is essential to gain a thorough understanding of both the barriers and facilitators to guideline implementation.

Abbreviations

CP	Care professional
CAN	Child abuse and neglect
DV	Domestic violence
CFIR	Consolidated Framework for Implementation Research
CCAT	Crowe Critical Appraisal Tool
CASP	Critical Appraisal Skills Program
OECD	Organization for Economic Cooperation and Development

Competing interests

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CRediT authorship contribution statement

Eveline M. Dubbeldeman: Conceptualization, Methodology, Writing – original draft. Rianne M.J.J. van der Kleij: Conceptualization, Methodology, Supervision, Writing – review & editing. Merel Sprenger: Methodology, Writing – review & editing. Ahmed S. Aslam: Methodology, Writing – review & editing. Jessica C. Kiefte-de-Jong: Writing – review & editing. Mathilde R. Crone: Conceptualization, Methodology, Supervision, Writing – review & editing.

Supplementary materials

Scan the QR code to view supplementary materials.

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Chapter 3

Expert consensus on multilevel implementation hypotheses to promote the uptake of youth care guidelines: a Delphi study

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Abstract

Background

The implementation of youth care guidelines remains a complex process. Several evidence–based frameworks aid the identification and specification of implementation determinants and strategies. However, the influence of specific strategies on certain determinants remains unclear. Therefore, we need to clarify which active ingredients of strategies, known as behaviour change techniques (BCTs), elicit behaviour change and improve implementation outcomes. With this knowledge, we are able to formulate evidence–based implementation hypotheses. An implementation hypothesis details how determinants and in turn, implementation outcomes might be influenced by specific implementation strategies and their BCTs. We aimed to identify 1) determinants relevant to the implementation of youth care guidelines and 2) feasible and potentially effective implementation hypotheses.

Methods

A four–round online modified Delphi study was conducted. In the first round, experts rated the implementation determinants based on their relevance. Next, experts formulated implementation hypotheses by connecting BCTs and implementation strategies to determinants and were asked to provide a rationale for their choices. In round three, the experts reconsidered and finalised their hypotheses based on an anonymous overview of all formulated hypotheses, including rationales. Finally, the experts rated the implementation hypotheses based on their potential effectiveness and feasibility.

Results

Fourteen experts completed the first, second, and third rounds, with 11 completed the final round. Guideline promotion, mandatory education, presence of an implementation leader, poor management support, knowledge regarding guideline use, and a lack of communication skills were reported as most relevant determinants. In total, 46 hypotheses were formulated, ranging from 6 to 9 per determinant. For each determinant, we provide an overview of the implementation hypotheses that were most commonly deemed feasible and potentially effective.

Conclusion

This study offers valuable insights into youth care guideline implementation by systematically identifying relevant determinants and formulating hypotheses based on expert input. Determinants related to engagement and to knowledge and skills were found to be relevant to youth care guideline implementation. This study offers a set of hypotheses that could help organisations, policymakers, and professionals guide the implementation process of youth care guidelines to ultimately improve implementation outcomes. The effectiveness of these hypotheses in practice remains to be assessed

Background

According to the Convention on the Rights of the Child [1], 'All children must be able to grow up in a safe and healthy environment where there are plenty of opportunities, to develop as people and participate'. Unfortunately, not every child is given this opportunity, which raises worldwide concerns. In the Netherlands, the need for youth care has grown, with approximately 443 thousand children (10.0%) under 23 receiving youth care in 2019 [2], increasing to 467 thousand (10.6%) by 2022 [3]. Within the scope of this study, we defined youth care as the care provided for children and their families experiencing a variety of problems, such as parenting issues, adverse socioeconomic conditions, and psychosocial and stress–related problems [4, 5]. For example, it supports families in financial hardship with education, healthcare, and nutrition, provides counselling and psychiatric help for adolescents with psychosocial issues, and protects children from domestic violence, offering them safe places and helping families tackle underlying issues. Untreated, these issues can hinder a child's development and lead to severe consequences like school dropout [6], antisocial or delinquent behaviour [6-8], severe psychological disorders [6, 8-11], and child abuse [12]. Ensuring children receive adequate care is essential to safeguard their right to a secure and healthy upbringing, emphasized by the Convention on the Rights of the Child. This involves early detection of emotional, behavioural, and social problems, with professionals recognizing when to refer for specialist interventions. [13]. Early identification and treatment can mitigate problems later in life [14-16] and limit associated costs and risks to society [17, 18].

In Dutch youth care, several evidence–based guidelines and interventions (further referred to as youth care guidelines) exist including the Model Protocol for Child Abuse and Domestic Violence [19], the Youth Health Care Guideline for Psychosocial Problems [20], and the Kindcheck [21]. These guidelines aid the identification and/or management of child psychosocial problems, child abuse and neglect (CAN), and parenting problems and to assist parents with mental health problems. For example, the Model Protocol for Domestic Violence and Child Abuse provides clear steps for professionals dealing with signs of violence. It involves identifying signs, consulting colleagues and reporting centers as needed, engaging with the individuals involved, assessing the situation, and deciding the appropriate action. This structured approach equips professionals with a comprehensive framework to effectively respond to signs of violence, ensuring the well-being of those affected [19]. However, the availability of evidence–based guidelines does guarantee their optimal implementation in practice [22-26]. Konijnendijk [24] showed that, despite professionals' familiarity with the content of the CAN guidelines and their positive perceptions, full adherence was low. Similarly, a study evaluating guidelines on positive parenting and family violence prevention showed that while about half of the professionals were familiar with the guidelines, only 14–16% applied them in practice [25]. The implementation of guidelines poses inherent challenges, especially within youth care. The interdisciplinary nature of the field, combined with the need to address sensitive topics with vulnerable families, heightens the complexity. Additionally, challenges arise from growing waiting lists, increasing administrative burdens, and persistent personnel shortages within youth care [27, 28]. Hence,

research increasingly emphasises the implementation of guidelines and interventions. Various theoretical frameworks have been developed to guide and facilitate the implementation process, concentrating on determinants influencing implementation [29-31] and offering taxonomies for effective implementation strategies [32].

Box 1. Relevant determinants and implementation hypotheses

We use the term **relevant** determinants to indicate those determinants that are 1) **important** for the implementation of youth care guidelines and 2) **changeable** in practice (i.e. adjustable to a large extent).

An **implementation hypothesis** details how implementation determinants and implementation outcomes might be influenced by specific behavioral change techniques and implementation strategies.

Studies have identified several determinants (i.e. barriers and facilitators) influencing the implementation of guidelines addressing CAN [24, 33-36], domestic violence during pregnancy [35, 37, 38], shaken baby syndrome [39], and childhood obesity [40]. Common determinants across these guidelines include issues related to time [24, 36-40] and knowledge [33-40]. Barriers specific to CAN and domestic violence during pregnancy guidelines include professionals' concerns about their own [38, 41-43] and/or patients' safety [37, 38, 41, 42]. Understanding the determinants related to a problem is essential as they offer valuable insights into developing effective implementation strategies. By identifying the root causes and contributing factors driving the problem, we can develop strategies that directly address these underlying issues, leading to more effective and sustainable solutions. However, despite providing valuable insights for developing strategies to optimize implementation, some determinants are challenging to change in practice, such as limited time and financial resources [44]. To ensure an effective implementation process, it is recommended to focus on determinants that are 1) important for guideline implementation and 2) changeable in practice (i.e., adjustable determinants) [45]. Determinants considered important and changeable are further referred to as relevant determinants (**Box 1**). Implementation strategies, such as local consensus discussions and the use of opinion leaders, aim to address these determinants and optimize implementation [32]. However, the specific impact of these strategies on determinants and their potential role in either implementation success or failure remains unclear. For example, strategies like educational outreach visits, learning collaboratives, and educational materials are considered effective in skill development [46]. Yet, the success of these strategies is not solely dependent on their direct impact on determinants. Embedded within strategies, Behaviour Change Techniques (BCTs), are specific techniques designed to induce behaviour change, playing a crucial role in shaping implementation outcomes. Examples of BCTs include providing instructions on how to perform behaviours, action planning, and using prompts or cues [47]. Despite the acknowledged effectiveness of these strategies and BCTs, the optimal combination that significantly influences implementation outcomes remains unclear. There is a need for a comprehensive understanding of how strategies and BCTs collectively influence determinants and, consequently, impact implementation performance [48]. With this knowledge, we are able to formulate detailed, evidence–based strategies that effectively stimulate the implementation of youth care guidelines.

In this study, we aimed to 1) identify the determinants most relevant to the implementation of youth care guidelines and 2) identify BCTs and combine them with implementation strategies to tackle barriers and strengthen facilitators. The present paper outlines a modified Delphi study designed to provide an overview of experts' opinions on relevant determinants and feasible and potentially effective BCTs and implementation strategies. In selecting the Delphi study as our methodology, we recognize the importance of professionals' expertise in the field of youth care implementation, providing a unique combination of theoretical knowledge, practical experience, and contextual awareness [49, 50]. The involvement of experts in a systematic and iterative process, allows us to draw upon their diverse perspectives, fostering a collaborative approach that is essential for addressing the challenges in the implementation of youth care guidelines. The theory–informed behaviour change (TIBC) method developed by French et al. [51] guided our Delphi study (**Table 1**). The TIBC method is a systematic approach for developing implementation interventions designed to change professionals' behaviour based on theoretical frameworks, empirical evidence, and practical considerations. The executing of the second and third steps of the TIBC method formed the foundation of our Delphi study. This method significantly contributes to our study objectives by providing a structured and theory-based framework to 1) identify determinants and 2) intervention components (i.e., BCTs and implementation strategies) that might be effective in addressing these determinants. In line with the work by French et al. [46], we use the term 'implementation hypotheses' to detail how specific BCTs and implementation strategies might influence implementation determinants and implementation outcomes (**Box 1**).

Table 1. Steps for developing a theory–informed implementation intervention

Steps	Tasks	Application in Delphi study
STEP 1: Who needs to do what, differently?	• Identify the evidence–practice gap • Specify the behavior change needed to reduce the evidence–practice gap • Specify the health professional group whose behavior needs changing	Not applicable
STEP 2: Using a theoretical framework, which barriers and enablers need to be addressed?	• From the literature, and experience of the development team, select which theory(ies), or theoretical framework(s), are likely to inform the pathways of change • Use the chosen theory(ies), or framework, to identify the pathway(s) of change and the possible barriers and facilitators to that pathway • Use qualitative and/or quantitative methods to identify barriers and facilitators to behavior change	• Rating determinants on their importance and changeability. Based on previous research, a preselected list of determinants influencing youth care guideline implementation will be provided to experts [52].
STEP 3: Which intervention components (behavioral change techniques and implementation strategies) could overcome the modifiable barriers and enhance the facilitators?	• Use the chose theory, or framework, to identify potential behavior change techniques to overcome the barriers and enhance the facilitators • Identify evidence to inform the selection of potential behavior change techniques and implementation strategies • Identify what is likely to be feasible, locally relevant and acceptable and combine identified components into an acceptable intervention that can be delivered	• Aligning determinants with a feasible and potentially effective BCT [47]. To facilitate this process, experts will be given a preselected list of BCTs for each specific determinant, drawing from a recent synthesis of literature and an expert consensus study on links between determinants and BCTs [53, 54]. • Include an implementation strategy from the ERIC project [32]. Experts will be provided with a preselected list of potential effective implementation strategies derived from prior literature [46].
STEP 4: How can behavior change be measured and understood.	• Identify mediators of change to investigate the proposed pathways of change • Select appropriate outcome measures • Determine feasibility of outcomes to be measured	Not applicable

Table adapted from French et al. 2012 [51]

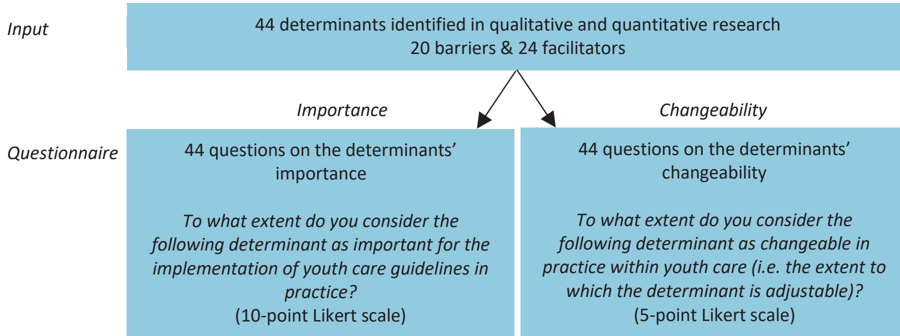
Methods

Study design

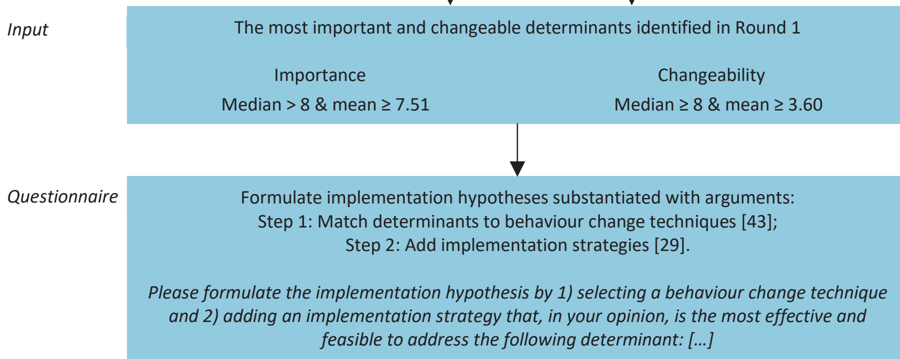
This study employed a four–round Delphi method. Relevant determinants were identified in a single round, guided by the primary objective of quickly obtaining experts' opinions on the relevance of determinants influencing the implementation of youth care guidelines. The formulation of implementation hypotheses involved a more nuanced and iterative process, spanning three rounds. This multi-round design aimed to harness the collective expertise of the participants and attain a nuanced understanding of their perspective on implementation hypotheses. The Delphi method, known for gathering participants' opinions within their field of expertise, offers advantages such as expert anonymity, iteration with controlled feedback, and statistical aggregation of group responses. It minimizes irrelevant discussions and group pressure towards conformity [49, 50]. Because current information on implementation hypotheses is scarce, our goal was to obtain a hierarchical overview of experts' opinions on feasible and potentially effective hypotheses to influence implementation determinants, rather than striving for complete consensus. The Delphi study proved suitable for providing such information. Furthermore, the formulation of final hypotheses required multiple rounds and the use of embedded data, which is not feasible with a single questionnaire. We aimed to include experts in implementation research and practice-based experts, anticipating differing opinions from various perspectives. The Delphi method minimizes group effects, such as pressure and suppressed dissenting opinions, which might occur in focus groups.

Online questionnaires were developed using Qualtrics [55], a web–based survey tool, and were administered over a four–month period (September–December 2020). **Figure 1** provides an overview of the Delphi study, including example questions. Our reporting adheres to the Conducting and REporting of DElphi Studies (CREDES) recommendations [56] (**Additional File 1**). Research involving health professionals completing a questionnaire on the use of guidelines falls outside the scope of the Medical Research Involving Human Subjects Act (WMO) in the Netherlands [57], making ethical approval unnecessary. Nonetheless, participants were well-informed about the study's objectives, the commitment to participant anonymity during interactions, and the assurance of anonymity in publishing study outcomes, aligning with Delphi method principles. Complete anonymity to researchers posed challenges due to practical considerations, such as reminding participants to complete questionnaires and using embedded data between rounds, necessitating knowledge of participant identities. Despite these challenges, we prioritized ethical practices to ensure participants' voluntary and well-informed involvement.

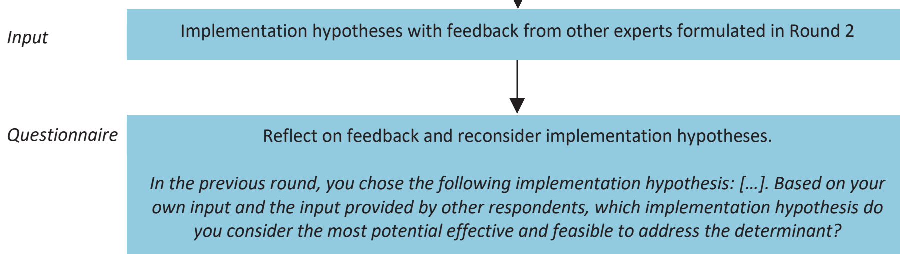
Round 1: Assign scores to preselected determinants



Round 2: Formulate implementation hypotheses



Round 3: Reconsider and finalize implementation hypotheses



Round 4: Rate implementation hypotheses

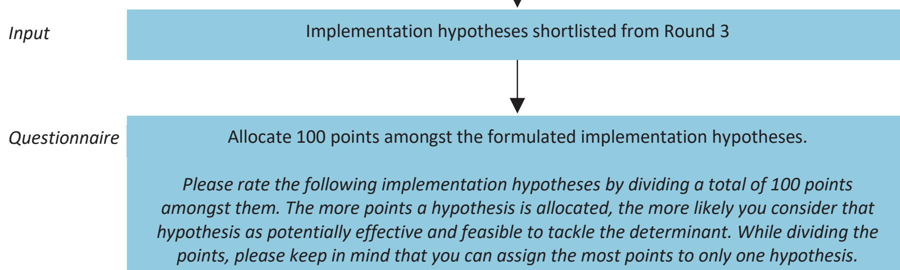


Figure 1. Overview of the four different rounds of this Delphi study

Preparation

The second step of the TIBC method involves identifying determinants that need addressing. In our approach, we conducted a modified Delphi study where the first round commenced with closed-ended questions on implementation determinants, deviating from the classical method that starts with open-ended questions [58]. This allowed us to present experts with a solid foundation of preselected determinants based on prior empirical research, minimizing their workload. Prior to the Delphi study, we conducted a systematic review to identify determinants influencing the implementation of youth care guidelines in general [52]. Additionally, non-published data on the implementation of a Dutch youth care guideline, Kindcheck, was utilized to identify determinants specific to this guideline. Based on these findings, we drafted a preliminary set of determinants, formulating them using the Consolidated Framework for Implementation Research (CFIR) developed by Damschroder [30]. The CFIR is an evidence–based framework that provides 39 constructs (i.e. determinants) arranged across five domains associated with effective implementation. Widely used in implementation research, the CFIR facilitates the practical application of results. In total, we identified 44 determinants, with 20 categorized as barriers and 24 as facilitators.

Round 1 – Rank the preselected determinants

Participants and procedures

In the first round, our objective was to establish a ranking of determinants influencing the implementation of youth care guidelines based on experts' opinions regarding their relevance. We recruited experts in the field of youth care guidelines in the Netherlands through convenience sampling within the research network and snowball sampling. Potential participants received information about the study via mail and were invited to participate. Those who agreed received an email containing the link to the initial questionnaire. Reminders were sent to non-responders after one and two weeks.

Questionnaire

The questionnaire comprised questions on the importance and changeability of 44 determinants influencing youth care guideline implementation (a total of 88 questions). Experts were asked to rate each determinant on a 10-point Likert scale, ranging from 1=not important to 10=very important. The level of changeability was rated on a 5-point Likert scale, ranging from 1=not changeable to 5=very changeable. To minimize availability bias, we provided experts with determinant-specific results from the systematic review [52] and the Kindcheck implementation study. Availability bias is a mental shortcut leading individuals to draw conclusions based on readily available examples; if something is easily and quickly recalled, it may be perceived as important [59].

Analysis

To identify the determinants considered by the experts as the most relevant, we calculated median scores as indicators of the determinants' importance and changeability. Following the

approach by van Stralen et al. [60], determinants with a median score above 8 on a 10-point Likert scale were deemed important, while those with a median score of 4 on a 5-point Likert scale were considered changeable. In the first round, 19 determinants were identified as both important and changeable for the implementation of youth care guidelines. To avoid burdening the experts in the formulation of implementation hypotheses for too many determinants in the next round, determinants with a median score *above* 8 for importance were considered relevant. Mean scores were also considered, with determinants having a median score above 8 and a mean score of 7.51 or higher for importance, along with a median score of 4 or higher and a mean score of 3.60 or higher for changeability, being identified as the most relevant based on the grand mean of all determinants. These selected determinants served as inputs for the second round of this Delphi study.

Round 2 – Formulate implementation hypotheses

In the second round, implementation hypotheses were formulated for each determinant resulting from Round 1. We used the term 'implementation hypotheses' to detail how the implementation determinants and implementation outcomes might be influenced by implementation strategies and their BCTs.

Questionnaire

Following the TIBC method, we asked the experts to match determinants with 1) a BCT formulated by Michie [47] and 2) an implementation strategy identified in the Expert Recommendations for Implementing Change (ERIC) project by Powell et al. [32].

In the first step, determinants were matched with BCTs. Experts were instructed to align each determinant with a feasible and potentially effective BCT [47]. To aid this process, a preselected list of effective BCTs for each specific determinant was provided, drawing from a recently conducted literature synthesis and expert consensus study on links between determinants and BCTs [53, 54]. This approach aligns with the TIBC method, which recommends reviewing relevant literature to identify BCTs with a positive impact on the determinants in question.

The second step involved adding implementation strategies. Since the initial matches did not specify how BCTs could be practically delivered, experts were asked to include an implementation strategy from the ERIC project [32, 61]. The ERIC project offers a compilation of 73 strategies clustered into 9 categories (e.g., engage consumers, develop stakeholder interrelationships, train and educate stakeholders, etc.) to facilitate the implementation of innovations. This step led to the formulation of an implementation hypothesis. Initially, experts were provided with a preselected list of effective implementation strategies based on literature, as compiled by Waltz and colleagues [46]. After completing both steps, experts were prompted to elaborate on the rationale for their choices using an open-ended question. **Figure 2** provides an overview of the process for formulating implementation hypotheses. To present the formulated hypotheses per determinant, frequency tables were employed.

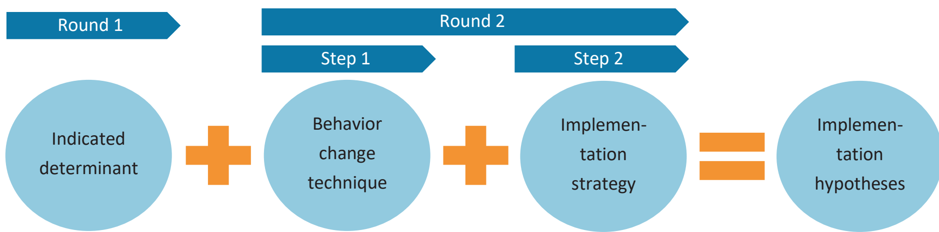


Figure 2. Process of implementation hypotheses formulation

Round 3 – Reconsider and finalize the implementation hypotheses

The third round was conducted to reconsider and finalise the implementation hypotheses formulated in the second round.

Questionnaire

In the final round, participants were given an anonymous overview of hypotheses formulated by all experts for each determinant, along with the rationales for these hypotheses. Individual experts were then prompted to reconsider their initially chosen implementation hypotheses based on this collective overview. Experts had the option to either retain their own formulated implementation hypothesis or select one proposed by another expert. Frequency tables were utilized to list the formulated hypotheses for each determinant.

Round 4 – Rate the implementation hypotheses

In the last round, the experts indicated which implementation hypotheses they considered most feasible and potentially effective in addressing specific determinants.

Questionnaire

Our research aimed to establish a hierarchical order for potentially effective implementation hypotheses. employing a ranking-type Delphi method with the fixed-sum approach [62, 63]. Experts were asked to rate implementation hypotheses for each determinant by allocating a total of 100 points (either in full or in part) to the hypotheses formulated in Round 3. This method facilitated data analysis through simple parametric tests, such as average points and standard deviation. Experts had flexibility in distributing points, with the only exception being that they could allocate the most points to only one hypothesis. The web-based survey tool ensured that experts could proceed to the next question only if they had allocated exactly 100 points. Data analysis was conducted using IBM SPSS Statistics version 24.

Results

Expert panel

In total, we approached 25 experts, and 19 expressed interest in participating. Fourteen experts completed the first, second, and third rounds (56% response rate), and 11 participated in the final round. All experts were Dutch and were experienced in guideline implementation: three had practice-based experience, and eleven had research-based experience in (youth care) guideline implementation (**Additional File 2**).

Round 1

The results from Round 1 are presented in **Additional File 3.** The determinants considered most important to youth care guideline implementation by experts included poor management support (median=9.00; mean=8.64), a lack of communication skills (median=9.00; mean=8.43), the presence of a motivated implementation leader (median=9.00; mean=8.86), and professionals' belief in positive outcomes for the child (median=9.00; mean=8.64). Perceived as least important were professionals' fear of making a false identification (median=6.00; mean=6.07), a lack of equipment (median=6.50; mean=6.21), low confidence in follow–up care by external organisations (median=6.00; mean=6.29), and the opportunity for professionals to make an anonymous call to external organisations (median=6.00; mean=5.57). Regarding changeability, the determinants indicated as most changeable included poor procedural clarity (median=4.50; median=4.36), mandatory education (median=4.50; mean=4.43), guideline promotion (median=4.50; mean=4.36), and the presence of a motivated implementation leader (median=4.50; mean=4.29). The determinants identified by the experts as least changeable were a lack of time (median=2.00; mean=2.64), poor congruence in the current workflow (median=2.00; mean=2.71), professionals' fear of harming the relationship with their client (median=2.50; mean=2.86), and availability of time (median=2.00; mean=2.57).

Six determinants were identified as the most relevant for youth care guideline implementation, serving as the basis for the second round (**Table 2**). Organizing these determinants based on their alignment within CFIR constructs, they were categorized into two groups: 1) engagement (i.e., guideline promotion, mandatory education, presence of a motivated implementation leader, and poor management support) and 2) knowledge and skills (i.e., guideline knowledge and poor communication skills).

Rounds 2 and 3

In Round 2, a total of 60 different implementation hypotheses were formulated, with each determinant having between 9 to 11 different hypotheses. After the experts reevaluated their hypotheses based on anonymous feedback from other experts, a total of 46 hypotheses were formulated in Round 3, ranging from 6 to 9 different hypotheses per determinant (**Additional File 3**). **Table 3** offers an overview of the two main implementation hypotheses most frequently considered by experts as feasible and potentially effective.

Engagement

To facilitate change in determinants related to engagement, the BCT practical support was predominantly considered feasible and potentially effective (n=10, 26.8%, **Additional File 3**). Additionally, various strategies for developing stakeholder interrelationships, such as using advisory boards and workgroups, obtaining formal commitments, and involving executive boards, were widely viewed as feasible and potentially effective in addressing determinants in practice (n=35, 62.5%).

Knowledge and skills

Providing instructions on how to perform a behaviour was largely considered a feasible and potentially effective BCT to address knowledge about guideline use (n=6, 42.9%). In tackling the lack of communication skills, behavioural practice/rehearsal was deemed feasible and potentially effective by the majority (n=11, 78.6%). Various implementation strategies for training and educating stakeholders were most frequently considered feasible and potentially effective in addressing knowledge and skills in practice (n=26, 92.9%).

Table 2. Determinants considered by expert as most relevant for youth care guideline implementation (n=14)

		Importance		Changeability		CFIR construct (domain) [30]	Description of CFIR construct [30]
Cat.	**Determinant**	**Mean**	**Median**	**Mean**	**Median**		
ENGAGEMENT	Promotion of guideline use	8.50	8.50	4.36	4.50	Engaging (Process)	Attracting and involving appropriate individuals in the implementation and use of the intervention through a combined strategy of social marketing, education, role modeling, training, and other similar activities.
	Mandatory education	8.07	8.50	4.43	4.50	Engaging (Process)	Attracting and involving appropriate individuals in the implementation and use of the intervention through a combined strategy of social marketing, education, role modeling, training, and other similar activities.
	Presence of a motivated implementation leader	8.86	9.00	4.29	4.50	Engaging (Process)	Individuals from within the organization who have been formally appointed with responsibility for implementing an intervention as coordinator, project manager, team leader, or other similar role.
	Poor management support	8.64	9.00	3.64	4.00	Leadership engagement (Inner setting)	Commitment, involvement, and accountability of managers with the implementation.
KNOWLEDGE & SKILLS	Knowledge regarding use of the guideline	8.29	8.50	3.79	4.00	Knowledge & beliefs about the innovation (Characteristics of individuals)	Individuals' attitudes toward and value placed on the intervention as well as familiarity with facts, truths, and principles related to the intervention.
	Lack of communication skills	8.43	9.00	3.79	4.00	Other personal attributes (Characteristics of individuals)	A broad construct to include other personal traits such as tolerance of ambiguity, intellectual ability, motivation, values, competence, capacity, and learning style.

Cat. =category; CFIR=Consolidated Framework for Implementation Research.

Table 3. Top 2 of implementation hypotheses mostly considered by experts as effective and feasible (n=14)

	Implementation hypotheses		n (%)		Category
	Behavior change technique	**Implementation strategy**	**R2**	**R3**	**Implementation strategy[a]**
ENGAGEMENT	*Promotion of guideline use*				
	Habit formation	Use advisory boards and workgroups	3 (21.4)	6 (45.8)	Develop stakeholder interrelationships
		Conduct educational meetings	2 (14.3)	2 (14.3)	Train and educate stakeholders
	Prompts/cues	Identify and prepare champions	2 (14.3)	2 (14.3)	Develop stakeholder interrelationships
	Mandatory education				
	Action planning	Create a learning collaborative	2 (14.3)	2 (14.3)	Train and educate stakeholders
		Conduct local needs assessment	3 (21.4)	4 (28.5)	Use evaluative and iterative strategies
		Use advisory boards and workgroups	1 (7.1)	2 (14.3)	Develop stakeholder interrelationships
	Restructuring the physical environment	Create a learning collaborative	2 (14.3)	2 (14.3)	Train and educate stakeholders
	Presence of an implementation leader				
	Social support (practical)	Provide ongoing consultation	2 (14.3)	3 (21.4)	Train and educate stakeholders
	Restructuring the social environment	Recruit, designate and train for leadership	2 (14.3)	3 (21.4)	Develop stakeholder interrelationships
	Poor management support				
	Social support (practical)	Conduct local consensus discussions	3 (21.4)	5 (35.7)	Develop stakeholder interrelationships
		Obtain formal commitments	2 (14.3)	2 (14.3)	Develop stakeholder interrelationships
KNOWLEDGE & SKILLS	*Knowledge regarding the use of the guideline*				
	Feedback on behavior	Create a learning collaborative	2 (14.3)	3 (21.4)	Train and education stakeholders
	Instruction how to perform a behavior	Conduct educational meetings	3 (21.4)	4 (28.5)	Train and education stakeholders
	Lack of communication skills				
	Behavioral practice/rehearsal	Conduct educational outreach visits	3 (21.4)	2 (14.3)	Train and education stakeholders
		Conduct ongoing training	4 (28.5)	8 (57.1)	Train and education stakeholders

R1=Round1; R2=Round 2; [a] Categories based by Waltz et al., 2015 [61].

Round 4

We compiled a list of hypotheses ranked by the average points each implementation hypothesis received (**Table 4**). **Figure 3** provides a simplified overview of the potential implementation hypotheses for each determinant based on the highest average points regarding their feasibility and potential effectiveness, as evaluated by the experts.

Engagement

Across the hypotheses, the highest number of points were allocated to the BCTs practical support and action planning (1183, 26.9% and 1118, 25.4%, respectively) and diverse implementation strategies regarding the development of stakeholder interrelationships (2246, 51.0%). Specifically, for guideline promotion, the hypotheses 'detailed action plan to promote guideline use that should be discussed and revised during collaborative learning sessions' received the most points (266, 24.2%).

> *"This takes time and congruence with all other guidelines. Prevent single mindedness (living one guideline....).Make teams responsible for their aptness to understand and practice all guidelines in an integrated and continuous way!" [respondent 8]*

For organizing mandatory education, experts allocated the highest number of points to the following hypothesis: 'detailed action plan in which the necessities, barriers, and facilitators for the organization of mandatory education, as well as professionals' readiness to mandatory education, are taken into account' (235, 21.4%).

> *"Involve the students in the planning and create time and space when necessary. Send a tailor out don't use a one size fits all approach. That does not motivate and does not work!" [respondent 8]*

The hypothesis 'provide implementation leaders ongoing consultations on how to perform their tasks and keep them motivated' received the highest number of points for its potential to enhance the presence of a motivated implementation leader (250, 22.7%).

> *"My experience is that a the effort and the energy of the implantation leader is a reflection for those who have to implement, like a mirror" [respondent 2]*

'Obtaining formal commitments from, for example, guideline developers, that states they will provide management practical support on how to support professionals in using guidelines' received the most points to address poor management support (277, 25.2%).

> *"Commitment written down may help professionals to talk to their managers regarding their responsibilities." [respondent 5]*

Knowledge and skills

Across hypotheses, the experts allocated the highest number of points to the BCTs behavioural practice/rehearsal and instructions on how to perform a behaviour (851, 38.7% and 464, 21.7%, respectively) and various implementation strategies regarding the training and education of stakeholders (1965, 89.3%). More specifically, the hypothesis ‘providing instructions to professionals during collaborative learning sessions’ was mostly considered feasible and potentially effective in facilitating knowledge transfer regarding guideline use (242, 22.0%).

> *“If specific knowledge is required it is needed that people can actually obtain that knowledge and so I chose the technique that deals with that knowledge, by creating a learning collaborative you have a structured and sustainable way of improving people's knowledge. You can share materials etc. within that group to foster learning.” [respondent 10]*

To address the lack of communication skills, most of the experts considered the hypothesis ‘behavioural practice/rehearsal during educational outreach visits’ to be feasible and potentially effective (246, 22.4%).

> *“I think communication skills can be best obtained by training. It is difficult to get professionals together for training skills, so educational outreach visit seemed the most feasible. However, also in these trainings videos of ' good behaviour' can be used to discuss how you can communicate about certain diagnosis, treatments and so on.” [respondent 11]*

Table 4. Summary of results of round four (n=11)

	Implementation hypotheses		Expert														Category
	Behavior change technique	**Implementation strategy**	**2**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**14**	**Tot**	**Mean (SD)**	**Rank**	**Implementation strategy[a]**
ENGAGEMENT	*Promotion of guideline use*																
	Habit formation	Use advisory boards and workgroups	0	0	0	10	20	0	0	10	0	10	0	50	4.55 (6.88)	7	Develop stakeholder interrelationships
		Conduct educational meetings	10	0	20	20	20	0	60	9	0	35	0	174	15.82 (18.58)	3	Train and educate stakeholders
	Prompts/cues	Identify and prepare champions	35	20	0	10	30	0	0	20	30	0	0	145	13.18 (14.19)	5	Develop stakeholder interrelationships
		Conduct local needs assessment	30	20	20	10	20	0	0	17	0	0	50	167	15.18 (15.66)	4	Use evaluative and iterative strategies
		Conduct educational meetings	20	10	0	20	10	50	40	15	0	35	0	200	18.18 (17.07)	2	Train and educate stakeholders
	Action planning	Create a learning collaborative	5	30	60	20	0	30	0	11	50	20	40	266	24.18 (20.03)	1	Train and educate stakeholders
		Identify and prepare champions	0	20	0	10	0	20	0	18	20	0	10	98	8.91 (9.22)	6	Develop stakeholder interrelationships
	Mandatory education																
	Action planning	Create a learning collaborative	5	0	0	20	20	0	70	8	30	40	0	193	17.55 (22.14)	3	Train and educate stakeholders
		Conduct local needs assessment	30	70	0	20	40	0	0	12	0	0	50	222	20.18 (24.42)	2	Use evaluative and iterative strategies
		Use advisory boards and workgroups	30	0	30	10	20	0	0	14	0	0	0	104	9.45 (12.30)	5	Develop stakeholder interrelationships
		Assess for readiness and identify barriers and facilitators	35	30	0	20	20	0	20	15	30	15	50	235	21.36 (14.68)	1	Use evaluative and iterative strategies
	Restructuring the physical environment	Assess for readiness and identify barriers and facilitators	0	0	40	10	0	0	0	16	0	15	0	81	7.36 (12.59)	7	Use evaluative and iterative strategies

Table 4. Summary of results of round four (n=11) [continued]

Implementation hypotheses		Expert														Category
Behavior change technique	**Implementation strategy**	**2**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**14**	**Tot**	**Mean (SD)**	**Rank**	**Implementation strategy[a]**
	Inform local opinion leaders	0	0	0	10	0	0	0	11	0	0	0	21	1.90 (4.25)	8	Develop stakeholder interrelationships
	Create a learning collaborative	0	0	30	10	0	70	10	9	0	30	0	159	14.45 (21.64)	4	Train and educate stakeholders
	Use advisory boards and workgroups	0	0	0	0	0	30	0	15	40	0	0	85	7.73 (14.38)	6	Develop stakeholder interrelationships
Presence of a motivated implementation leader																
Social support (practical)	Provide ongoing consultation	35	10	10	20	10	30	70	15	50	0	0	250	22.73 (21.84)	1	Train and educate stakeholders
	Identify and prepare champions	40	20	0	20	10	0	0	19	0	0	60	169	15.36 (19.66)	3	Develop stakeholder interrelationships
	Inform local opinion leaders	0	0	0	10	10	0	0	18	0	0	0	38	3.45 (6.27)	8	Develop stakeholder interrelationships
Social support (unspecified)	Inform local opinion leaders	0	20	0	10	10	0	0	7	0	25	0	72	6.55 (8.96)	7	Develop stakeholder interrelationships
	Assess for readiness and identify barriers and facilitators	0	20	30	10	20	0	0	8	0	0	40	128	11.64 (14.05)	4	Use evaluative and iterative strategies
	Identify and prepare champions	0	30	0	10	40	0	0	16	0	0	0	96	8.73 (14.21)	6	Develop stakeholder interrelationships
Social comparison	Recruit, designate and train for leadership	25	0	50	10	0	70	0	7	20	40	0	222	20.18 (23.86)	2	Develop stakeholder interrelationships
Restructuring the social environment	Recruit, designate and train for leadership	0	0	10	10	0	0	30	10	30	35	0	125	11.36 (13.80)	5	Develop stakeholder interrelationships
Poor management support																
Social support (practical)	Conduct local consensus discussions	30	0	30	20	10	30	10	9	10	0	15	164	14.91 (11.23)	2	Develop stakeholder interrelationships

ENGAGEMENT

Table 4. Summary of results of round four (n=11) [continued]

	Implementation hypotheses		Expert														Category
	Behavior change technique	**Implementation strategy**	**2**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**14**	**Tot**	**Mean (SD)**	**Rank**	**Implementation strategy[a]**
ENGAGEMENT	Restructuring the social environment	Obtain formal commitments	20	60	0	10	20	20	70	7	0	20	50	277	25.18 (24.03)	1	Develop stakeholder interrelationships
		Involve executive boards	20	40	0	20	10	30	0	11	0	0	0	131	11.91 (14.00)	5	Develop stakeholder interrelationships
		Recruit, designate and train for leadership	20	0	30	10	10	20	0	14	0	50	0	154	14.00 (15.62)	3	Develop stakeholder interrelationships
		Develop a formal implementation blueprint	0	0	0	10	0	0	20	7	0	0	0	37	3.36 (6.52)	9	Use evaluative and iterative strategies
	Social comparison	Obtain formal commitments	0	0	30	10	30	0	0	8	0	20	35	133	12.09 (14.07)	4	Develop stakeholder interrelationships
		Involve executive boards	0	0	0	10	0	0	0	10	30	10	0	60	5.45 (9.34)	7	Develop stakeholder interrelationships
		Identify and prepare champions	0	0	10	10	20	0	0	22	40	0	0	102	9.27 (13.18)	6	Develop stakeholder interrelationships
	Social rewards	Alter incentive/allowance structures	10	0	0	0	0	0	0	12	20	0	0	42	3.82 (6.95)	8	Utilize financial strategies
	Knowledge regarding the use of the guideline																
KNOWLEDGE & SKILLS	Feedback on behavior	Conduct educational meetings	24	0	10	10	0	0	10	9	30	0	0	93	8.45 (10.35)	5	Train and educate stakeholders
		Create a learning collaborative	30	60	40	10	0	0	10	8	0	40	0	198	18.00 (20.98)	3	Train and educate stakeholders
	Instruction on how to perform a behavior	Conduct educational meetings	20	0	0	20	50	30	60	12	30	0	0	222	20.18 (20.89)	2	Train and educate stakeholders
		Create a learning collaborative	26	40	30	20	0	60	20	11	0	35	0	242	22.00 (18.97)	1	Train and educate stakeholders
	Information about antecedents	Distribute educational materials	0	0	0	10	20	10	0	7	0	0	0	47	4.27 (6.69)	8	Train and educate stakeholders

Table 4. Summary of results of round four (n=11) [continued]

Implementation hypotheses			Expert														Category
	Behavior change technique	Implementation strategy	2	4	5	6	7	8	9	10	11	12	14	Tot	Mean (SD)	Rank	Implementation strategy[a]
KNOWLEDGE & SKILLS	Information about health consequences	Identify and prepare champions	0	0	20	10	10	0	0	20	0	0	0	60	5.45 (8.20)	7	Develop stakeholder interrelationships
		Conduct educational meetings	0	0	0	10	20	0	0	15	40	25	50	160	14.55 (17.67)	4	Train and educate stakeholders
		Conduct educational outreach visits	0	0	0	10	0	0	0	18	0	0	50	78	7.09 (15.40)	6	Train and educate stakeholders
	Poor communication skills																
	Behavioral practice/rehearsal	Conduct educational outreach visits	35	20	30	10	30	10	40	17	0	10	20	222	20.18 (12.28)	2	Train and educate stakeholders
		Conduct ongoing training	25	0	10	20	0	50	15	26	40	35	25	246	22.36 (15.73)	1	Train and educate stakeholders
		Create a learning collaborative	5	60	10	20	10	30	10	23	30	5	5	208	18.91 (16.65)	3	Train and educate stakeholders
		Assess for readiness and identify barriers and facilitators	0	20	30	20	30	10	5	20	10	10	20	175	15.91 (9.70)	4	Use evaluative and iterative strategies
	Demonstration of the behavior	Conduct ongoing training	25	0	20	20	0	0	10	10	20	25	25	155	14.09 (10.44)	5	Train and educate stakeholders
		Conduct educational meetings	10	0	0	10	30	0	20	4	0	15	5	94	8.55 (9.81)	6	Train and educate stakeholders

Tot=total points allocated to hypotheses; SD=standard deviation;

[a] Categories based by Waltz et al., 2015 [61]

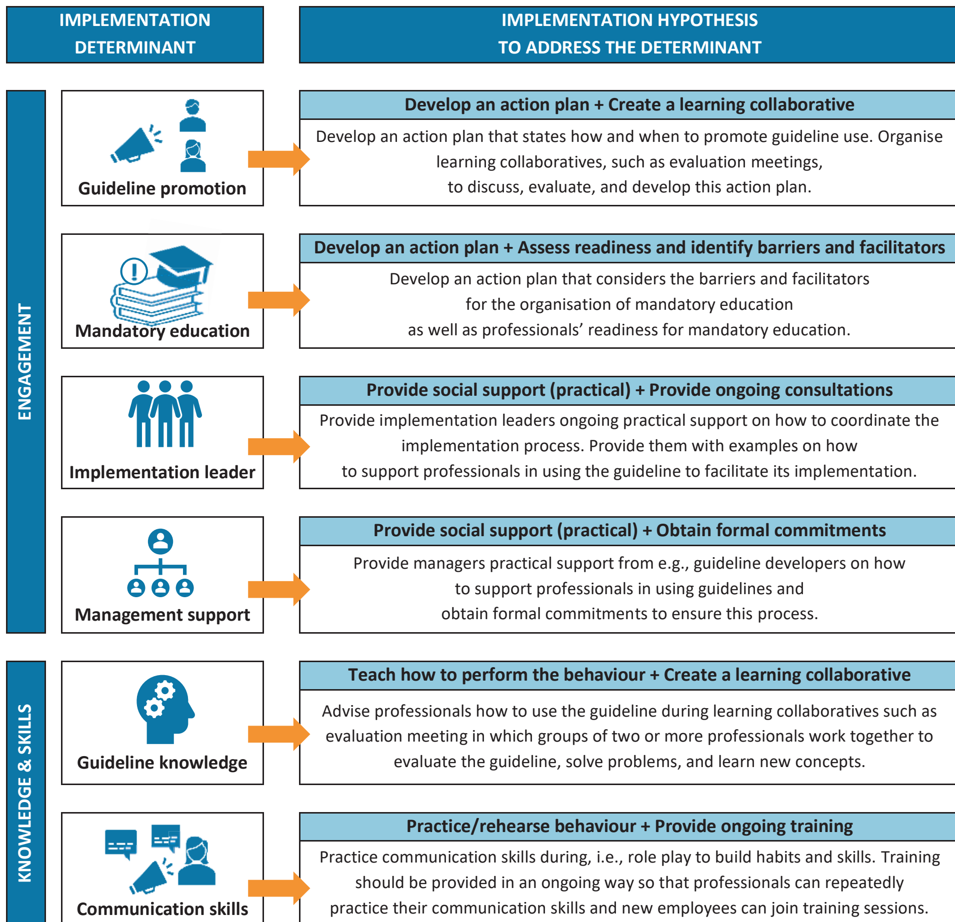


Figure 3. Overview of the determinants considered by the experts the most important and changeable for the implementation of youth care guidelines and possible strategies to address these determinants.

Discussion

Our objective was to identify the relevant determinants of youth care guideline implementation and formulate feasible and potentially effective implementation hypotheses to address these determinants. The recruited experts identified determinants related to 1) engagement (i.e., guideline promotion, mandatory education, the presence of a motivated implementation leader, and management support) and 2) knowledge and skills (i.e., guideline knowledge and communication skills) as crucial for the implementation of guidelines.

To elicit changes in determinants relating to engagement, the BCTs practical support and action planning were predominantly considered feasible and potentially effective. Various implementation strategies aimed at developing stakeholder interrelationships were most frequently regarded as feasible and potentially effective in facilitating changes in practice. To elicit changes in professionals' knowledge and skills, the BCTs providing instructions on guideline use and behavioural practice/rehearsal practice were predominantly considered feasible and potentially effective. The majority of experts deemed various strategies focused on training and educating stakeholders feasible and potentially effective in facilitating changes in practice.

In total, 46 different hypotheses were formulated to address determinants, ranging from 6 to 9 hypotheses per determinant. For each determinant, we provide an overview of the most feasible and potentially effective hypotheses (as evaluated by the experts) that organizations can use to develop a tailored implementation plan for youth care guidelines.

Implementation determinants

Engagement

The implementation of youth care guidelines is a multifaceted process necessitating a systematic approach. It encompasses the dissemination, adoption, and sustained utilization of guidelines. As such, CPs should be aware of the existence and content of these guidelines, be motivated to apply them in practice, and continue their usage [64]. According to the experts in this study, determinants focusing on engagement (i.e., promoting guideline use, providing mandatory education, the presence of an implementation leader, and management support) were considered relevant to facilitate the implementation process. Engaging appropriate individuals to stimulate the implementation and use of guidelines and interventions is often overlooked during the implementation process [65]. However, involving all stakeholders, such as management, implementation leaders, and users, in the implementation of guidelines contributes to successful implementation [66]. Individuals who are more committed to their tasks and supported in their efforts contribute positively to the implementation process.

Mandatory education is categorised in the CFIR construct 'Process – Engaging'. In this context, mandatory education serves to attract and involve professionals in the use of guidelines. Different theories exist regarding the effects of mandatory education. Some argue that trainees attending voluntary education programs display higher autonomous motivation, translating to

genuine interest and personal commitment to guideline implementation [67, 68]. Contrary, others have shown increased motivation with mandatory education, suggesting that when education is mandatory, it must be important [69]. The enforced nature of the education might convey the significance of adherence to these guidelines, leading to increased motivation to implement them effectively.

The presence of a motivated implementation leader, identified as an important facilitator, aligns with findings from studies, particularly those focused on child abuse guidelines [33, 34, 36, 70, 71]. Implementation leaders play a pivotal role in facilitating successful guideline implementation by improving networks and communication, enabling access to experts, and lowering the threshold for professionals to seek assistance [70]. Their presence is also associated with professionals' improved readiness to care for children and guideline implementation [72]. Furthermore, poor management support was considered a relevant barrier, which is in line with previous studies [34, 39].

Knowledge and skills

Consistent with prior research, knowledge about the use of the guideline was considered as a facilitator [33, 34, 73] while the lack of it was considered a barrier [37, 38, 43]. According to the behaviour framework by Cabana [74], increasing knowledge is expected to enhance positive attitudes toward the guidelines, ultimately contributing to the effective implementation of guidelines.

The experts considered poor communication skills to be a relevant barrier, aligning with findings from previous studies [35, 37, 40, 71, 75]. Effective communication skills are crucial in detecting psychosocial problems, as professionals' abilities and interviewing techniques are linked to parents' disclosure. However, professionals' communication skills often pose a significant challenge when discussing sensitive issues with patients or parents [76, 77].

Professionals' perceived responsibility towards screening for psychosocial problems and their belief that using guidelines will result in positive outcomes were also considered important but more challenging to change in practice compared to factors like knowledge and the availability of resources. Attitudes and beliefs are shaped by past and present experiences [78] and once established, they are hard to change [79]. Crapazano [79] demonstrated that despite an increase in knowledge about alcohol and drug use, professionals' attitudes and beliefs about screening practices and interventions remained negative.

Consistent with the expert consensus study by Huijg [44], time availability is deemed important but challenging to alter in practice. Activities like screening for psychosocial problems, interprofessional collaboration, and family care are time-consuming. Despite the well-known time constraint in youth care, professionals require support from management and policymakers. Organizations can enhance time management through prioritization workshops, technology integration, purposeful scheduling, and team collaboration platforms. These

strategies might empower professionals to navigate time constraints, enhancing overall productivity in the dynamic field of youth care [80, 81].

Contrary to previous literature

While the experts in the current study considered guideline promotion and mandatory education relevant for optimal implementation, they are rarely considered facilitators in other studies. This discrepancy could be explained by the fact that researchers often utilize frameworks [24, 33-35, 40, 71, 75] or questionnaires [39, 82] with preformulated determinants that may not specifically cover these determinants. Additionally, determinants are often identified from the perspective of professionals using the guidelines rather than those facilitating guideline implementation [34]. Consequently, determinants within the domain of the individual are more likely to be cited than determinants within the domain of the process, s the latter is more focused on the organizational level [30].

Contrary to our expectations, professionals' fear of false identification after screening for psychosocial problems was considered one of the least important determinants by the experts. This could be attributed to the fact that fear is a frequently cited barrier among mandated reporters of child abuse [73, 83-85]. However, in our study, questions were directed towards determinants of the implementation of youth care guidelines focusing on psychological, behavioural, and social problems in children and their families in general. These guidelines do not mandate professionals to report to authorities when they have doubts regarding a child's development. In many countries, however, professionals are obligated by law to report any reasonable suspicion of child abuse. In child abuse, fear of false identification is therefore perceived as a major barrier.

Implementation hypotheses

Engagement

To elicit change in engagement-related determinants, the BCTs practical support and action planning were considered the most feasible and potentially effective. There is growing interest in the use of action planning to bridge the gap between behavioural intentions and actual change. The development of an action plan can help initiate change by specifying when, where, and how to act [86, 87]. Effective action planning has the potential to enhacnce a positive workplace culture in which both management and professionals are actively engaged and take responsibility for guideline implementation and quality improvement [86, 88]. Practical, task–oriented support includes clarifying roles, providing resources to perform tasks, and monitoring implementation [89]. In Connell's consensus study, 81% of the experts considered providing practical support to be linked to social influences – interpersonal processes that can cause individuals to change their thoughts, feelings, or behaviours [54].
Strategies concentrating on the development of stakeholder interrelationships, such as obtaining formal commitments, were regarded as the most feasible and potentially effective in inducing changes in engagement-related determinants. Obtaining formal commitments is recognized as an effective strategy, as indicated by Waltz's consensus study, to enhance the

commitment, involvement, and accountability of managers and implementation leaders in the implementation process [46].

Knowledge and skills

To elicit change in professionals' knowledge and skills, the experts deemed providing instructions on guideline use and engaging in the practice and rehearsal of the behaviour as the most feasible and potentially effective BCTs. These findings align with prior research investigating the connections between determinants of change and BCTs [53, 54].

Various strategies focusing on the training and education of stakeholders, including educational meetings, collaborative learning, and ongoing training, were considered feasible and potentially effective in facilitating change in practice, which is in line with previous research [46, 90, 91]. For example, collaborative learning, an educational approach involving groups of professionals working together to solve problems or create solutions, has shown positive outcomes in healthcare settings. A study on collaborative learning within youth-friendly health services demonstrated improvements in professionals' healthcare knowledge, use of evidence-based resources, empowerment to provide high-quality youth-friendly care, teamwork, and cooperation [90]. Ongoing training strategies (e.g. booster sessions and follow–up training) appear promising in maintaining acquired knowledge and skills [46, 92]. Concerning educational meetings, despite its significant potential in achieving success in knowledge translation and enhancing professionals' practice [93], a Cochrane review showed only small to moderate effects [94]. The review emphasizes that the effectiveness of these meetings is influenced by several factors. They prove most effective when utilizing a mixed interactive and didactic format; however, addressing highly complex behaviours may pose a challenge. The perceived seriousness of the targeted outcome affects effectiveness, with smaller impacts observed for outcomes seen as having less serious consequences for patients. Additionally, factors such as attendance rate, intensity, location, and initial compliance also play crucial roles in determining their effectiveness.

Strengths and limitations

One of the strengths of this study is the use of a widely used theoretical method to guide the Delphi study in the formulation of implementation hypotheses. Additionally, we employed various theoretical frameworks to categorize implementation determinants and compile a set of effective and feasible BCTs and strategies. Assessing determinants, BCTs, and strategies with the support of theoretical frameworks helps ensure a theoretically informed approach rather than relying solely on pragmatic considerations. It is anticipated that applying systematic theory-based methods and frameworks will contribute to the long-term effectiveness of the implementation process [31].

Another strength of the study is that in addition to strategies, we used BCTs to hypothesise how determinants can be best addressed. Implementation research often provides details on the type of strategies to address determinants but fails to describe which techniques are applied to

initiate behaviour change. The lack of theoretical rationale and detailed information on behaviour change processes not only limits the design and replication of implementation efforts but also makes it challenging to evaluate what actually contributes to their effectiveness [47, 95].

Several limitations should be acknowledged in this study. Firstly, the absence of professionals and policymakers among the experts may introduce bias in the results, as their perspectives on the significance of implementation determinants and effective strategies could differ from those of researchers and experts. [96].

Additionally, it's important to note that this Delphi study follows a modified version of the classical approach, which starts with closed-ended questions rather than open-ended ones. While this modification aims to provide a solid foundation by offering a set of determinants based on previous empirical research and reducing the workload for experts, it may lead to the omission of some crucial determinants, BCTs, and implementation strategies not included in the preselected list.

Conclusion

This study offers valuable insights into youth care guideline implementation by systematically formulating hypotheses based on expert input. In contrast to studies primarily focusing on determinant-targeted strategies, we delve into specific techniques crucial for behavioural change. By integrating scientific literature with implementation experts' perspectives, our research provides a nuanced understanding of the complex processes vital for successful youth care guideline implementation. Experts identified determinants most relevant by experts for the implementation of youth care guidelines, encompassing engagement, knowledge, and skills. We presented an overview of corresponding implementation hypotheses to guide organizations, policymakers, and professionals in improving the implementation process and outcomes in youth care guidelines. Future research should move beyond superficial effectiveness assessments and delve into the intricacies of how and why implementation strategies lead to positive outcomes. This shift will contribute to a nuanced understanding of the complex dynamics in youth care guideline implementation. Evaluating techniques and processes provides valuable information to develop context-specific interventions, thereby strengthening the overall knowledge base in implementation science and the use of BCTs in healthcare. Additionally, involving stakeholders at all organizational levels during determinant identification and hypothesis formulation is crucial, recognizing that implementation is a multilevel process where each individual can contribute uniquely to improvement.

Abbreviations

BCT	Behavioural change technique
CFIR	Consolidated framework for implementation research
ERIC	Expert recommendations for implementing change
TIBC	Theory–informed behaviour change

Ethical considerations and consent to participate

The Medical Ethics Committee of the Leiden University Medical Center, decided that the rules laid down in the Dutch Medical Research Involving Human Subjects Act (in Dutch: 'Wet Medisch-wetenschappelijk Onderzoek met mensen') did not apply to the research proposal (proposal number 22-3079). We certify that all methods were in full compliance with the Declarations of Helsinki [98] and the General Data Protection Regulation [99]. The questionnaire was sent via an internet link and the data were processed without identifiers. Experts eligible for participation were informed about the study and its procedures before the study commenced, and online informed consent of the participants was obtained at the start of the online survey. Experts had the right to withdraw his or her consent at any time.

Consent for publication

Not applicable

Availability of data and materials

All data supporting the conclusions of this study are included in the paper and its additional files. Other supporting data are available at: https://doi.org/10.17026/dans-293-q3yx.

Competing interests

The authors have no competing interests to declare.

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Authors' contributions

EMD was involved in the design of the study, designed the questionnaire, recruited participants, collected, analysed and interpreted the data, and wrote the initial draft and final manuscript. RMJJ assisted in the design of the study, designed the questionnaire, analysed and interpreted the data, and critically revised the manuscript. EAB assisted in the interpretation of the data and critically revised the manuscript. MRC assisted in the design of the study and interpretation of

the data and critically revised the manuscript. All authors read and approved the final manuscript.

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Supplementary materials

Scan the QR code to view supplementary materials.

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Chapter 4

Optimizing implementation: elucidating the role of behavior change techniques and corresponding strategies on determinants and implementation performance: a cross-sectional Study

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Abstract

Background

Behavior change techniques (BCTs) are considered as active components of implementation strategies, influencing determinants and, ultimately, implementation performance. In our previous Delphi study, experts formulated 'implementation hypotheses', detailing how specific combinations of BCTs and strategies (referred to as BCT-strategy combinations) might influence determinants and guideline implementation within youth care. For example, educational meetings providing instructions on guideline use were hypothesized to enhance practitioners' knowledge and, consequently, guideline implementation. However, these hypotheses have not been verified in practice yet.

Methods

We conducted a cross-sectional study involving practitioners and management professionals from youth (health)care organizations. Using questionnaires, we obtained data on the presence of BCT-strategy combinations and their perceived influence on determinants and implementation performance. Chi-squared tests and regression analyses were employed to determine the influence of specific BCT-strategy combinations on determinants and implementation performance.

Results

Our analyses included data from 104 practitioners and 34 management professionals. Most of the management professionals indicated that the BCT-strategy combinations positively influenced or had the potential to influence their implementation performance. At the practitioner level, half of the combinations were perceived to have a positive influence on determinants and implementation performance. Furthermore, practitioners who reported the absence of BCT-strategy combinations were more skeptical about their potential influence on determinants and implementation performance.

Conclusion

Several BCT-strategy combinations were perceived to improve or potentially improve implementation performance of both practitioners and management professionals. In the development and evaluation of implementation efforts, we advocate for clearly describing the implementation effort's objective and using frameworks that detail the BCTs inducing behavior change, the strategy employed, and the processes driving the observed changes. Understanding these interconnected processes is important in designing targeted, evidence-based behavior change interventions. This understanding optimizes resource allocation and contributes to the overall success of implementation efforts in youth care.

Background

In Dutch youth care, numerous evidence-based guidelines and interventions exist to support the identification and/or management of child psychosocial problems, child abuse and neglect, parenting problems, and to support parents with mental health problems (further referred to as youth care guidelines) [1]. However, the availability of evidence-based guidelines does not guarantee their optimal implementation in practice [2-5]. Implementation is defined as: 'the degree to which settings and staff members deliver a program or apply a policy as intended' [6]. The implementation of guidelines poses inherent challenges, particularly within the realm of youth care. The interdisciplinary nature of the field, the requirement to address sensitive topics with vulnerable families, and the additional pressure stemming from growing waiting lists, increased administrative burdens, and a persistent personnel shortage all contribute to the increased difficulty of effective implementation in youth care [7]. Hence, research is increasingly focused on the implementation of guidelines and interventions. Various theoretical frameworks supporting the implementation process have been developed. These frameworks focus on determinants influencing implementation [8-10] and provide taxonomies for effective implementation strategies [11]. Implementation determinants are factors that can either facilitate or hinder successful implementation. These determinants may pertain to the innovation itself (e.g., complexity), the individuals involved (e.g., capability), the (external) organizational context (e.g., partnership & connection and funding), and the implementation process (e.g., engaging) [8]. Implementation strategies, including educational outreach, learning collaboratives, and the use of opinion leaders, are methods to address these determinants and optimize the implementation of innovations [11].

However, the influence of specific implementation strategies on determinants and how this interaction contributes to either implementation success or failure remains unclear. For example, several implementation strategies have been considered effective to change skills, such as educational outreach visits, learning collaboratives, and educational meetings [12]. Yet, the effectiveness of these strategies is not solely dependent on their direct influence on determinants; other critical components play pivotal roles in shaping the outcomes of implementation strategies [13, 14]. Behavior Change Techniques (BCTs), as active components embedded within strategies, serve as specific techniques designed to induce behavior change. Examples of BCTs include providing instructions on how to perform behaviors, action planning, and using prompts or cues [15]. For instance, employing educational meetings as a strategy to address lack of knowledge on guideline use may provide information. However, the specific BCT of providing instructions on guideline use during these meetings may truly influence practitioners' knowledge. The relationship between BCTs, strategies, and their influence on determinants and, in turn, practitioners' performance in guideline implementation, highlights the interconnectedness of these elements within the implementation process. Exploring and

understanding these relationships facilitates designing effective, tailored, and evidence-based behavior change interventions, optimizing resource allocation, and ultimately improving the success of implementation efforts [16]. There is a need for a clear understanding of how strategies and BCTs collectively influence determinants and, consequently, impact implementation performance [17].

Delphi study

In a previous four-round Delphi study [18], we asked implementation experts to 1) identify important and changeable (i.e., relevant) determinants of youth care guideline implementation and 2) formulate feasible and potentially effective 'implementation hypotheses' for the relevant determinants. Building on the work by French et al. [19], we used the term 'implementation hypotheses' to detail how implementation determinants, and in turn, implementation performance might be influenced by specific BCTs and implementation strategies (i.e., BCT-strategy combination). In the first round, experts identified relevant determinants through closed-ended questions, including a preselected list of 44 determinants informed by a systematic review [20] and non-published data on a Dutch youth care guideline. In the second round, experts were tasked with formulating implementation hypotheses. Informed by existing literature on links between determinants, behaviour change, and strategies [12, 21], experts were provided a preselected list of BCTs and implementation strategies for each relevant determinant to formulate implementation hypotheses. The subsequent round focused on reviewing, finalizing, and rating these implementation hypotheses. Each expert had the opportunity to reassess and finalize their choices based on the anonymous rationales provided by all participants. Employing a ranking-type Delphi with fixed-sum questions, experts were asked to allocate 100 points to all formulated hypotheses for each determinant.

The implementation process involves various components. To assist readers in navigating the text, we used abbreviations that refer to these specific components, which are outlined below:

D	Determinant
BCT	Behavior Change Technique
S	Implementation strategy
IOD	Influence on Determinant
O	Outcome (implementation performance)

Our Delphi study revealed that experts considered determinants relating to the process of implementation (i.e., guideline promotion, mandatory education, presence of a motivated implementation leader, and management support) and knowledge and skills (i.e., guideline knowledge and communication skills) relevant for the implementation of youth care guidelines. Moreover, the Delphi study yielded the formulation of two distinct types of hypotheses: type A hypotheses and type B hypotheses, visualized in **Figure 1**. Type A hypotheses were formulated for the management professionals representing management and/or policy makers responsible for facilitating guideline implementation in the organization (further referred to as management professionals). These hypotheses describe how specific strategies, including BCTs, can influence

implementation strategy performance (i.e., type A1 hypotheses), which in turn may influence practitioners' implementation performance (i.e., type A2 hypotheses). For example, to implement a new guideline, it is important that this guideline is promoted among practitioners [D]. It is hypothesized that the use of an action plan [BCT] -formulated, discussed, and improved during collaborative learnings [S]- will facilitate guideline promotion by management professionals [IOD]. Guideline promotion may, in turn, influence practitioners' guideline implementation in practice [O]. Type B hypotheses are focused on the level of the practitioner applying the guideline in practice. Addressing a lack of knowledge regarding guideline use [D] may involve receiving instructions [BCT] through educational meetings [S], which is expected to increases their knowledge on guideline use [IOD]. This, in turn, may improve practitioners' implementation performance [O].

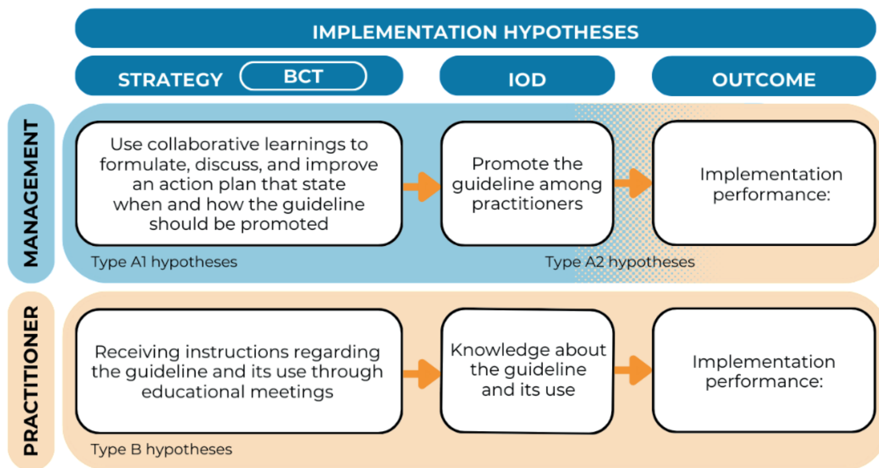

Figure 1. Implementation hypotheses. BCT=behavior change technique; IOD=influence on determinant.

Logically, implementation strategies can encompass various BCTs, and vice versa. For example, learning collaboratives [S] can be applied to provide instructions [BCT] but also to provide feedback on behaviors [BCT], while providing instructions can also be done via educational meetings [S]. In the Delphi study, we specifically focused on formulating hypotheses including one BCT with one implementation strategy, aiming for a systematic evaluation of each 1-1 combination. By concentrating on these core components, we aimed to provide a clear understanding of the interconnectedness of the identified BCT-strategy combination and their influence on the determinant and, in turn, implementation performance. In total, 46 hypotheses were formulated ranging from six to nine different hypotheses per determinant. However, these hypotheses have not been verified in practice yet.

As previously emphasized, understanding how specific determinants are influenced by BCTs and implementation strategies is important for optimizing implementation efforts. Therefore, the current study represents as a critical step in evaluating the validity of the hypotheses proposed in our earlier Delphi study within the real-world context of youth care. Specifically, we assessed whether the hypothesized BCT-strategy combinations were associated with a change in the linked determinants, and in turn, self-reported implementation performance. We focused on the top-ranking two hypotheses for each determinant based on expert ratings in the Delphi study (**Table 1**).

Table 1. Implementation hypotheses assessed in this study

	Determinant	Behaviour Change Technique	Strategy
PROCESS OF IMPLEMENTATION	Guideline promotion	Action planning	Create a learning collaborative
		Prompts/cues	Conduct educational meetings
	Mandatory education	Action planning	Assess for readiness and identify barriers and facilitators
		Action planning	Conduct local needs assessment
	Presence of a motivated implementation leader	Social support (practical)	Provide ongoing consultation
		Social comparison	Recruit, designate and train for leadership
	Management support	Social support (practical)	Obtain formal commitments
		Social support (practical)	Conduct local consensus discussions
KNOWLEDGE AND SKILLS	Knowledge on guideline use	Instructions on how to perform a behaviour	Create a learning collaborative
		Instructions on how to perform a behaviour	Conduct educational meetings
	Communication skills	Behavioral practice/rehearsal	Conduct educational outreach visits
		Behavioral practice/rehearsal	Conduct ongoing training

Methods

To explore whether the expected changes, as predicted by the hypotheses, could be verified in practice, we conducted a cross-sectional study. An online questionnaire was developed using the web-based survey tool Qualtrics [22] and was distributed between March and October 2021. Reporting follows the STROBE guidelines (**Additional File 1**) [23].

Participants and procedures

The implementation hypotheses to be explored (**Table 1**) were related to two groups of professionals within youth (health) care, namely management professionals and practitioners. Therefore, employees affiliated with either of these groups where eligible to participate. To ensure a diverse and representative study population, we purposely sampled organizations in four regions with distinct levels of urbanization: Amsterdam, Haaglanden, Friesland, and Brabant. Organizations in which youth care guidelines [1] were implemented (i.e., youth health care, municipal health services, well-baby clinics, and mental health care), were contacted by phone. Interested organizations received an email containing an information letter and questionnaire link, which was then disseminated to eligible participants. Prior to participation, digital informed consent was obtained from all respondents.

Implementation hypotheses

As previously detailed, the Delphi study introduced two types of hypotheses: type A for management professionals, and type B for practitioners. We verified two type A hypotheses for each of the following implementation determinants: promotion of the guideline, mandatory education, motivated implementation leader, and management support (*n*=8). Two type B hypotheses were formulated for ‘knowledge about the guideline’ and ‘communication skills’ (*n*=4). In **Additional File 2**, all 12 implementation hypotheses are described in more detail.

Questionnaire

First, respondents were queried about their occupational roles (i.e., management professional or practitioner) and general characteristics such as the type of organization, professional function, years of experience, and working hours. Management professionals were asked whether their organization implemented youth care guidelines, while practitioners were questioned about their use of these guidelines in their daily functions. If affirmative, participants were asked to specify the two most used guidelines. Subsequently, participants were represented with the complete questionnaire for each reported guideline. Practitioners were prompted to rate their current guideline implementation performance (further referred to as self-reported implementation performance) on a 5-point Likert scale, ranging from extremely bad (1) to extremely good (5). The questionnaire featured a clear definition of implementation performance: 'Applying the recommendations, advice, and/or action instructions in practice as

intended.' An illustrative example was provided for clarification: 'In the context of the reporting code, implementation performance involves going through the five steps before the professional decides whether to report to Child Protective Services.' Practitioners were instructed to base their ratings on their experiences at the time of completing the questionnaire, reflecting the current moment. Then, based on participants' occupational roles, we obtained data regarding whether specific BCTs and implementation strategies were employed, and their perceived influence on determinants and, consequently, implementation performance.

Type A hypotheses

To verify type A1 hypotheses in practice, we asked management professionals about whether specific BCT-strategies combinations were performed (e.g., 'Is there any concrete action plan formulated [BCT] that state when and how to promote the guideline among practitioners?' and 'Are learning collaboratives [S] organized in which this action plan is discussed and improved?'). Furthermore, we asked about whether the BCT-strategy combination has facilitated a change in the determinant (e.g., 'An action plan [BCT], -formulated during collaborative learnings [S]- helps me to promote the guideline among practitioners [IOD]'). To assess whether type A1 hypotheses influenced practitioners implementation in practice (type A2 hypotheses), we assessed practitioners' experience on implementation determinants (e.g., 'I am experiencing that the guideline is promoted within the organization [D]') and their influence on guideline implementation (e.g., 'Promotion of the guideline could/has … my actual guideline use [O]').

Type B hypotheses

Since type B hypotheses are focused on the level of practitioners, we asked practitioners about the presence of BCT-strategy combinations (e.g., 'Did you receive instructions [BCT] on the guideline and its use?' and 'Did you receive specific instructions on guideline use during educational meetings [S]'). We also assessed the influence of the BCT-strategy combination on the implementation determinant (i.e., 'Receiving specific instructions about guideline use helps me to increase my knowledge regarding guideline use [IOD]'). Finally, we asked practitioners about the influence of the implementation determinant on their guideline implementation (i.e., 'Increasing my knowledge regarding guideline use has ... my actual guideline use [O]').

A complete overview of the questions is presented in Additional File 3. In instances where participants reported certain implementation strategies or BCTs were not performed or did not influence implementation determinants, they were redirected to a hypothetical version of the same question (e.g., 'An action plan [BCT] -formulated during collaborative learnings [S]- could help me to promote the guideline among practitioners [O]'). This enabled us to assess participants' perceptions of the potential influence of these aspects on implementation performance.

A complete overview of the questions is presented in **Additional File 3**. Some participants reported certain implementation strategies or BCTs were not performed or did not influence implementation determinants. If so, we forwarded them to the hypothetical version of the same question (e.g., 'An action plan [BCT] -formulated during collaborative learnings [S]- could help me to promote the guideline among practitioners [O]') as we were also interested in how participants rated the potential influence of these aspects on implementation performance. These questions are not presented in the overview.

Statistical analyses

We excluded participants who: 1) did not sign the informed consent, 2) did not complete the questionnaire, or 3) did not report to use any guidelines. After data reviewing, no missing data or outliers were found. To discern between the presence or absence of specific components within hypotheses, we converted categorical responses (i.e., no/I don't know=no(0); yes=yes(1)) and Likert-scale responses (1,2,3=no(0); 4,5=yes(1)) into dichotomous variables Based on these responses, a new variable was created, termed 'implementation hypotheses part 1'. We considered the implementation hypotheses part 1 as present (coded as 1) when the variables concerning the BCTs and strategies were rated as 1. For all other combinations, the hypothesis was considered absent (coded as 0). In this study, we specifically evaluated the hypotheses associated with determinants identified in the Delphi study that -for the practitioners in our study- had a substantial impact on the implementation of youth care guidelines. Therefore, we first conducted a univariate regression analysis for each determinant to assess their influence on practitioners' self-reported implementation performance. Determinants showing significance were further analyzed to explore implementation hypotheses.

Type A hypotheses

To evaluate type A1 hypotheses (i.e., the influence of implementation hypothesis part 1 [BCT, S] on a change in the determinant [IOD]), we used descriptive statistics. We employed a chi-square test to compare the perceived (potential) influence on implementation performance in the groups that did and did not received a specific BCT-strategy combination. Type A2 hypotheses (e.g., the influence of practitioners' perceived management support [D] on their self-reported implementation performance [O]) were assessed using univariate and multivariate logistic regression analyses, including organization type, occupational function/profession, years of experience, working hours, and type of youth care guideline as covariates.

Type B hypotheses

To assess type B hypotheses, we created another variable, termed 'implementation hypotheses part 2'. We considered the implementation hypotheses part 2 as present (coded as 1) when implementation hypothesis part 1 as well as the influence of part 1 on the implementation determinant [IOD] were rated as 1 . For all other combinations, the hypothesis was considered

absent (coded as 0). We used descriptive statistics and univariate and multivariate logistic regression analysis to assess the influence of implementation hypothesis part 2 [BCT, S, IOD] on practitioners' self-reported implementation performance [O]. Covariates included in the multivariate regression analyses were organization type, occupational function/profession, years of experience, working hours, and type of youth care guideline.

We used IBM SPSS Statistics for Windows, version 25 analyze the data, with p-values below .05 considered significant.

Results

Participants

Practitioner

In total, 148 practitioners responded to the questionnaire. Four practitioners did not sign the informed consent form, 25 did not use any guidelines of interest, and fifteen did not fully complete the questionnaire. Of the remaining 104 responses, 76 completed the questionnaire for two types of guidelines and 28 for only one guideline, which resulted in 180 unique cases eligible for analysis (**Table 2**).

Table 2. General characteristics of management professionals (*n*=34) and practitioners (n=104)

	Management *n*(%)	Practitioners *n*(%)
Organization		
Mental health care	21(61.8)	76(73.1)
Forensic mental health care	5(14.7)	11(10.6)
Youth health care	3(8.8)	9(8.7)
Youth care	1(2.9)	7(6.7)
Other	4(11.8)	1(1.0)
Profession [based on educational level]	NA	
University postgraduate degree with specialization		7(6.7)
University postgraduate degree		35(33.7)
University degree		18(17.3)
University of applied science postgraduate degree		44(42.3)
Experience [in years]	NA	17.76(10.05)*
Work hours [per week]	NA	28.88(7.14)*
Guideline objective[A]		
Reporting Code Act Domestic Violence & Child Abuse	18(31.8)	63(35.0)
Child Check	14(24.1)	46(25.6)
Psychosocial	11(19.0)	40(22.2)
Child problems	9(15.5)	18(10.0)
Other	6(10.3)	13(7.2)
Self-reported implementation performance	NA	3.85(0.64)*

NA=not applicable; *numbers in M(sd); [A] for management *n*=58, for practitioners *n*=180.

Management

In total, 49 employees with a management function responded to the questionnaire. Five responders did not sign the informed consent, three reported that guidelines of interest were not used, and seven did not fully complete the questionnaire. Of the remaining 34 responses, 24 completed the questionnaire for two guidelines and ten for only one, resulting in 58 cases eligible for analysis. **Table 2** provides the general characteristics of the responders.

The univariate regression analysis showed that mandatory education was not related to practitioners' self-reported implementation performance (**Additional File 4**). Therefore, we did not evaluate the hypothesis for this determinant.

Implementation hypotheses type A

Guideline promotion

Approximately one-third of the managers (34.5%) formulated an action plan [BCT] during collaborative learnings [S] (**Figure 2A**). Among them, 95.0% responded that this strategy improved their guideline promotion within the organization [IOD]. Most of the managers who did not formulate an action plan during collaborative learnings, hypothesized that this strategy could improve their guideline promotion (86.8%). No significant difference was found between these groups, as indicated by the Fisher's Exact test (p=0.653).

About half of the managers (51.7%) received prompts/cues [BCT] during educational meetings [S] (**Figure 2B**). Among them, the majority (90.0%) responded that this strategy improved their guideline promotion within the organization [IOD]. About two-third of the managers who did not receive prompts/cues during educational meetings hypothesized that this strategy could improve their guideline promotion (67.9%). The difference between these groups was significant ($\chi^2(1,58)=4.33$, p=0.038).

Furthermore, the regression analysis revealed a significant influence of perceived guideline promotion on practitioners' self-reported implementation performance (OR=2.91, 95% CI [1.28-5.64], p=0.009). The multivariate regression model was significant (Nagelkerke $R^2=0.16$, p=0.018) (**Additional File 4**).

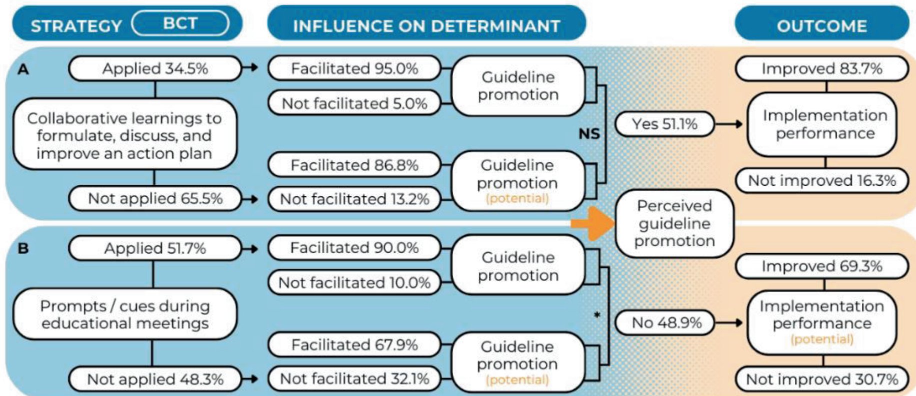

Figure 2. Results for the BCT-strategy combination *action planning – create a learning collaborative* (**A**) and *prompts/cues – conduct educational meetings* (**B**) regarding guideline promotion. *=significant at p<.05.; NS=not significant.

Motivated implementation leader

Results show that 31.0% of the managers supported [BCT] implementation leaders by applying ongoing consultations [S] (**Figure 3A**). Among them, 88.9% responded that this strategy facilitated managers to keep implementation leaders motivated [IOD]. Three-quarter of the

managers who did not have ongoing consultation with implementation leaders, hypothesized that this strategy could facilitate managers to keep implementation leaders motivated (75.0%). The Fisher's Exact test showed no significant difference between these groups (p=0.300).

About half of the managers (44.8%) considered other organizations' expertise [BCT] while recruiting implementation leaders [S] (**Figure 3B**). Among them, 61.5% responded that this strategy facilitated the recruitment of motivated implementation leaders [IOD]. Of those who did not consider the expertise of other organizations, while recruiting implementation leaders, 46.9% hypothesized that this strategy could facilitate the recruitment of motivated implementation leaders. The difference between the groups was not significant ($\chi2(1,58)=1.24$, p=0.266).

Furthermore, results showed that the presence of a motivated implementation leader significantly influenced practitioners' self-reported implementation performance, compared to the absence of a (motivated) implementation leader (OR=4.44, 95% CI [1.67-11.84, p=0.003]). The multivariate regression model was significant (Nagelkerke $R2=0.19$, p=0.006) (**Additional File 4**).

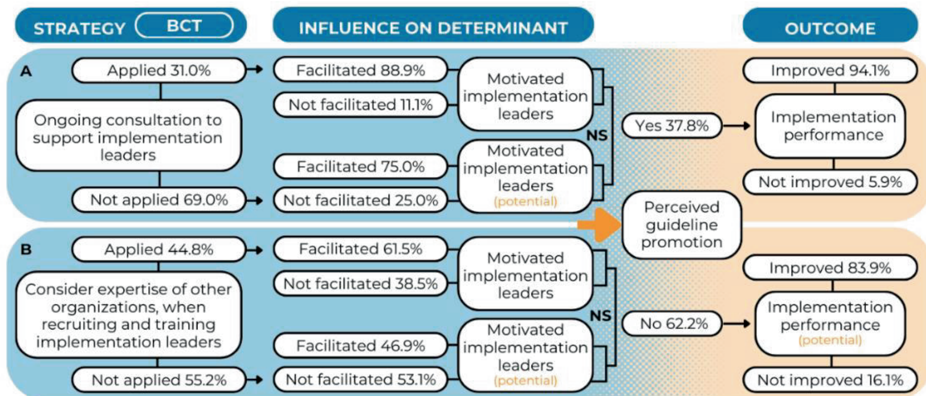

Figure 3. Results for the BCT-strategy combination *social support (practical) – provide ongoing consultation* (**A**) and *social comparison – recruit, designate, and train for leadership* (**B**) regarding the presence of a motivated implementation leader. *=significant at p<.05.; NS=not significant.

Management support

Results showed that 70.7% of the managers conducted local consensus discussions within their team [S] to determine how and when the guideline should be used and how to support practitioners in this process [BCT] (**Figure 4A**). Among them, 85.4% responded that this strategy improved their actual support towards practitioners [IOD]. Most of the managers who did not conduct local consensus discussions hypothesized that this strategy could improve their support

towards practitioners (76.5%). The Fisher's Exact test showed no significant difference between these groups (p=0.458).

Eighty-one percent of the managers obtained formal commitments within their team [S] that state how and when the guideline should be used by practitioners and their commitment to support them in this process [BCT] (**Figure 4B**). Among them, the majority (85.1%) responded that this strategy improved their actual support towards practitioners [IOD]. Among managers who did not obtain formal commitments, 72.2% hypothesized that this strategy could improve their support towards practitioners. The Fisher's Exact test showed no significant difference between these groups (p=0.381).

Furthermore, the regression analysis showed that perceived management support significantly influenced practitioners' self-reported implementation performance (OR=4.44, 95% CI [1.95-10.11], p<0.001). The multivariate regression model was significant (Nagelkerke R2=0.21, p=0.002) (**Additional File 4**).

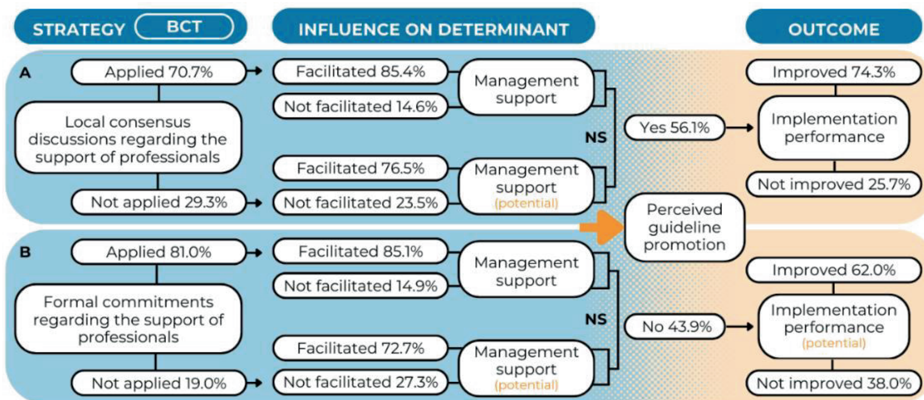

Figure 4. Results for the BCT-strategy combination *social support (practical) – obtain formal commitments* (**A**) and *social support (practical) – conduct local consensus discussions* (**B**) regarding management support. *=significant at p<.05.; NS=not significant.

Implementation hypotheses type B

Knowledge on guideline use

About half of the practitioners (55.0%) received instructions on guideline use [BCT] through collaborative learnings [S] (**Figure 5A**). Among them, 94.9% responded that this strategy improved their knowledge [IOD] and increased guideline implementation [O] in 93.6% of these cases. The majority of practitioners (86.0%), who either did not receive instructions on guideline use through collaborative learning sessions or reported that this strategy did not enhance their

knowledge, hypothesized that an increase in knowledge through this strategy could lead to improved guideline implementation. The regression analysis showed that increased guideline knowledge after receiving instructions through collaborative learnings did not significantly influenced practitioners' self-reported implementation performance (OR=2.19, 95% CI [1.00-4.77], p=0.050) (**Additional File 4**).

Two-third of the practitioners (66.7%) were provided instructions on guideline use [BCT] through educational meetings [S] (**Figure 5B**). Among them, 95.0% responded that this improved their knowledge [IOD], which, in turn, increased guideline implementation [O] in 93.9% of the cases. The majority of practitioners (83.3%), who either did not receive instructions through educational meetings or stated this strategy did not improve their knowledge, hypothesized that enhanced guideline knowledge through educational meetings could lead to improved guideline implementation. The regression analysis showed that increased guideline knowledge after receiving instructions through educational meetings significantly influenced practitioners' self-reported implementation performance (OR=2.22, 95% CI [1.03-4.79], p=0.042). The multivariate regression model was significant (adjusted R2=0.14, p=0.048) (**Additional File 4**).

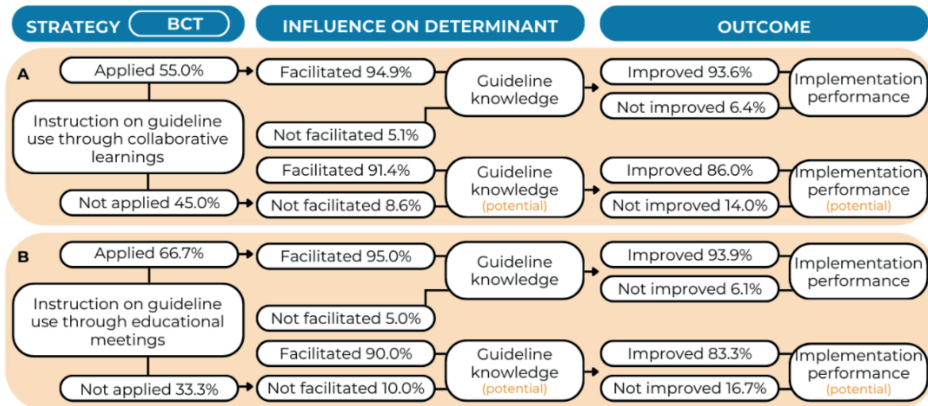

Figure 5. Results for the BCT-strategy combination instructions on how to perform a behaviour – create a learning collaborative (**A**) and instructions on how to perform a behaviour – conduct educational meetings (**B**) regarding knowledge on guideline use.

Communication skills

About one-third of the practitioners (31.7%) practiced communication skills [BCT] during educational outreach visits [S] (**Figure 6A**). Among them, 93.0% responded that this strategy improved their communication skills [IOD] and, consequently, increased guideline implementation [O] in 83.0% of these cases. Among practitioners who either did not practice their communication skills through educational outreach visits or stated this strategy did not improve their skills, only 52.8% hypothesized that improved communication skills could lead to improved guideline implementation. The regression analysis showed that increased

communication skills after practicing their skills through educational outreach visits did not significantly influence practitioners' self-reported implementation performance (OR=2.13, 95% CI [0.83-5.47], p=0.117 (**Additional File 4**).

About one-third of the practitioners (32.2%) practiced their communication skills through ongoing training [S] (**Figure 6B**). Among them, 91.4% responded that this strategy improved their communication skills [IOD], which, in turn, increased guideline implementation [O] in 81.1% of the cases. Among practitioners who did not practice their skills through ongoing training or stated this strategy did not improve their skills, only 53.5% hypothesized that improved communication skills could lead to improved guideline implementation. The regression analysis showed that increased communication skills after practicing their skills through ongoing training significantly influenced practitioners' self-reported implementation performance (OR=2.80, 95% CI [1.08-7.25], p=0.034). The multivariate regression model was significant (Nagelkerke R^2=0.15, p=0.036 (**Additional File 4**).

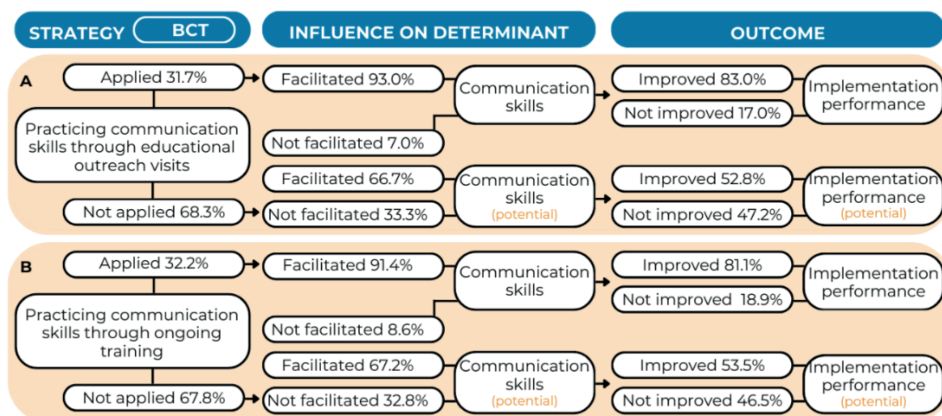

Figure 6. Results for the hypotheses behavioral practice/rehearsal – conduct educational outreach visits (**A**) and behavioral practice/rehearsal – conduct ongoing training (**B**) regarding communication skills.

Discussion

In the context of youth care, our study aimed to verify the previously formulated hypotheses [18] about the influence of BCT-strategy combinations on determinants and self-reported implementation performance in real-world settings. The majority of management professionals and practitioners reported positive influences when BCT-strategy combinations were employed, indicating improvements in determinants and/or implementation performance. Furthermore, even among the management professionals who reported that BCT-strategy combinations were not performed, there was still a tendency towards perceiving potential positive influences. However, practitioners tended to be more skeptical about the potential influence of BCT-strategy combinations.

Regarding guideline knowledge [D], we hypothesized that knowledge level is increased [IOD] by receiving instructions [BCT] through collaborative learnings [S], which, in turn, improves practitioners' implementation performance [O]. In our study, 55% of the practitioners responded that receiving instructions on guideline use through collaborative learnings. Although the majority stated that receiving instructions through collaborative learnings increased their knowledge and, in turn, improved their guideline use, the multivariate regression analysis did not show a significant influence on practitioners' self-reported implementation performance. This finding contrasts with previous research on collaborative learnings and guideline implementation in health care [24-27]. A potential explanation for this discrepancy could be our inclusion of knowledge increase as a component. Indeed, our data showed that irrespective of knowledge increase, practitioners who received instructions through collaborative learnings did indicate a significantly higher self-reported implementation performance than their counterparts. This suggests that practitioners' knowledge might not be the key determinant causing a change in their implementation performance or practitioners in this study did not consider knowledge acquisition as a significant influence Instead, practitioners' guideline implementation might have been influenced by the social processes that arose within collaborative learning environments [12, 28, 29]. However, the second hypothesis, proposing that providing instructions [BCT] through educational meetings [S] increases practitioner guideline knowledge [IOD] and implementation performance [O], was confirmed. These findings imply that to improve implementation performance by increasing knowledge, educational meetings might be more conducive to provide instructions than collaborative learnings. Nonetheless, considering the processes involved in behaviour change is crucial when selecting and analyzing appropriate BCTs and strategies [29]. This approach goes beyond acknowledging that an interventions or strategy works by providing a comprehensive understanding of why a particular intervention or strategy is effective in specific contexts. It enables researchers and practitioners to pinpoint the specific processes contributing to observed outcomes, facilitating the refinement and customization of interventions for enhanced effectiveness [28, 29].

Regarding communication skills [D], we hypothesized that skills level is increased [IOD] by practicing skills [BCT] through educational outreach visits [S], which, in turn, improves practitioners' implementation performance [O]. However, our results did not confirm this hypothesis, also regardless of communication skills improvement. Based on these findings, there may be limited support that enhancing communication skills through practice during educational outreach visits leads to improved implementation performance within youth care. Previous research showed mixed results on the effectiveness of educational outreach visits on various implementation outcomes in health care [30-32]. More research is needed to gain more insight on the effects of educational outreach visits on skill development and guideline implementation. According to Perry and colleagues, dynamic and interactive trainings are most suitable to improve skills [33]. This is supported by previous research in the field of primary care and mental health care using standardized patients and role play. These training methods improved practitioners' self-efficacy, skills, and confidence to use the skills in practice [34].Importantly, these results were mediated by the amount of training received [35], aligning with our results on the influence of ongoing [S] practice [BCT] on practitioners' communication skills [IOD] and implementation performance [O].

Most of the management professionals considered action planning [BCT] in combination with learning collaboratives [S] conducive to improve guideline promotion [O]. Developing an action plan can facilitate change by providing behavioral regulation and cues, specifying when, where, and how to act [28, 29]. This, in turn, can contribute to positive workplace cultures where stakeholders take responsibility for implementation performance and quality improvement [36-38]. Additionally, even when an action plan and/or learning collaboratives were absent, most of the management still responded positively towards their potential influence guideline promotion.

Practitioners who did not receive specific BCT-strategy combinations were significantly less positive regarding their potential influence on determinants and implementation performance compared to those who did. For example, practitioners who did not receive guideline instructions [BCT] through educational meetings [S] were less likely to believe this would increase their guideline knowledge [IOD] and implementation [O] compared to those who did. This trend was consistent across nearly all hypotheses for practitioners, whereas at the management level, negative beliefs were only observed for one hypothesis. This skepticism among practitioners towards new implementation efforts could be attributed to implementation fatigue, stemming from the substantial changes experienced within the Dutch youth care system in recent years. The decentralization of the system in 2015 has led to fragmented care and increased administrative burdens. Despite the implementation of action programs, challenges such as increasing waiting lists and persistent personnel shortages persist, exacerbating the difficulties faced by practitioners. This continuous wave of changes and initiatives may have left

practitioners feeling overwhelmed and fatigued. To address practitioners' skepticism, involving them in the development of implementation strategies could be a valuable solution. By engaging practitioners, we can gain valuable insights and experiences, improving the credibility of the results and fostering a sense of ownership and responsibility. This collaborative approach is vital for optimizing implementation effects and promoting a more positive attitude towards new strategies in the youth care system [39].

Strengths and limitations

The strength of this study is that, to our knowledge, this is the first study that explored the interconnected process between determinants, BCTs and strategies, and their influence on determinants and, in turn, implementation performance within youth care. Implementation research often investigates implementation strategies' effectiveness on a change in determinants, but fails to describe which behaviour change processes are responsible for the resulting change [40]. Developing and evaluating implementation strategies including BCTs and their MoA using, for example, the Theory of Informed Behaviour Change model [19] or the AIMD framework (Aims, Ingredients, Mechanisms, Delivery) [41], makes it possible to evaluate what core elements contribute to the effectiveness of implementation efforts [15, 40, 42, 43].

Some limitations should be noted too. Firstly, we did not include a question about managers' self-reported implementation performance independent of the hypotheses (e.g., 'how would you rate the extent to which the organization has promoted the guideline among practitioners?'). Consequently, we were unable to perform regression analysis for hypotheses type A1 as we did for hypotheses B. Furthermore, we could not link the data from the management to those of the practitioners. Therefore, hypotheses A1 and A2 could not be tested as one chain of hypotheses as illustrated in **Figure 2**. In addition, the small sample size for the management reduced statistical power.

As highlighted in the introduction, strategies can encompass a range of BCTs, and vice versa, a single BCT may be delivered through various strategies. We acknowledge that our study's approach, which explores the relationship between individual 1-1 BCT-strategy combinations, determinants, and implementation performance, may not fully capture the complexity observed in real-world situations. It represents a deliberate simplification that allowed us to systematically assess and comprehend the impact of each specific combination. In future research, we advocate for a more nuanced exploration, considering the intricate interplay of multiple BCTs and strategies to provide a more comprehensive understanding of their interconnectedness in practical contexts.

Next, it is important to acknowledge that we did not collect data on other processes potentially influencing changes in determinants and implementation performance. There may be other

psychological, physical, or social processes at play that we did not account for in our study. Exploring these processes is crucial for understanding the mechanisms behind behaviour change, thereby improving our ability to explain why interventions are effective [29].

Also, to verify the hypotheses in practice, we employed a cross-sectional method to collect data on practitioners' and managers' experience regarding the implementation hypotheses. However, to offer insights into the effect of BCTs and implementation strategies on implementation performance, randomized controlled trials or before-after studies (with a matched control group) are required. Nonetheless, our study provides a basis for further research on effective strategies to improve guideline implementation within youth care.

Another limitation is that the proportion of variability (R2) explained in the regression models were low. This indicates that, data points fall further from the regression line and thus, changes in implementation performance are only marginally explained by the dependent variable, but a significant trend between the variables is still present. On the other hand, our primary goal was to understand the relationship between the independent variables and the dependent variable and not to predict the value of the dependent variable.

Finally, since the implementation hypotheses were formulated for youth care guidelines, our results are not generalizable for other guidelines used in health care such as guidelines for cardiovascular disease or diabetes. Moreover, most of our participants were working in mental health care (61.8%) and therefore, the results may not be generalizable in other organizations in which youth care guidelines are implemented.

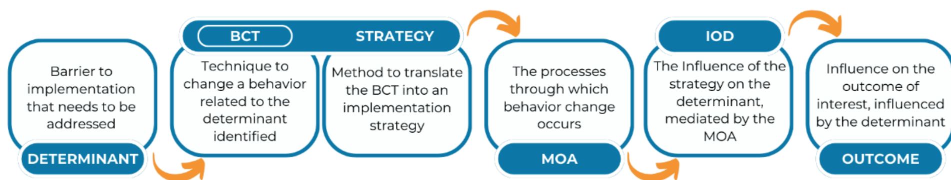

Figure 7. Visual representation of the interconnected process from implementation determinant to outcome. BCT=behavior change technique; MOA=mechanism of action; IOD=influence on determinant.

Conclusion

Guideline implementation is a complex process involving determinants, BCTs, strategies, and implementation performance. By verifying our hypotheses in practice, we contributed to a better understanding of this complex relationship within youth care. According to practitioners and management professionals, several BCT-strategy combinations improved or could improve changes in determinants and/or implementation performance. Furthermore, our study underscores the need for a nuanced understanding of the processes influencing implementation outcomes. Overall, our study provides a basis for future researchers, policy makers, and other stakeholders to develop, apply, and evaluate strategies for guideline implementation in youth care. We recommend clearly describing the implementation efforts' objective and using frameworks that include a description of both the BCTs that will elicit behavior change, the strategy to achieve this, and the processes that drive the observed changes in implementation outcomes. Understanding the interconnected process between BCTs and strategies, and how they influence determinants and outcomes, is important for designing targeted, evidence-based behavior change interventions. Furthermore, our study illustrated that some participants, mainly practitioners, were more skeptical regarding the potential effect of implementation hypotheses. This should also be considered when developing and implementing strategies to guide the implementation process in the increasingly demanding field of youth care.

Abbreviations

BCT	Behavior Change Technique
D	Determinant
IOD	Influence on Determinant
O	Outcome
S	Strategy

Ethics approval and consent to participate

The Medical Ethics Committee of the Leiden University Medical Center, decided that the rules laid down in the Dutch Medical Research Involving Human Subjects Act (in Dutch: 'Wet Medisch-wetenschappelijk Onderzoek met mensen') did not apply to the research proposal (proposal number 22-3079). We certify that all methods were in full compliance with the Declarations of Helsinki [44] and the General Data Protection Regulation [45]. The questionnaire was sent via an internet link and the data were processed without identifiers. Experts eligible for participation were informed about the study and its procedures before the study started, and online informed consent of the participants was obtained at the start of the online survey. Experts had the right to withdraw his or her consent at any time.

Consent for publication

Not applicable.

Availability of data and materials

All data supporting the conclusions of this study are included in the paper and its additional files. The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors have no competing interests to declare.

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Authors' contributions

EMD was involved in the design of the study, designed the questionnaire, recruited participants, collected, analyzed and interpreted the data, and wrote the initial draft and final manuscript. MRC assisted in the design of the study and interpretation of the data and critically revised the manuscript. RMJJvdK assisted in the design of the study, designed the questionnaire, analyzed,

and interpreted the data, and critically revised the manuscript. JCKdJ critically revised the manuscript. All authors read and approved the final manuscript.

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Supplementary materials

Scan the QR code to view supplementary materials.

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Chapter 5

One size fits all? A latent profile analysis to identify care professional subgroups based on implementation determinants

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Abstract

Background

Recent research emphasizes the need for a more holistic approach to implementation science, acknowledging complex interactions among implementation determinants and heterogeneity in context and care professionals (CPs). To verify this need, we aimed to identify distinctive subgroups of CPs based on their unique profiles of implementation determinants concerning the Childcheck, a guideline facilitating early identification of child abuse based on parental characteristics. We also explored the influence of organization type on subgroups of CPs with specific implementation characteristics (subgroup membership) and assessed their relationship to CPs implementation level.

Methods

A total of 562 Dutch CPs in Mental Health Care (aMHC) and Forensic Care settings (Forensic MHC, Probation Service, and The Salvation Army) completed a self-reported questionnaire on Childcheck implementation determinants. We conducted Latent Profile Analysis to identify subgroups of CPs. The influence of organization type on subgroup membership was examined using Chi-Squared test and we explored the impact of subgroup membership on implementation levels using a one-way ANOVA.

Results

We identified five distinct subgroups. Subgroup A (Reporting Center for Child Abuse and Neglect (RCCAN) collaboration issues, 11.7%) faced issues related to the external organization, such as feedback and collaboration issues. Subgroup B (RCCAN collaboration and organizational issues, 5.0%) encountered challenges with both the external and internal organization, including issues with financial resources and formal agreements, resulting in the lowest implementation level. Subgroup C (Limited implementation issues, 9.4%) demonstrated relatively high ratings across determinants, achieving the highest implementation level. CPs in subgroup D (CP-client interaction issues, 37.7%) encountered challenges specifically in CP-client interaction. CPs in subgroup E (Indifferent attitudes towards implementation, 36.1%) expressed low to average rating and was predominantly represented by CPs in aMHC settings. This subgroup also reported a low to average implementation level.

Conclusions

This study highlights the importance of tailored implementation plans to address each subgroup's specific needs and challenges, instead of employing a one-size-fits-all approach. Latent Profile Analysis successfully revealed the variations in implementation determinants among CPs in aMHC and Forensic Care settings. Tailoring implementation strategies for these subgroups is key to successful guideline implementation and enhancing the well-being of vulnerable children and families.

Background

In recent years, there has been a growing interest in implementation research within child and family care settings, particularly in determinants influencing the implementation of guidelines and interventions [1-5]. The analyses in these studies have predominantly focused on the influence of individual determinants on implementation, such as resource availability, self-efficacy, and guideline complexity. Although each of these determinants is of importance and has an impact on the implementation of guidelines and interventions on its own, there is a compelling argument for adopting a more holistic approach in this research area [6, 7]. Successful implementation is not a straightforward process determined by the presence or absence of determinants in isolation; rather, it depends on the complex interaction and synergist relationships between these determinants [7, 8]. For example, while lack of time is often perceived as a barrier to implementation, it can result from various factors such as, insufficient leadership, low service priority, or inappropriate workflow. Effectively addressing the issue of time constraints in an implementation program requires targeted strategies tailored to the identified causes, rather than attempting to address the barrier in isolation [7]. Furthermore, Care Professionals (CPs) and care settings can exhibit significant heterogeneity in implementation determinants and organizational context, necessitating implementation efforts tailored to their unique needs [9, 10]. Identifying subgroups enables researchers and policymakers to understand the unique needs and challenges of different CPs, facilitating the creation of tailored strategies for each subgroup, increasing the likelihood of successful implementation. This subgroup-focused approach also improves resource allocation. By understanding the specific characteristics and needs of each subgroup, resources can be directed where they are most needed, ensuring efficient use and maximizing the impact of implementation efforts. However, in the current body of literature, there has been limited attention to quantitatively examining specific subgroups based on implementation determinants. While previous qualitative research has revealed some patterns and trends regarding implementation processes [11-13], there is a lack of in-depth quantitative approaches to systematically identify these subgroups.

This study presents a method to systematically capture the contextual variation or heterogeneity in implementation determinants across CPs. We performed latent profile analysis (LPA) [14] to identify groups of CPs, with unique profiles of implementation determinants. We used data collected during the implementation of the Childcheck, a guideline aimed at facilitating the early identification of child abuse based on parental characteristics, such as domestic violence, substance abuse, and suicide attempt or other severe psychiatric problems [15, 16]. The Childcheck is part of the Model Protocol for Domestic Violence and Child Abuse and is mandatory for all professionals working with adult patients or children. This protocol guides CPs in effectively responding to signs of violence though a structured approach involving the following steps: 1) Identify the signs; 2) Consult with a colleague and, if necessary, with the Reporting and Advice Center for Domestic Violence and Child Abuse (RCCAN; in Dutch: *Veilig Thuis*); 3) Talk to the person(s) involved; 4) Assess whether domestic violence or child abuse has occurred. If in

doubt, consult with the RCCAN; 5) Decide whether to arrange help yourself or report the case to the RCCAN. The Child Check is conducted during the first step, emphasizing the identification of signs based on parental characteristics rather than focusing solely on child-related factors. In 2018, the Dutch Ministry of Health, Welfare, and Sport commissioned the initiation of a Childcheck implementation impulse within adult Mental Health Care (aMHC) and Forensic Care (FC). aMHC and FC involve individuals dealing with complex mental health issues, co-occurring disorders, or past trauma and legal involvement. The vulnerability and complexity of these individuals may jeopardize the safety and well-being of their children [15]. Improving the implementation of the Childcheck in these settings contributes to creating a safer environment for children through early detection of potential risks and the initiation of appropriate interventions. It acknowledges the importance of the family perspective in aMHCand FC, aligning with the responsibilities of CPs to ensure the safety and well-being of all parties involved. The primary objective of this impulse was to facilitate the transition of the Childcheck from policy to practice by assisting, monitoring, and evaluating its implementation. One of the steps in the implementation impulses was to identify determinants influencing the implementation of the Childcheck. Using data from the implementation of the Childcheck within aMHC and FC, we aimed to:

1. Identify subgroups of CPs working in aMHC and FC based on their unique profiles of implementation determinants.

2a. Explore whether subgroup allocation is related to organization type.

2b. Assess how subgroup allocation is related to CPs’ implementation level.

Methods

For this study, we conducted retrospective, cross-sectional analyses to identify subgroups among CPs based on data related to determinants influencing the implementation of the Childcheck. The implementation impulses that were initiated by the ministry, were translated into implementation activities by a team of professionals, including researchers, domestic violence and child abuse policy officers, and statisticians. Additionally, an advisory group, comprised of policymakers and professionals from various aMHC and FC settings, played a key role by offering insights, feedback, and advice on the implementation process. The Haaglanden Medical Center (The Hague, The Netherlands) was responsible for executing the implementation impulses throughout The Netherlands. The Medical Ethics Committee at Leiden University Medical Center determined that the Dutch Medical Research Involving Human Subjects Act did not apply to our research proposal (proposal number WSC-2022-38). Our reporting follows the STROBE guidelines (**Appendix A**) [17].

Participants and procedures

Two distinct implementation impulse initiatives were developed for CPs working in Dutch aMHC and FC organizations. The aMHC implementation impulse represents an extension of a three-year implementation program (2016-2018) for aMHC organizations, involving 103 organizations. By the end of this program, 37 organizations either did not implement or did not adequately implement the Childcheck according to the recommended fundamental criteria. Consequently, these aMHC organizations were invited to participate in an additional implementation impulse in 2019 to enhance their implementation efforts. Some organizations that participated in the initial implementation program were unable to join the extended program due to mergers. Ten organizations joined the extended implementation program. Furthermore, we recruited other aMHC organizations that had not already taken part in the initial implementation program, of which two decided to participate. In total, twelve aMHC organizations participated. In the Netherlands, aMHC services includes diagnosis, treatment, and support for individuals and their family dealing with various mental health issues, such as depression, anxiety, and psychiatric disorders. Funding for aMHC is commonly sources from the Health Insurance Act.

The FC implementation impulse was initiated in 2020, and we recruited FC organizations, including Forensic MHC, Probation Service, and the Salvation Army. The FC aims to safely reintegrate offenders into society, recognizing that punishment alone is insufficient for those with mental disorders, intellectual disabilities, or addiction. Specifically, forensic MHC focuses on treating mental health issues related to criminal behavior, while Probation Service offers guidance for post-sentence reintegration and preventing recidivism. The Salvation Army provides various assistance services, including support for the homeless, substance abusers, and the socially vulnerable. In the Netherlands, government funding supports Forensic MHC and Probation Services, while The Salvation Army's financing depends on the type of care, whether it is funded by the municipality, government, or the Health Insurance Act. Thirty-two FC

organizations decided to participate (i.e., 19 Forensic MHC, 10 Probation Services, and 3 the Salvation Army. In total, 44 aMHC and FC organizations joined the initiative (**Appendix B**).

Communication was facilitated through representatives of the respective organization. Throughout the two implementation phases in aMHC and FC, each representative distributed a questionnaire among CPs via mail, providing a link to an online platform (https://kindcheck-ggz.nl and https://kindcheck-forensisch.nl). Reminders were sent to the representatives regarding the distribution of the questionnaires. In aMHC organizations, questionnaires were distributed from February 2019 to November 2020 and from October 2020 to June 2022 in FC organizations. The implementation impulses were initially not designed with a research intention but rather aimed to evaluate, assist, and monitor the implementation of Childcheck. The questionnaires were entirely anonymous, with only the organization name and department being visible. Consequently, no individual informed consent was obtained. CPs were informed via the website about the implementation impuls and that data would be collected anonymously and shared with their respective organizations to optimize implementation of the Childcheck.

Questionnaire

We developed a questionnaire (**Appendix C**) to evaluate determinants influencing Childcheck implementation. This questionnaire is based on the theoretical and evidence-based Measurement Instrument for Determinants of Innovations (MIDI) framework developed by Fleuren et al.[18] for measuring determinants that influence the implementation of innovations. The MIDI included four categories evaluating determinants associated with the user (e.g., knowledge), the innovation (e.g., procedural clarity), the organization (e.g., financial resources) and the socio-political context (e.g., law and regulations). For the questionnaire development, we focused on the first three categories. Determinants relating to the socio-political context were not considered in the questionnaire since these determinants could not directly be influenced by the organization or CP. We deductively added items derived from evaluations with the project members and the advisory group.

Additionally, we included questions to evaluate the extent to which CPs adhere to Childcheck's recommendations (i.e., implementation level), comprising four items such as ‘Do you apply the Childcheck in the initial client meeting?’. The questionnaire comprises 37 questions distributed across four categories: 1) the user (the CP, twenty items), 2) the innovation (Childcheck, four items), 3) the organization (aMHC and FC organizations, nine items), and 4) the implementation level (four items). Items concerning implementation determinants used a 5-point Likert scale (1 - totally disagree to 5 - totally agree), with an additional ‘not applicable/I don't know’ option. Implementation level items were rated on a 4-point Likert scale (1 – never to 4 - always), except for one item using a 5-point scale (1 - totally disagree to 5 - totally agree). Prior to distribution, we conducted a review for clarity and time estimation. The total time needed to fill out the questionnaire was approximately 20-30 minutes.

Statistical Analyses

Data cleaning

We imported data to IBM SPSS Statistics 25 for Windows. Since all questions were mandatory, there were no missing values. The category 'not applicable/I don't know' was recoded as 3 (neutral), and we adjusted the categories of the reverse-worded items. We excluded data from CPs who were not familiar with the Childcheck. The cleaned data was imported into RStudio version 4.3.1 for further analysis.

Reliability and scaling

We used Item Response Theory (IRT) to compute scales for all constructs that contained two or more items. This analysis was performed using the 'mirt' package (**Appendix D**) [19]. In the IRT analysis, weighted person scores were computed for each participant based on their responses to all items within a specific construct. The IRT analysis assigns different weights to items, based on item discrimination (i.e., *a*-parameter, measuring an item's ability to distinguish trait levels) and threshold parameter (i.e., *b*-parameter, identifying trait level where response category choice changes). We applied the Generalized Partial Credit Model of IRT to the following determinants: coordinator, partnership and connection, client cooperation, descriptive norm, knowledge, professional obligation, outcome expectations, and implementation level. For each item within a construct, we evaluated both *a*- and *b*-parameters. Each construct included items with *a*-parameters above one and appropriately categorized *b*-parameters. We rescaled the resulting person scores for each construct to a range from 1 to 5 to align with the other determinants.

5

Based on the IRT analyses, we formed seven reliable construct, each effectively representing the following determinants: coordinator (two items), partnership and connections (four items), client cooperation RCCAN (two items), descriptive norm (two items), knowledge (two items), professional obligation (four items), and outcome expectations (two items). The construct implementation level was formed by three items; the item ('I conduct the Childcheck in accordance with step 1 of the Reporting Code') was not included in the construct due to poor discrimination, inconsistent location parameters, and poor fit to the model. In total, 22 determinants divided over three domains were used in the LPA analyses: the innovation (compatibility, observability, procedural clarity, relative priority), the organization (access to knowledge, coordinator, financial resources, formal ratification, partnership and connection, time, client cooperation Childcheck, client cooperation RCCAN), and the professional (communication skills, descriptive norm, general skills, routine, implementation needs, knowledge, outcome expectations, professional obligation, relationship client, social support).

Subgroup identification

We conducted a LPA in Rstudio using the 'tidyLPA' package (**Appendix E**) [20]. LPA is a statistical technique used to identify unobserved (latent) subgroups or profiles within a heterogenic population by examining patterns in observed variables [14]. Specifically, in this study, subgroup membership is determined by CPs' response patterns to questionnaire items. We applied Model

1 LPAs with one to ten profiles, assuming that variances are equal across profiles and covariances are set to zero. We assessed model fit using the 'MClust' package [21] and selected the optimal model based on fit indices and interpretability [22]. To compare the relative fit among competing models, we used the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC), with lower values indicating a better fit to the data. We also examined changes in fit indices; note that AIC may continuously decrease with large sample sizes, and a high BIC could suggest an overly complex model [23]. Additionally, we assessed the models' entropy, indicating the clarity of profile distinction, with scores ranging from 0 to 1 (optimal) [24]. Finally, we interpreted the models by examining the mean ratings of implementation determinants within each class. This involved identifying the unique characteristics of each class and gaining insight into the practical significance and applications of these classes in the context of Childcheck implementation.

Relationship with organization type and implementation level

To assess the relationship between organization type (i.e., aMHC, Forensic MHC, Probation Services, and the Salvation Army) and subgroup membership, we performed a chi-square test. To account for multiple comparisons, we applied Bonferroni corrections to control for Type I errors. Our hypothesis was that organization type would be associated with group membership (significant level was set at α=.05 and α=.0025 with Bonferroni correction). We also explored the impact of subgroup membership on implementation levels using a one-way ANOVA with a significance level set at α=.05. Post-hoc pairwise comparisons were conducted using Tukey's Honestly Significant Difference method to identify specific group differences when the ANOVA showed significance. Our hypothesis was that there would be significant differences in implementation levels among the identified subgroups.

Results

In total, 603 CPs completed the questionnaire (aMHC: 204, forensic MHC: 198, Probation Service: 161, and the Salvation Army: 40). Forty-one cases were excluded due to unfamiliarity with the Childcheck, resulting in a final dataset of 562 cases for the subsequent analysis (aMHC: 193, forensic MHC: 180, Probation Service: 159, and the Salvation Army: 30).

Subgroup identification

We assessed the fit indices of various models, ultimately selecting the model that best represented distinctive and interpretable subgroups within the data (**Appendix F**). Both the AIC and BIC exhibited a significant decrease in the five-profile model, followed by an increase. Entropy values were deemed most favorable for the model with five profiles. Based on the fit indices and interpretability, a model with five profiles was considered the best, having an entropy of 0.91. **Table 1** provides estimates for all implementation determinants, and **Figure 1** shows a visual representation of the subgroups.

Subgroup A (*n*=66, 11.7%), was characterized by low mean ratings on determinants relating to the RCCAN. CPs in this profile expressed low confidence in and perceived low client satisfaction with the assistance offered by the RCCAN (2.26 and 1.19, respectively). They also scored low in determinants such as collaboration and communication with RCCAN (1.96). However, the Childcheck was compatible with CPs' current practices (4.21), formal agreements concerning the implementation of the Childcheck were formulated by their organization (4.18), and CPs were provided with enough time (4.01) and had access to knowledge (3.96). CPs also considered clients as cooperative concerning conversations about RCCAN (4.27). Subgroup A was labeled as 'RCCAN collaboration issues'.

Subgroup B (*n*=28, 5.0%) shared similarities with subgroup C with low mean ratings on determinants related to the RCCAN. Additionally, profile B was marked by low mean ratings on determinants associated with the internal organization, including concerns about formal agreements (1.98) and the presence of various resources (coordinator=2.09, financial resources=1.34, and time=2.10). Routine and support from colleagues or supervisors was also rated as low (1.49 and 1.52, respectively). However, CPs in this profile rated determinants related to client cooperation as high (4.59 and 4.51) and indicated that applying the Childcheck did not interfere with other activities (4.18). We labeled subgroup B as 'RCCAN collaboration and Organizational Issues'.

Subgroup C (*n*=53, 9.4%) was characterized by overall high to average ratings, except for client cooperation concerning conversations about RCCAN (2.59). CPs in this profile reported to be provided with sufficient time (4.30) and perceived that the Childcheck was applied by their colleagues (4.16). Subgroup C was labeled as 'Limited implementation issues'.

Subgroup D (*n*=212, 37.7%), was characterized by overall high ratings on the determinants. However, CPs in this profile encountered issues when integrating the Childcheck into practice. They reported that applying the Childcheck interfered with their other activities (2.39), that they lacked communication skills (2.31), and were concerned that applying the Childcheck might harm their relationship with clients (2.32). Additionally, they considered clients as poorly cooperative concerning the Childcheck (2.31). We labeled subgroup D as 'CP-client interaction issues.

Subgroup E (*n*=203, 36.1%), was characterized by overall low to average ratings and was accordingly labeled as 'Indifferent attitudes towards implementation'. In this subgroup, CPs did not express particularly positive or negative opinions regarding the Childcheck or its implementation determinants.

Table 1. Mean ratings of implementation determinants in the five identified subgroups and the total group

	Determinant	RCCAN collaboration issues n =66, 11.7%	RCCAN collaboration and organizational issues n =28, 5.0%	Limited implementation issues n =53, 9.4%	CP-client interaction issues n =212, 37.7%	Indifferent attitudes towards implementation n =203, 36.1%	Total n=562
Innovation	Compatibility	4.21	2.56	3.86	4.23	3.21	3.75
	Observability	1.19	1.19	3.74	3.33	2.85	2.83
	Procedural clarity	4.14	2.94	3.36	4.45	3.47	3.88
	Relative priority	3.20	4.18	3.34	2.39	2.84	2.83
Organization	Access to knowledge	3.96	2.56	3.96	4.04	2.95	3.56
	Coordinator	2.87	2.09	3.21	3.63	2.90	3.16
	Financial resources	3.31	1.34	3.80	3.85	3.06	3.37
	Formal ratification	4.18	1.98	3.99	4.35	3.17	3.76
	Partnership & connections	1.96	1.76	3.73	3.74	3.04	3.17
	Time	4.01	2.10	4.30	4.11	2.96	3.61
Professional	Client cooperation Childcheck	3.33	4.59	3.56	2.31	2.80	2.85
	Client cooperation RCCAN	4.27	4.51	2.59	2.89	3.25	3.24
	Communication skills	2.79	3.68	3.60	2.31	2.58	2.66
	Descriptive norm	3.94	3.15	4.16	3.66	3.05	3.50
	General skills	4.16	3.12	3.58	4.46	3.54	3.94
	Implementation needs	2.16	3.11	2.72	2.28	3.27	2.70
	Knowledge	3.85	2.23	3.21	4.23	2.94	3.53
	Outcome expectations	2.26	1.88	3.60	3.35	2.85	2.99
	Professional obligation	3.76	3.10	3.14	4.20	4.08	3.95
	Relationship client	3.03	3.94	3.93	2.32	2.68	2.77
	Routine	3.85	1.49	3.60	3.92	2.55	3.27
	Social support	3.90	1.52	3.94	4.32	3.32	3.73

Note. RCCAN=Reporting Center for Child Abuse and Neglect; CP=Care Professional; Bold values represent the lowest value for each determinant or a value lower than 2.50: Italic values represent the highest value for each determinant.

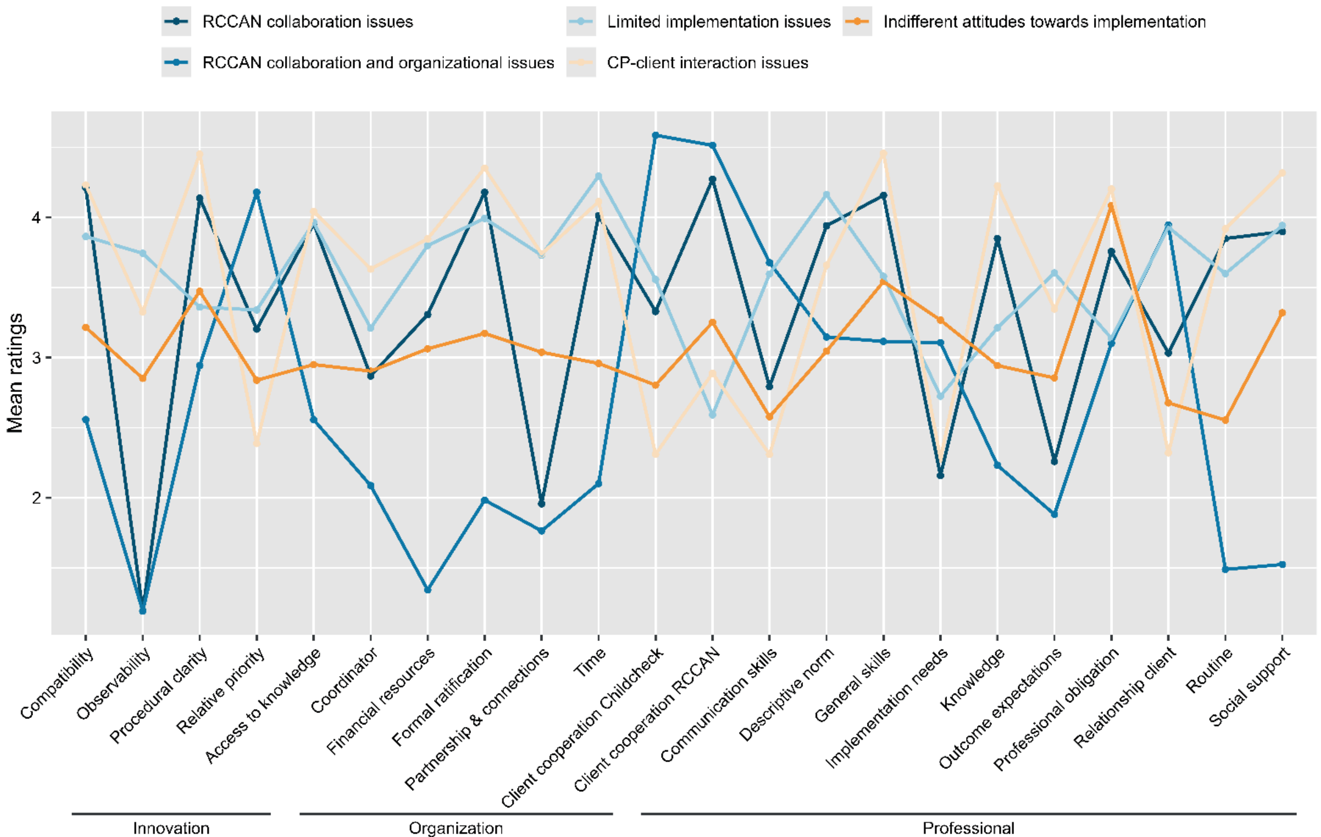

Figure 1. A visual representation of the five latent profiles, described across the three domains including 22 implementation determinants. The vertical axis displays mean ratings for each determinant. A higher rating means a more positive attitude concerning a specific determinant.

5

Relationship with organization type and implementation level

Organization

The distribution of organizations within subgroups is shown in **Figure 2** and the results of the chi-square test with Bonferroni corrections are presented in **Table 2**. The results show a significant association between organization type and group membership among CPs (χ^2(12, *n*=562)=263.09, *p*<0.001). More specifically, CPs within aMHC were found to be more often present in the 'Indifferent attitudes towards implementation' subgroup (Std. Res=15.4, *p*<0.001), and less often to be present in the other subgroups (Limited implementation issues: Std. Res=-5.4, *p*<0.001; CP-client interaction issues: Std. Res=-6.6, *p*<0.001; RCCAN collaboration issues: Std. Res=-5.9, *p*<0.001; RCCAN collaboration and organizational issues: Std. Res=-3.5, *p*<0.05). CPs within Forensic MHC were more often present in the 'Integration issue' subgroup (Std. Res=4.1, *p*<0.001) and less often present in the 'Indifferent attitudes towards implementation' subgroup (Std. Res=-7.5, *p*<0.001). While CPs within Probation Service were more often present in the 'Integration issue' subgroup (Std. Res=3.1, *p*<0.05) and 'RCCAN collaboration issues' (Std. Res=3.4, *p*<0.05), they were less often present in the 'Indifferent attitudes towards implementation' subgroup (Std. Res=-7.1, *p*<0.001). CPs within The Salvation Army were more often present in the 'Limited implementation issues' subgroup (Std. Res=3.4, *p*<0.05).

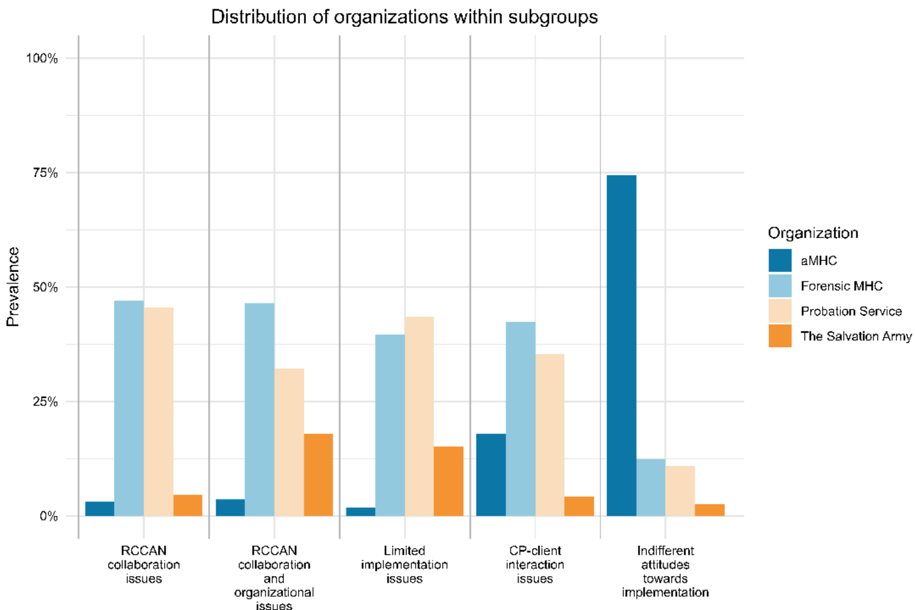

Figure 2. Distribution of organizations within the different subgroups.
aMHC=Mental Health Care; RCCAN=Reporting Center for Child Abuse and Neglect; CP=Care Professional.

Table 2. Chi-square tests for subgroup membership and organizations with Bonferroni correction

Org		Subgroups					Total
		RCCAN collaboration issues	RCCAN collaboration and organizational issues	Limited implementation issues	CP-client interaction issues	Indifferent attitudes towards implementation	
aMHC	Obs	2	1	1	38	151	193
	Exp	22.7	9.6	18.2	72.8	69.7	
	Res	-4.3	-4.3	-4.3	-4.3	-4.3	
	Std. Res	-5.7	-3.5	-5.2	-6.4	15.0	
Forensic MHC	Obs	31	13	21	90	25	180
	Exp	21.1	9.0	17.0	67.9	65.0	
	Res	2.1	2.1	2.1	2.1	2.1	
	Std. Res	2.8	1.7	1.2	4.1	-7.5	
Probation Service	Obs	30	9	23	75	22	159
	Exp	18.7	7.9	15.0	60.0	57.4	
	Res	2.6	2.6	2.6	2.6	2.6	
	Std. Res	3.3	0.5	2.6	2.9	-6.9	
The Salvation Army	Obs	3	5	8	9	5	30
	Exp	3.5	1.5	2.8	11.3	10.8	
	Res	-0.3	-0.3	-0.3	-0.3	-0.3	
	Std. Res	-0.3	3.0	3.3	-0.9	-2.3	
Total		66	28	53	212	203	562

Note. Standardized residuals in bold are those that exceeded +/- 3.0 (p<0.0025); aMHC=Mental Health Care; RCCAN=Reporting Center for Child Abuse and Neglect; Care Professional.

Implementation level

Overall mean implementation level was 2.94 [1.00 – 5.00] (median=3.04; IQR=2.21 – 3.67]. Boxplots for implementation levels for each subgroup are shown in **Figure 3** and the results of the ANOVA and pairwise comparisons are presented in **Table 3**. The ANOVA revealed a significant overall association between subgroup membership and implementation level ($F(4, 557)=37.4$, $p<0.001$). Post hoc tests showed a significant lower mean implementation level in the 'RCCAN collaboration and organizational issues' subgroup compared to all other subgroups (Mean Diff.= -1.58 (RCCAN collaboration issues), -2.02 (Limited implementation issues), -1.58 (CP-client interaction issues), and -0.83 (Indifferent attitudes towards implementation), all $p<0.001$). CPs in the 'Limited implementation issues' subgroup had a significant higher mean implementation level compared to the CPs in the 'RCCAN collaboration and organizational issues' (Mean Diff.=2.02, $p<0.05$), 'CP-client interaction issues' (Mean Diff.=-0.44, $p<0.05$), and the 'Indifferent attitudes towards implementation' subgroup (Mean Diff.=1.19, $p<0.05$).

Table 3. One-way ANOVA for subgroup membership and implementation level with pairwise comparison

Source	Sum of Squares	Df	Mean Sq.	F-value	p-value
Class	140.63	4	35.16	37.21	<0.001
Residual	526.25	557	0.94		

Post Hoc Tukey's HSD

Profile 1	Profile 2	Mean Diff. Profile 2-1	95% CI Lower	Upper	Adjusted p-value
RCCAN collaboration issues	RCCAN collaboration and organizational issues	-1.58	-2.17	-0.97	<0.001
	Limited implementation issues	0.44	-0.04	0.94	0.09
	CP-client interaction issues	0.00	-0.37	0.38	1.00
	Indifferent attitudes towards implementation	-0.75	-1.12	-0.37	<0.001
RCCAN collaboration and organizational issues	Limited implementation issues	2.02	1.40	2.64	<0.001
	CP-client interaction issues	1.58	1.05	2.12	<0.001
	Indifferent attitudes towards implementation	0.83	0.29	1.37	<0.001
Limited implementation issues	CP-client interaction issues	-0.44	-0.85	-0.03	<0.05
	Indifferent attitudes towards implementation	-1.19	-1.60	-0.78	<0.001
CP-client interaction issues	Indifferent attitudes towards implementation	-0.75	-1.01	-0.49	<0.001

Note. 95% CI=95% Confidence Intervals; RCCAN=Reporting Center for Child Abuse and Neglect; CP=Care Professional.

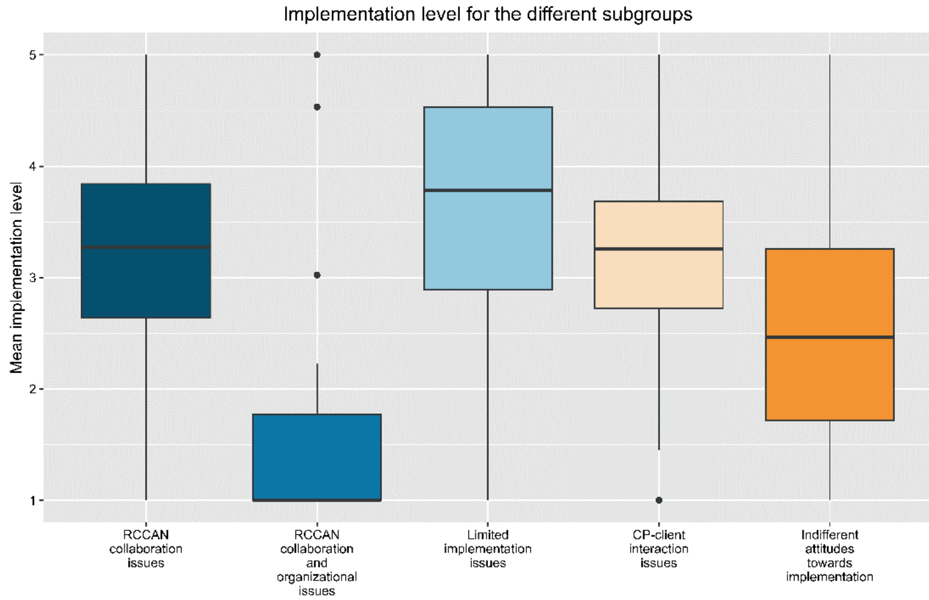

Figure 3. Boxplot relating to the mean implementation level for different subgroups; RCCAN=Reporting Center for Child Abuse and Neglect; CP=Care Professional.

Discussion

This study aimed to identify subgroups among CPs based on determinants influencing the implementation of the Childcheck within aMHC and FC. Five distinct subgroups were identified, each with their unique profile of implementation determinants. Subgroup A (RCCAN collaboration issues) had low mean ratings in determinants related to the RCCAN, such as collaboration, communication, and client assistance. Subgroup B (RCCAN collaboration and organizational issues) was similar to Subgroup A but had additional low ratings for internal organization determinants, like formal agreements and various resources. CPs in Subgroup B also showed low mean ratings for routine, suggesting that performing the Childcheck has not become a regular practice for them. Subgroup C (Limited implementation issues) exhibited overall relative average to high ratings. CPs in subgroup D (CP-client interaction issues) faced some difficulties integrating the Childcheck into practice, including a lack of communication skills and concerns about client relationships. CPs in subgroup E (Indifferent attitudes towards implementation) expressed average opinions, neither strongly positive nor negative. Most CPs were classified into the ‘CP-client interaction issues’ subgroup, followed by the ‘Indifferent attitudes towards implementation’ subgroup. This latter subgroup was predominantly represented by CPs working in aMHC settings. The 'Limited implementation issues' subgroup demonstrated the highest level of implementation, while the 'RCCAN collaboration and organizational issues' subgroup exhibited the lowest implementation level.

Considering implementation theories, we observed a noteworthy alignment between identified subgroups and the domains of the Consolidated Framework for Implementation Research (CFIR) [25], highlighting the consistency between practical outcomes and theoretical foundations. This alignment not only strengthens the validity of the CFIR framework but also underscores its practical relevance in implementing the Childcheck in both aMHC and Forensic MHC settings. It offers researchers, policymakers, and care professionals a solid framework to understand specific implementation challenges and develop targeted intervention strategies, thereby enhancing Childcheck implementation.

The identified subgroups are based on the co-occurrence of determinants, aligning with patterns found in prior qualitative research. For example, in the 'CP-client interaction issues' subgroup, we observed the co-occurrence of communication skills, client relationships, and client cooperation. In prior studies, CPs expressed concerns about potential aggressive reactions or damaging their client relationships, leading to reducing parental cooperation, when addressing suspected child abuse. However, such concerns might be caused by lack of communication skills [12, 13]. Similarly, the determinants characterizing the 'RCCAN collaboration issues' subgroup have been previously recognized as co-occurrent [11, 13]. CPs expressed a lack of confidence in follow-up care, with the care offered perceived as inadequate or too slow, potentially exacerbating the child's situation after reporting. These concerns might be influenced by CPs facing challenges related to RCCAN, including a lack of feedback and unclear communication, and often find themselves not taken seriously.

Our study's findings are comparable with a previous study using LPA to identify subgroups based on pre-implementation determinants [26]. However, interpreting similarities requires careful consideration, acknowledging distinctions between the two studies concerning the type of innovation (HIV pre-exposure prophylaxis versus the Childcheck guideline) and implementation phases (pre-implementation versus post-implementation). Furthermore, Piper et al. focused on organizational readiness for implementation from the perspective of professionals or administrators, while our study centered on the professionals themselves. Piper et al. identified six distinct profiles, with the 'Highest Capacity for Implementation' subgroup being similar to our ‘Limited implementation issues’ subgroup. They reported overall high mean ratings on determinants, which corresponds to our subgroup. They also identified a subgroup named the 'Resource-Strained Group,' which faced obstacles concerning the internal and external organization, such as limited resources, weak leadership engagement, poor implementation climate, and external partnerships, corresponding to our subgroup 'RCCAN collaboration and organizational issues'. Moreover, both groups showed the lowest scores on outcome measures, namely implementation readiness and implementation level, emphasizing a substantial impact of internal and external organizational determinants on the implementation process. Both studies identified a specific subgroup with neither strongly positive nor negative ratings. Notably, Piper and colleagues were unable to identify a subgroup comparable to our 'CP-client interaction issues' subgroup due to the pre-implementation nature of their study.

Practical implications

The identification of distinct subgroups of CPs allows for the development of tailored implementation strategies. Instead of employing a one-size-fits-all approach, organizations can customize their implementation plans to address each subgroup's specific needs and challenges. For example, in the aforementioned ‘Integration issue’ subgroup, CPs might benefit from improving client communication and local consensus discussions to reflect on why the Childcheck is important, rather than a distraction from their “real work”. Meanwhile, the ‘RCCAN collaboration issues’ subgroup could benefit by building partnerships to facilitate information sharing, collaborative problem-solving, and the development of a shared vision and goals related to the implementation of the Childcheck [27]. A Cochrane Review found that tailored strategies improved CPs’ implementation into practice [28]. Successful implementation of guidelines like Childcheck leads to early identification and intervention for children at risk. This, in turn, not only enhances their well-being and reduces the risk of long-term problems [15, 29-31], but also plays a role in constraining associated societal costs [30, 32].

The ‘Indifferent attitudes towards implementation’ subgroup primarily comprised CPs working in aMHC settings and demonstrated a low to average implementation level. The term ‘Indifferent attitudes towards implementation’ implies a degree of disinterest among these CPs when confronted with new initiatives or changes. This indifference may have stemmed from the substantial challenges faced by the Dutch aMHC in recent years. The decentralization in the Dutch aMHC system in 2015 resulted in a fragmented care environment, influenced by budgetary constraints and the delegation of responsibilities to municipalities (32). The

decentralization introduced complexity by involving different levels of government and diverse funding structures. Consequently, this complexity may contribute to increased bureaucracy and administrative burdens, leaving professionals with less time and energy for implementing new initiatives. Additionally, despite the introduction of an action program in 2017 to reduce waiting lists in mental healthcare [33], these lists have not decreased as expected. By mid-2022, the waiting list had increased to 80,000 individuals, with approximately 52% surpassing the specified target duration of fourteen weeks. Concurrently, the persistent personnel shortage reached 7% of vacant positions in 2022, with an expected continued rise over the next decade [34]. These challenges might have collectively contributed to the observed indifferent attitudes towards Childcheck implementation among CPs in aMHC settings. However, for a deeper understanding of CPs' indifferent attitudes towards implementing the Childcheck within aMHC, additional qualitative research is essential. Qualitative methods facilitate an in-depth exploration of attitudes, behaviors, and experiences, allowing researchers to delve into the specific contexts and situations influencing indifferent attitudes towards Childcheck implementation.

Another noteworthy detail for discussion is that in the majority of aMHC settings, the implementation impulse began in 2016 and was later extended in 2019. This extension provided aMHC settings with additional time to enhance their implementation efforts. It's important to note that the questionnaires were distributed between 2019 and 2020. In contrast, for FC settings, the implementation impulse started in 2020, and the questionnaires were distributed between 2020 and 2021. This discrepancy resulted in a time gap of 3 to 4 years for aMHC settings, compared to a maximum of 1 year for the FC settings, and have introduced potential differences in experiences and attitudes to the Childcheck implementation among CPs within aMHC compared to FC.

Strengths and limitations

This study has several strengths. To the best of our knowledge, it is among the first to take a holistic approach to implementation research, focusing on determinants that CPs perceived as influencing guideline implementation. LPA offers a detailed understanding of how distinct groups of CPs view and experience the determinants affecting the implementation of the Childcheck, offering meaningful insights for practice. Additionally, the study’s sample size of 562 participants exceeds the recommended minimum for LPA, enhancing the robustness of subgroup classification [35]. Moreover, the high entropy of the five-profile model (0.91) indicates well-defined and easily distinguishable profiles, enhancing the validity and interpretability of the subgroup classifications. Last, the use of the MIDI in combination with input from project members and the advisory group provides a well-established, theoretical- and practice-based framework for evaluating implementation determinants.

Limitations should be noted as well. First, the study's reliance on organizational representatives for the distribution of questionnaires introduces a potential limitation in terms of generalizability. The effectiveness of the questionnaire distribution was contingent upon the varying levels of effort and diligence exhibited by these representatives. Second, and potentially

as a consequence of the preceding limitation, within the aMHC, two organizations collectively represented about 80% of the total CPs. Since we identified a subgroup predominantly represented by CPs working in aMHC settings (i.e., the 'Indifference attitudes towards implementation' subgroup), we investigated whether this identification was primarily influenced by these two organizations. We examined the distribution of individual organizations across all classes and observed a notable presence of CPs from various organizations in the identified subgroup. Therefore, the identification was not limited to the well-represented organizations but was based on a likely widespread pattern within the aMHC. Next, we did not obtain data on CPs' background characteristics, making it impossible to investigate whether factors such as gender, age, or work experience influenced the allocation of CPs in the different subgroups. Second, the study relied on self-report data and utilized a questionnaire with reverse-worded items, potentially introducing response bias that may have affected the identification of latent profiles in LPA. Furthermore, this study focused on aMHC and FC settings. Future research could explore if similar subgroup dynamics exist in other settings where the Childcheck is implemented, such as the emergency department, ambulance services and General Practices. Last, we were unable to obtain informed consent, since the implementation impulses were not originally established with a research intention but rather to evaluate, assist, and monitor the implementation of Childcheck. Nevertheless, the study ensured the anonymity of CPs and adhered to ethical guidelines to protect their privacy.

Conclusion

LPA is a valuable method to capture the heterogeneity in implementation determinants among CPs in aMHC and FC settings. We identified five distinct subgroups, each characterized by its unique set of implementation determinants. Interaction processes between CPs and clients posed significant challenges for a majority of CPs when implementing the Childcheck in practice and should be considered when developing a tailored implementation program. Additionally, considering the low implementation level, CPs facing challenges related to the RCCAN, organizational resources, leadership, and support should not be overlooked, despite being the smallest subgroup. Qualitative research is needed to gain a deeper understanding of the indifferent attitudes towards implementing the Childcheck among CPs in aMHC settings. Recognizing and addressing the specific needs of different CP subgroups, organizations can take more effective steps towards achieving successful guideline implementation and, ultimately, improving the lives of vulnerable children and families.

Abbreviations

aMHC	Adult Mental Health Care
CFIR	Consolidated Framework for Implementation Research
CP	Care Professional
FC	Forensic Care
IRT	Item Respons Theory
LPA	Latent Profile Analysis
MIDI	Measurement Instrument for Determinants of Implementation
RCCAN	Reporting Center for Child Abuse and Neglect

Ethics approval and consent to participate

The Medical Ethics Committee of the Leiden University Medical Center, decided that the rules laid down in the Dutch Medical Research Involving Human Subjects Act (in Dutch: 'Wet Medisch-wetenschappelijk Onderzoek met mensen') did not apply to the research proposal (proposal number WSC-2022-38). The questionnaire was sent via an online platform and the data were processed without identifiers. We were unable to obtain informed consent, since the implementation impulses were not originally established with a research intention but rather to evaluate, assist, and monitor the implementation of the Childcheck. Nevertheless, the study ensured anonymity of CPs and adhered to ethical guidelines to protect their privacy.

Consent for publication

Not applicable.

Availability of data and materials

All data supporting the conclusions of this study are included in the paper and its additional files. The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors have no competing interests to declare.

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Authors' contributions

EMD assisted in the development of the implementation impulse, was involved in the study design, analysed and interpreted the data, and wrote the initial draft and final manuscript. MRC

assisted in the development of the implementation impulse, the design of the study, the interpretation of the data and critically revised the manuscript. JCKdJ and RMJJvdK assisted in the interpretation of the data and critically revised the manuscript. HMD and ILLG developed and executed the implementation impulse. All authors read and approved the final manuscript.

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Supplementary materials

Scan the QR code to view supplementary materials.

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Chapter 6

General discussion

General discussion

Implementing guidelines in youth care presents significant challenges. Suboptimal implementation may lead to critical issues being overlooked, inaccurately assessed, or neglected as well as a waste of scarce resources, such as time, staff, and funding, which are not utilized effectively. Ensuring early identification and intervention is crucial to safeguarding children's wellbeing and mitigating long-term problems. This dissertation sought to unravel the complexities of implementing youth care guidelines and in particular targeted at domestic violence (DV) and child abuse and neglect (CAN). In this final chapter, we will first summarize the findings of the thesis and reflect on the thesis's research objective. We will discuss the lessons learned, offer practical recommendations for improving guideline implementation, and suggestions for future research.

Main findings

Implementation determinants

Implementation determinants are factors that influence whether, how and to which extent guidelines are put into practice. Understanding these determinants is crucial for developing tailored strategies to improve guideline implementation and care quality. In **Chapter 2**, we examined determinants related to DV and CAN guidelines. The availability of resources emerged as the most important determinant influencing guideline implementation. CPs frequently cited time constraints as a major barrier. They explained that their demanding workload made it difficult to fully integrate CAN and DV guidelines into daily practice. The time required to address situations where clients disclosed issues or CPs identified problems further compounded these constraints. Additionally, determinants relating to guideline knowledge, self-efficacy, and communication skills also emerged as important. CPs reported uncertainty about the diagnosis or felt they did not have the skills to perform the guidelines, particularly concerning communication skills. Other determinants included guideline complexity and cosmopolitanism (i.e., inter-organizational networks). Although most determinants were comparable between DV and CAN guidelines and between quantitative and qualitative research methods, some differences were observed. In **Chapter 3**, we asked implementation experts in the context of youth care to rate the relevance of implementation determinants in terms of their importance and changeability. Experts considered knowledge of guideline use and communication skills as most relevant, similar to the perspectives of CPs. Other relevant determinants involved engaging both management and CPs in the implementation of guidelines, focusing on promoting guideline use, mandatory education, the presence of implementation leaders, and management support. CPs and experts may view relevant implementation determinants from different perspectives. CPs focus on practical aspects of guideline implementation, while experts emphasize strategic elements and the broader context needed for effective implementation.

Chapter 5 demonstrates that implementation determinants do not function in isolation; instead, they interact and influence one another in shaping the implementation process. Five distinct subgroups of CPs were identified, defined by a unique combination of determinants (**Table 1**).

Table 1. Subgroups of Care Professionals based on implementation determinants

Subgroup A	Low confidence in and perceived client satisfaction with the Reporting Center for Child Abuse and Neglect (RCCAN), as well as poor collaboration and communication with RCCAN.
Subgroup B	Low ratings on RCCAN-related determinants and additional challenges within their internal organization, including a lack of formal agreements, resources, and limited support.
Subgroup C	Generally high to average ratings across determinants.
Subgroup D	Priority issues, limited communication skills, concerns about harming client relationships, and low client cooperation regarding the Childcheck.
Subgroup E	Overall low to average ratings on determinants.

Implementation hypotheses

For specific determinants, implementation hypotheses were formulated in **Chapter 3** and **Chapter 4** focused on whether these hypotheses could be verified in practice. The relationship between determinants, BCTs, strategies, and their influence on implementation performance is complex. While certain combinations of BCTs and strategies appear to be valuable, their success depends on understanding the mechanisms that drive change. Mechanisms—the psychological or behavioural processes through which BCTs and strategies leads to actual behaviour change, such as knowledge, beliefs about capabilities, and social influence—bridge the gap between BCTs, strategies, and actual behaviour change. They explain *how* and *why* BCTs and strategies lead to meaningful outcomes. While BCTs are specific, observable techniques aimed to directly change behaviour, mechanisms explain how and why these BCTs lead to behaviour change. Understanding both BCTs and mechanisms clarifies why certain strategies are effective and provide insights into how they can be refined to become more targeted and effective.

Reflecting on our aim, can we conclude that we have fully achieved our goal based on these findings? Do we now know how to ensure the proper implementation of youth care guidelines? The answer is: not entirely. While this research enhanced our understanding of the determinants and strategies involved in the implementation process, a crucial element is still missing. Implementation should not be considered from a reductive perspective. It would be overly simplistic to suggest: "*You lack knowledge, which hinders implementation, so we will provide instructions through educational meetings, and the problem will be solved.*" In reality, this process is much more complex: implementation requires a holistic approach honouring how interconnected determinants, BCTs, strategies, mechanisms influence implementation outcomes.

A holistic approach to implementation

When introducing guidelines, innovations or improving existing interventions, it is advocated to follow a structured implementation process [1-3]. Generally, this process starts with identifying key barriers and facilitators that may influencing the implementation of (new) interventions or guidelines, followed by the selection and/or development of appropriate implementation strategies to target these determinants. Finally, a process and outcome evaluation are performed to assess the effectiveness of the selected strategies and identify potential areas for improvement. This process is cyclical, characterized by continuous feedback and adaptation, which is vital for optimizing interventions, guidelines or innovations and ensuring success across diverse contexts [4].

However, despite the structured approaches available, current models aimed at guiding the implementation process—and, thereby, implementation research—often overlook two critical elements: the interconnectedness of determinants, as well as the underlying reasons why certain strategies are effective. Recognizing the interconnectedness of determinants is essential because challenges in implementation typically stem from the complex interaction of multiple factors, rather than isolated barriers and facilitators, and how they may manifest within different contexts (**Chapter 5**). Additionally, a deeper understanding into the *how* and *why* certain strategies work can provide valuable insights into why some approaches succeed while others fail (**Chapter 4**).

Interconnected determinants

Several frameworks exist to identify implementation determinants, with the Consolidated Framework for Implementation Research (CFIR) most frequently used in implementation science [5]. The CFIR emphasizes the role of context in shaping the implementation of interventions across various settings. Within CFIR, context is integrated into domains like the outer setting (e.g., patient needs, external policies) and the inner setting (e.g., organizational culture, available resources). These domains aim to capture both external and internal factors that can act as barriers or facilitators. However, CFIR's approach often treats contextual determinants as isolated, overlooking their interconnectedness, the fact that determinants are related to each other. We need to move beyond asking *What are the (contextual) determinants that influence implementation?* and instead ask *How are these determinants interconnected? How do they influence each other and the context in which they occur?* [6].

This perspective aligns with the findings from **Chapter 5**, which reveal that CPs do not face isolated implementation determinants; rather, their implementation challenges arise from a combination of various determinants. Using LPA, we identified distinct subgroups, each characterized by a unique set of determinants they perceive as influencing implementation. For example, one subgroup highlighted the importance of client cooperation, communication skills,

and the CP-client relationship, all of which relate to CP-client interactions. Improving communication skills alone may not be sufficient if a CP is working with a non-cooperative client. Conversely, even if a client is highly cooperative, the lack of effective communication or a strong relationship may still impede the successful use of tools like the ChildCheck. This highlights how determinants are interconnected and how their interactions within a specific context shape implementation challenges.

Behaviour change techniques and mechanisms of action

In contrast to interconnected determinants, a topic that has received relatively limited attention in implementation science, there is an emerging focus on systematically understanding the elements that drive effective implementation. In line with the findings of Proctor et al. [4, 7], our research argues that a clearer understanding of the connections between determinants, BCTs, strategies, mechanisms of action, and implementation outcomes is essential. This link can be viewed as a hierarchical structure facilitating the formulation and validation of implementation hypotheses. Within these hypotheses, *determinants* are factors influencing individual behaviour, and understanding their interconnectedness is crucial for selecting effective BCTs. *BCTs* are specific techniques designed to address these determinants, while *strategies* are broader plans that utilize BCTs to promote behaviour change. *Mechanisms of action* refer to the psychological or behavioural processes explaining how BCTs and strategies contribute to behaviour change, serving as the bridge between interventions and resulting behaviour changes. *Implementation outcomes* reflect the effects of strategies and interventions on their execution and application in practice, including acceptance, adherence, and sustainability. When interventions are well-aligned with these elements, the likelihood of successful implementation increases.

The past few years, BCTs and underlying mechanisms are increasingly acknowledged as critical to successful outcomes [1, 4, 8]. While this shift represents a significant advancement in the field, research remains in its infancy and is still concentrated on theoretical frameworks rather than practical applications [7, 9-11]. There is a need for empirical evidence on the relationship between BCTs, strategies, mechanisms, and implementation outcomes.

Translating a holistic approach into future research

To translate this holistic approach into implementation research, we must ask ourselves: *how can we map the interrelationships between implementation determinants? What methods can we use to explore the complex interactions between determinants and context? And how can we not only measure the outcomes of implementation strategies but also explore why these outcomes emerge?* This section discusses approaches that can help answer these questions and how a holistic perspective can be integrated into implementation research.

Methods in implementation research

The methods discussed below are derived from our research on the implementation of youth care guidelines and offer valuable insights that can extend beyond youth care, benefiting future implementation research in other fields. Depending on the phase of the study, each method can offer valuable insights.

Mixed-method designs

We advocate for the use of mixed-methods approaches as a standard practice throughout all stages of the implementation process, whenever feasible. While new quantitative methods continue to emerge that can capture the how and why behind implementation outcomes, qualitative research remains essential. Although quantitative methods are valuable in identifying what works and measuring outcomes at scale, qualitative research plays a crucial role in understanding the contextual nuances that shape success. Relying solely on quantitative methods can oversimplify complex processes, potentially missing key dynamics that influence implementation in real-world settings. Additionally, mixed-methods may also uncover complementary or unique insights that are often overlooked when using a single-method approach. As discussed in **Chapter 2**, qualitative research uncovered complexities in clinical guidelines and their effects on patient care—insights that were often missed in quantitative studies. Ultimately, maintaining a balance between quantitative and qualitative approaches is crucial to prevent results from becoming overly simplistic and poorly applicable in real-world settings. While quantitative methods can provide broad, generalizable data, qualitative methods offer depth and context that help interpret those results in a way that aligns with the complexities of everyday practice. By integrating both approaches, we can avoid reducing complex implementation processes to mere numbers, ensuring that interventions are not only statistically significant but also practically relevant and adaptable to diverse real-world contexts.

Determinant analysis

Identifying implementation determinants and, more importantly, understanding how they are interconnected, and influence implementation outcomes is generally the first step in the implementation process. To explore these relationships, methods such as Latent Profile Analysis (LPA), Network Analysis, and Structural Equation Modelling (SEM) can provide valuable insights. These methods enable researchers to uncover patterns, quantify relationships, and examine causal connections, providing deeper insights into how different determinants interact and collectively influence implementation. By revealing these interrelationships, these techniques offer practical guidance for designing more targeted and effective implementation strategies.

LPA (**Chapter 5**), is a statistical technique that identifies unobserved subgroups within a population based on patterns of responses across multiple observed variables, grouping individuals into profiles with similar patterns of behaviour or characteristics [12]. Within

implementation research, LPA allows researchers to better understand which determinants co-occur and interact in various contexts, and ultimately, influencing implementation. Instead of labelling "communication skills" as a barrier, this approach uncovers when these skills become problematic and whether they interact with other contextual factors. Within healthcare, the application of LPA is relatively new. However, their use has increased, particularly to identify profiles based on implementation determinants and participant characteristics [13-15] or to identify practitioner subgroups based on implementation strategies and treatment practices [16-19].

Network analysis is a method used to explore the relationships between variables by representing them as nodes in a network, with edges indicating the strength of their connections [20]. In implementation research, network analysis can identify how implementation determinants are interconnected and how they influence implementation outcomes, where the outcome is treated as a central node, and determinants as surrounding nodes connected through edges. This approach allows researchers to visualize and quantify the strength of these relationships, helping to identify the most influential determinants and understand how they interact within the network [21]. Network analysis can complement LPA by examining the interactions of determinants and their influence on implementation outcomes within identified subgroups.

Structural Equation Modelling (SEM) is a statistical technique used to explore causal relationships and interconnections between variables [22]. While network analysis identifies and visualize patterns and suggests hypotheses about the interconnectedness of certain determinants and their relationships with implementation outcomes, SEM can be used to test these hypotheses for causal relationships. It models both direct and indirect effects, making it particularly useful in implementation research. SEM helps identify how different implementation determinants are interconnected and which ones most strongly influence implementation. By examining these interrelationships, SEM provides a deeper understanding of the determinants that impact the implementation process within youth care.

System Modelling is another method to evaluate causal relationships, but it adds value by showing how these relationships change dynamically under different conditions or over time. Within implementation research, System Modelling can provide deeper insight into the long-term effects of interventions and contextual influences. It may offer a richer and more flexible approach than static causal models like SEM, as it considers the evolution and complexity of the system. Although uncommon in implementation research, its potential to understand the dynamics of implementation processes makes it worthwhile to further investigate and apply in youth care focused implementation research [23].

Implementation hypotheses

We believe that the foundation for effective implementation hypotheses development and evaluation lies in adopting a realist evaluation approach. This theory-driven approach provides a framework to understanding how, why, and under what circumstances interventions or guidelines achieve their intended outcomes [24]. It is grounded in the idea that their effectiveness depends on the interaction between context, mechanisms, and outcomes (CMO configurations). Through developing, testing, and refining programme theories, Realist Evaluation enables researchers and policymakers to design tailored implementation strategies that account for the diverse environments and challenges inherent in youth care systems. This approach ensures that interventions and guidelines are not only evidence-informed but also practically applicable in real-world settings.

Qualitative Comparative Analysis (QCA), Ripple Effect Mapping (REM), and SEM can be applied within Realist Evaluation to test implementation hypotheses, as they focus on causal relationships between determinants, BCTs, strategies, mechanisms, and outcomes, thereby enhancing the understanding of how and why implementation processes succeed or fail in different contexts.

Qualitative Comparative Analysis (QCA) is a set-theoretic method that examines how combinations of conditions influence specific outcomes, revealing interactions among determinants, BCTs, strategies, and mechanisms in implementation processes [25]. By identifying patterns that lead to success or failure, QCA helps to understand the complex dynamics of effective implementation across different settings [26-33]. It identifies necessary and sufficient conditions for successful outcomes, providing insights into which factors contribute to success in diverse contexts. For example, Goicolea et al. (2015) applied QCA to examine the successful implementation of IPV response in primary health care teams. They found that teams perceiving themselves as well-prepared, self-efficient, and adopting a woman-centred approach responded better to IPV. Additionally, team climate, training, and having a champion were crucial for success. Goicolea's study highlights how QCA can uncover key factors and configurations that drive successful implementation in complex settings like IPV response in health care.

REM is a participatory method that explores the broader effects of implementing guidelines, policies, or interventions. The primary goal is to understand how changes move through a system and the effects they produce, both intended and unintended [34, 35]. In REM, stakeholders such as healthcare providers, policymakers, or even patients are actively involved in identifying and mapping the outcomes of the implementation. REM goes beyond measuring success to explore why aspects of implementation succeed or fail, examining both expected and unexpected outcomes. By mapping ripple effects, REM uncovers the causes and pathways influencing implementation. This approach highlights the complex interactions of various factors and

contextual influences, providing insights that can inform strategies to optimize implementation processes. By engaging participants in reflecting on their experiences, REM revealed the mechanisms through which the program led to positive changes at the individual, family, and community levels [36].

Next to exploring the interconnectedness of determinants and their influence on implementation, SEM is also a useful method to evaluate implementation hypotheses, as it allows for testing causal relationships between BCT-strategy combinations and implementation outcomes. By modelling both direct and indirect effects, SEM provides insights into the underlying mechanisms driving these relationships [37].

Other lessons from the journey

During the course of this dissertation, we encountered additional insights that, alongside the findings related to our research, are also valuable to consider in implementation research. These reflections have enriched our understanding of the complexities of guideline implementation and provide valuable insights for both future research and practice.

Optimal implementation

In implementation research, adherence rates-as part of implementation fidelity- are often used to analyse which factors influence guideline adherence and to examine whether adherence is linked to the effectiveness of an intervention [38-42]. However, researchers typically do not distinguish between intentional non-adherence and unintentional non-adherence. Intentional non-adherence occurs when providers or patients consciously modify the guidelines based on specific circumstances or preferences. In contrast, unintentional non-adherence is unplanned and can result from a lack of knowledge or when steps are overlooked or forgotten [43]. This distinction is crucial because focusing only on adherence may overlook the impact of intentional adaptations that could improve outcomes in some cases. This raises the question: should the focus be solely on achieving perfect adherence, or should we instead prioritize achieving the intended outcomes, such as improving child well-being, even if it requires some level of adaptation in how the guidelines are applied?

Research shows that within youth care, strict adherence is sometimes deemed undesirable in complex situations and adaptations are made to align interventions with the local context and specific client or professional situations [44, 45]. In the case of the Childcheck, CPs are required to engage in a conversation with the client to discuss concerns about the child's safety. In practice, however, CPs may encounter situations where engaging in such a conversation is deemed unsafe—either for the children, for themselves, or for others involved. In such cases, a CP might choose to skip the direct conversation and move immediately to protective actions. These adaptations are not necessarily detrimental. Thoughtful, deliberate adjustments—while

preserving the underlying principles of guidelines—can improve outcomes. Intentional adjustments, when guided by conceptual understanding and professional expertise, should be viewed as a strength rather than non-adherence. On the other hand, unintentional non-adherence may highlight areas where additional knowledge, resources, or organizational support may be needed.

Recognizing intentional non-adherence as a potential strength highlights the importance of adaptability in guideline implementation. However, before considering making guidelines more adaptable, we must identify which core elements are essential for achieving positive outcomes and which steps may be adjusted based on the context. This understanding is important to ensure that adaptations do not compromise the guideline's effectiveness, preserving its intended outcomes, and enables a more accurate interpretation of implementation research concerning adherence. Low adherence rates may not necessarily indicate poor implementation, as some steps may be adjusted without compromising the effectiveness of the intervention. The modified framework for implementation fidelity by Pérez et al. (2015) provides a structured approach to evaluate and refine interventions or guidelines by balancing adherence to core elements with necessary adaptations. This framework helps researchers define the essential components that are critical for achieving intended outcomes. At the same time, it recognizes the potential for context-specific adaptations, allowing flexibility in implementation without compromising effectiveness. By following this approach, researchers and practitioners can create guidelines or interventions that are both structured and adaptable. Acknowledging this balance will help create guidelines that are both structured and adaptable, where we prioritize optimal adherence over perfect adherence.

Behaviour change as the core of implementation.

As highlighted throughout this dissertation, implementation research cannot be fully effective without insights from the behavioural sciences. At its core, implementation research focuses on behaviour change—whether at the individual, team, or organizational level. Therefore, behavioural insights are essential to understand and support the adoption of new practices or policies [47-49]. Both fields seek to understand the drivers of change. Disciplines like psychology and sociology reveal why people or systems behave as they do and how their behaviour can be influenced. This is crucial, as implementing new guidelines is not just about providing resources; it involves changing behaviours within complex systems. Ultimately, integrating behavioural sciences with implementation research is key to achieving sustainable change. Recognizing their interdependence enables a deeper understanding of how to effectively drive lasting impact.

Reflecting on the state of implementation research

Even though some aspects and knowledge discussed in this dissertation are relatively new within the field of implementation research, other aspects have been known for some time. For

example, the importance of mechanisms was highlighted by Proctor as early as 2011, and the modified framework on fidelity and adaptation was developed in 2015. The benefits of using mixed-methods have also been well-documented. This leads to the critical question: why is this existing knowledge not (yet) optimally applied within implementation research? To address this, we must acknowledge the paradox that exists within the field: "To improve the field of implementation research, we must conduct implementation research to understand why the implementation of implementation research itself is not optimal."

Implications of findings

The findings of this dissertation emphasize that knowledge of guidelines, communication skills, and engagement at both professional and management levels are important for successfully implementing youth care guidelines. Perhaps even more important is the collaboration with external organizations, such as other care institutions or governmental agencies such as in the case of (mental) youth care. However, the extent to which these determinants influence guideline implementation is highly context-dependent. The findings underscore the need for a more comprehensive and systematic approach to implementation research. Often, existing models fall short in capturing the complex interplay between various determinants and how this can enhance the development of targeted implementation strategies. Additionally, many frameworks fail to address the how and why of behaviour change, leaving gaps in understanding the mechanisms driving effective implementation.

These gaps led to the development of a framework that provides researchers with a structured, theory-driven approach to exploring the implementation process (**Figure 1**). This framework systematically guides researchers through key steps, beginning with the identification of interconnected contextual determinants. Instead of examining these factors in isolation, it encourages exploring how they interact within specific contexts. By identifying the behaviour changes needed to address these determinants, researchers can apply targeted BCTs to effectively address barriers and enhance facilitators. These BCTs are subsequently translated into practical strategies tailored to the unique needs of the target setting. The next step is understanding how and why these strategies induce behaviour change, focusing on uncovering underlying mechanisms. This step is crucial for bridging the gap between strategies and desired implementation outcomes, helping researchers understand the change processes. It functions as a cyclical process, allowing for continuous feedback and refinement, ensuring that interventions can adapt to emerging challenges.

To operationalize this holistic approach, we recommend employing analytical methods that can capture the complex relationships between determinants, BCTs, strategies, mechanisms, and outcomes. Techniques like LPA, Network analysis, SEM, QCA, and REM could be particularly useful in identifying patterns and interactions for future research that may not be evident

through traditional methods. By combining these methods with qualitative approaches, researchers can gain deeper insights into the dynamics and context-specific nuances of real-life situations. This integrated approach enables researchers to examine the dynamic interplay between various factors and context, offering a deeper understanding of the implementation in practice and helping to tailor strategies and improve outcomes.

Based on Realist Evaluation and the acknowledgement of applying a holistic approach, our framework addresses key gaps in existing approaches such as Intervention Mapping, Theory-Informed Behaviour Change, or the Implementation Research Logic Model, by introducing novel elements that enhance their applicability and relevance:

1. Interconnectivity of Determinants: Unlike existing frameworks, which often treat determinants as isolated factors, our framework emphasizes their interconnectedness, offering a more realistic understanding of implementation contexts.
2. Structured overview: By systematically linking determinants, BCTs, strategies, mechanisms, and outcomes, a comprehensive and practical roadmap is provided for developing implementation hypotheses.
3. Analytical guidance: The framework outlines key considerations for evaluations involved the implementation process.
4. Cyclic process: It acknowledge the cyclical process, ensuring continuous adaptation and learning from evaluations and changing contexts.

Our framework strengthens existing models by offering a comprehensive approach that integrates development and evaluation, addresses the complexity of real-world implementation, and provides practical tools for both designing and assessing interventions. It offers a robust foundation for sustainable and effective implementation in real-world contexts.

Applying a holistic approach to a Childcheck implementation research

Determinant analyses

Building on the LPA, we explore the process of understanding and improving the implementation of the Childcheck among CPs. The LPA in **Chapter 5** highlighted determinants influencing Childcheck adherence but did not account for intentional or unintentional non-adherence. Future research should include questions about adherence to specific steps, exploring reasons for non-adherence, which can be deemed irrelevant when valid, allowing for a more targeted exploration of determinants influencing unintentional non-adherence. Although the LPA highlighted key determinants and their interconnectedness, it does not explain why these determinants are interconnected or how they may negatively impact the implementation of the Childcheck. Therefore, qualitative research is necessary to explore this further. For example, subgroup D, which was identified in the LPA, highlighted key determinants such as communication skills, client cooperation, and CP-client relationship **Table 1**. A qualitative

analysis could reveal that CPs struggle to implement the Childcheck not due to a lack of general communication skills, but because they feel unable to initiate conversations in specific situations—especially with resistant, aggressive clients or those with whom they have established a trust-based relationship.

Implementation hypotheses

Following the above analyses, we should apply a Realist Evaluation (RE) approach to develop, evaluate and refine program theories based on the insights gathered from the LPA and qualitative research. In the first phase of the RE process, we should formulate CMO configurations (Context, Mechanism, Outcome), through a series of IF, THEN, BECAUSE statements. These configurations serve as implementation hypotheses about the conditions under which the Childcheck is most effectively implemented. Examples of these configurations are listed in **Table 2**.

In phase two, these CMO configurations should be tested in practice. For this case study, an option would be to use Ripple Effect Mapping (REM), a method that helps visualize the impact of interventions (**Table 2**). This phase will provide clarity on whether the formulated CMO configurations are accurate and help explain why and how the Childcheck can be successfully implemented in different situations. The data gathered during this phase will inform the refinement of the program theory.

In the third phase, the program theory will be refined based on the findings from phase two. The initial CMO configurations should be adjusted and improved based on real-world experiences shared by CPs. This refined theory should be robust enough to provide practical, evidence-based recommendations for the implementation of the Childcheck (**Table 2**). The refined implementation hypotheses could be presented in a detailed report that includes concrete recommendations for policymakers and implementers, such as:

1. A customized implementation strategy that emphasizes both training and ongoing peer support.
2. Practical toolkits or guides for CPs dealing with challenging client situations, with specific tips for managing resistance or aggression.
3. Guidance on how the implementation process can be continuously adjusted to meet the evolving needs of CPs, with room for feedback and iterative adjustments.

By refining implementation hypotheses through these phases, we aim to provide a foundation to improve the Childcheck's implementation in practice. The goal is to equip CPs with the tools and support they need to apply the Childcheck more effectively and confidently, ultimately improving outcomes for children and families.

Table 2. The development, evaluation, and refinement of implementation hypotheses for the Childcheck

Phase 1: Develop implementation hypotheses	
CONTEXT	CPs struggle to implement the Childcheck, not due to a lack of communication skills in general, but because they feel unable to initiate the conversation with resistant or aggressive clients or those with whom they have established a trust-based relationship.
CMO Configuration 1	
IF	CPs practice challenging situations (BCT) through ongoing training (strategy) and receive brief educational materials (strategy) with practical guidance (BCT) on discussing the Childcheck in these situations.
THEN	They will feel more competent and confident in applying the Childcheck in complex situations,
BECAUSE	Scenario-based training enhance skills and confidence through practice, while accessible guidance tools offer immediate support, reinforcing their ability to implement the Childcheck in complex situations.
CMO Configuration 2	
IF	CPs are given the space and support (BCT) to discuss cases with colleagues using network weaving (strategy), where they receive feedback (BCT), engage in problem-solving (BCT), and develop tailored strategies (strategy) for managing difficult client situations.
THEN	They will adapt their approach to suit diverse client needs, foster a collaborative culture within their organization, and apply the Childcheck with greater confidence,
BECAUSE	Peer-to-peer support and collaborative problem-solving enhance skills, create a supportive environment for sharing insights, and build trust and confidence through shared successes.
Phase 2: Evaluate implementation hypotheses (using Ripple Effect Mapping)	
WHAT	Use REM to evaluate the broader impact of training, education materials, and peer-to-peer support, particularly regarding changes in CPs' behaviour and the implementation of the Childcheck in various situations.
HOW	Collect data from CPs, policymakers, and other stakeholders who have been involved in the implementation process. Map how these strategies affect the implementation of the Childcheck in complex situations.
WHY	REM helps visualize changes in behaviour and attitudes following training, education materials, and peer interactions, providing insights into whether the applied BCTs and strategies are leading to a more consistent implementation of the Childcheck through the expected mechanisms.
Phase 3: Refine and present refined implementation hypotheses	
Refinement 1	Tailored training and support: It may show that CPs benefit from ongoing training and educational materials, but additional emotional support could be essential in managing complex situations they may encounter.
Refinement 2	Structured peer-to-peer sessions: If peer support is crucial for boosting confidence, the theory could be refined to include more structured sessions, to ensure ongoing learning and support in daily practice.
Refinement 3	Context-specific materials: If CPs struggle to use the Childcheck in specific situations, providing tools like a "quick guide" could offer short, practical support for those situations.

Concluding remarks

This dissertation underscores the complexities of guideline implementation in youth care, with a particular focus on CAN and DV, highlighting that the process is far from straightforward. Similar to the unexpected detour mentioned in the introduction—where heavy rain and blurred vision disrupted the journey—implementation in practice often faces significant challenges. Much of the current implementation research fails to address the dynamic, context-dependent nature of these challenges, limiting its practical applicability.

A key contribution of this work is the recognition of the interconnectedness of determinants within the implementation process. Furthermore, by focusing on the causal relationships between BCTs, implementation strategies, and underlying mechanisms, this work advocates for a holistic approach to implementation research. This approach highlights the need to understand not only which strategies work, but also how and why they succeed or fail in specific contexts. The development of a framework in this research aims to bridge the gap between theory, research, and practice. By embracing a holistic view of the implementation process—one that considers both the dynamic interconnections and the contextual factors that shape causal pathways—we aim to provide insights that can better support effective guideline implementation.

Youth care, and particular concerning CAN and DV, is a sector where the implementation of guidelines is not simply a matter of adherence. The complexity of the involved organizations, ethical considerations, and the diversity of situations make it necessary apply a holistic approach to implementation research, to develop effective, tailored, context-specific, and sustainable implementation approaches.

Ultimately, just as every journey requires flexibility to adapt to changing conditions, so implementation research must evolve to meet the needs of practitioners in real-world settings. This dissertation hopes to contribute to that evolution by providing a clearer path forward—one that guides us not merely towards implementation, but towards meaningful, context-driven outcomes that truly benefit children and families.

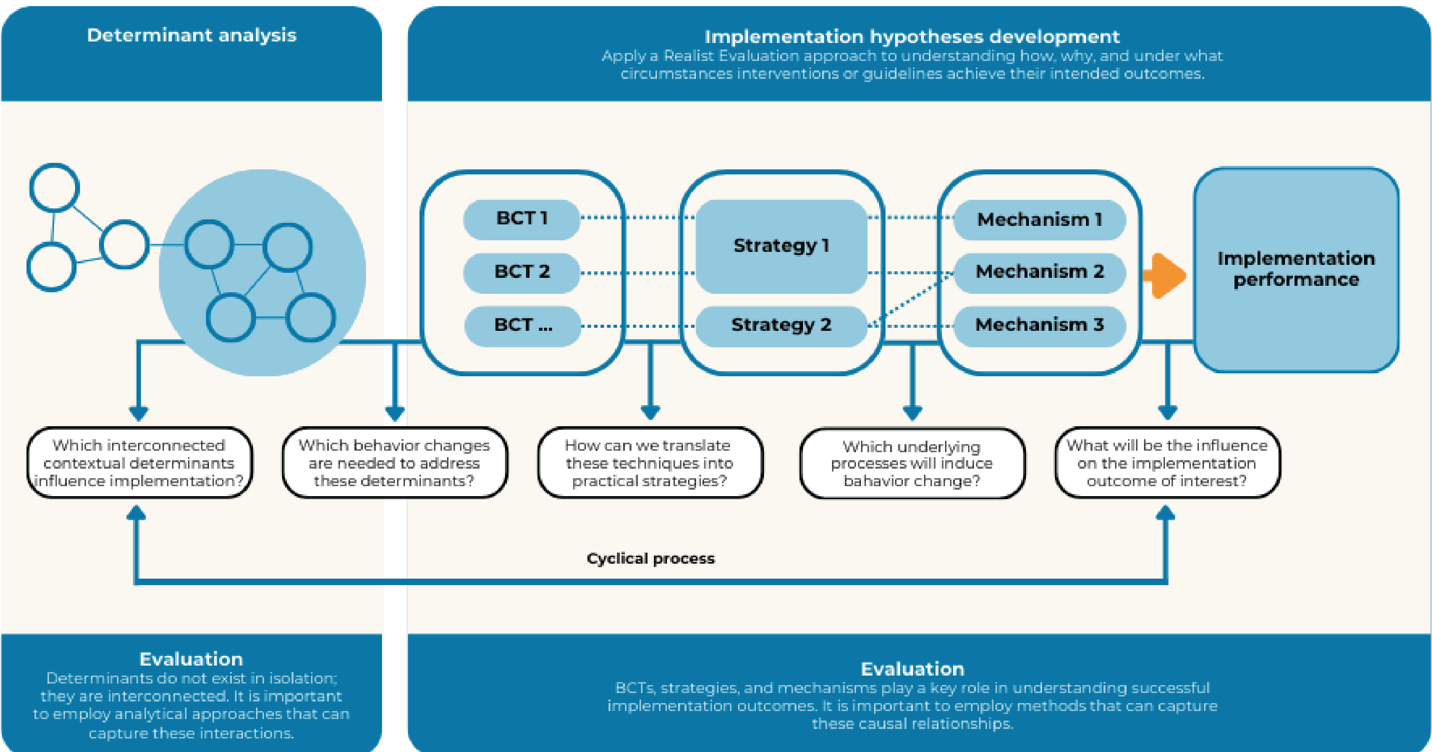

Figure 1. Framework guiding the identification of contextual determinants, behavior change techniques, and mechanisms to inform adaptive implementation strategies.

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Chapter 7

Summary

Summary

Introduction

Youth care guidelines are essential for ensuring the well-being of children and families, promoting early intervention, and preventing severe developmental, psychological, and social consequences. Effective implementation of these guidelines improves long-term health, safety, and stability, helping children grow up in secure environments. However, implementing guidelines on sensitive issues like domestic violence (DV) and child abuse and neglect (CAN) is complex, due to the sensitive nature of the topic, the vulnerability of families, and systemic challenges within youth care.

Recent years have seen increased focus on the challenges of guideline implementation, with frameworks developed to guide the process, focusing on implementation determinants as well as Behaviour Change Techniques (BCTs) and strategies to address these determinants. However, the influence of BCTs and strategies on determinants and implementation outcomes remains unclear. Additionally, in current frameworks, determinants are considered in isolation, overlooking the complex interconnections between them. overlooks their complex interconnections. Understanding how determinants, strategies, and BCTs interact allows for more effective, tailored strategies that maximize impact and improve outcomes for children and families.

The objective of this dissertation is to unravel the process of youth care guideline implementation, with a particular emphasis on CAN and DV guidelines. Specifically, we aim to gain a deeper understanding of the relationships between determinants, strategies, BCTs, and the implementation of youth care guidelines. Furthermore, we aim to identify subgroups of implementers based on their unique profiles of implementation determinants.

Main findings of this dissertation

The implementation of guidelines is influenced by various determinants. **Chapter 2** identified relevant determinants for the implementation of CAN and DV guidelines, such as the availability of resources, time constraints, knowledge of the guidelines, self-efficacy, and communication skills. In **Chapter 3**, experts were asked to assess the relevance of determinants influencing the implementation of youth care guidelines. Their responses emphasized the importance of knowledge about guideline usage and communication skills. Other crucial factors included engaging both management and CPs, mandatory education, the presence of implementation leaders, and management support. **Chapter 5** demonstrates how the determinants interact and influence each other. Five subgroups of CPs were identified, each defined by a unique combination of determinants.

In **Chapter 3** and **Chapter 4**, implementation hypotheses were formulated and evaluated regarding the relationship between determinants, BCTs, strategies, and implementation performance. The success of BCTs and strategies depends on understanding the mechanisms that drive change. These mechanisms, such as knowledge, beliefs, and social influence, explain how and why BCTs lead to actual behaviour change, bridging the gap between applied techniques and outcomes. While BCTs are specific actions aimed at changing behaviour, mechanisms clarify the process behind the change. Understanding these mechanisms clarifies why certain strategies are effective and provides insight into how they can be refined further.

A holistic approach to implementation research

While this research has improved our understanding of the determinants, BCTs, and strategies influencing the implementation of youth care guidelines, we cannot fully conclude that our goal has been achieved. Implementation should not be considered from a reductive perspective. It would be overly simplistic to suggest: "*You lack knowledge, which hinders implementation, so we will provide instructions through educational meetings, and the problem will be solved*." In reality, this process is much more complex: implementation requires a holistic approach involving interconnected determinants, BCTs, strategies, mechanisms, and implementation outcomes. Recognizing the interconnectedness of determinants is essential because challenges in implementation typically stem from the complex interaction of multiple factors, rather than isolated barriers and facilitators, and how they manifest within different contexts. Additionally, a deeper understanding into the "how and why" certain strategies work can provide valuable insights into why some approaches succeed while others fail.

The recognition of the interconnection between implementation determinants, as well as the role of BCTs and underlying mechanisms, marks an important advancement in the field. However, research is still in its early stages, focusing more on theoretical frameworks than on practical applications. Furthermore, current frameworks do not capture the holistic approach considered in this dissertation. There is a need for a framework that acknowledges the interconnectedness of determinants, BCTs, strategies, mechanisms, and outcomes, and provides clear guidance on how to apply this holistic approach in implementation research. Specifically, such a framework should offer practical steps for examining and evaluating the relationships between these elements and how they collectively influence the overall implementation process. This would allow researchers, practitioners, and policymakers to apply more targeted, effective strategies and continuously refine their approaches to improve outcomes in real-world contexts.

A holistic framework for implementation research

These insights led to the development of a new framework that provides a structured, theory-driven approach to studying the implementation process. This framework guides researchers in identifying interconnected contextual determinants and applying BCTs tailored to these specific contexts. It also emphasizes the importance of understanding how and why strategies induce behaviour change by uncovering underlying mechanisms. The framework promotes a cyclical process of continuous feedback and refinement, allowing interventions to adapt to emerging challenges.

To operationalize this holistic approach, the framework offers guidance on suitable analytical methods and recommendations for evaluation. It emphasizes the need to account for the complex relationships between determinants, BCTs, strategies, mechanisms, and outcomes during the evaluation process. By doing so, it enables a deeper understanding of the dynamic interactions in the implementation process. The framework builds on existing models, such as Intervention Mapping and Theory-Informed Behavior Change, by addressing key gaps, such as the interconnectivity of determinants, providing a structured overview, offering analytical guidance, and incorporating a cyclical process for continuous improvement. It strengthens current models by integrating development and evaluation, offering a comprehensive approach for sustainable and effective implementation in real-world contexts.

Conclusion

This dissertation highlights the complexities of implementing guidelines in youth care, particularly in the context of CAN and DV, emphasizing that this process of often challenging and context-specific. It underscores the need for a holistic approach to implementation research, one that recognizes the interconnectedness of various determinants and the causal relationships between determinants, BCTs, strategies, mechanisms, and outcomes. The developed framework seeks to bridge theory and practice by providing insights into how and why certain strategies succeed or fail in specific contexts. Ultimately, just as every journey requires flexibility to adapt to changing conditions, implementation research must evolve to meet the needs of practitioners in real-world settings. This dissertation aims to contribute to this evolution by offering a more structured approach to implementation research—one that not only focuses on the implementation process itself but also ensures that outcomes are tailored to specific contexts, driving tangible improvements in the well-being of children and families.

Appendix

Nederlandse samenvatting

Dankwoord

Bibliography

Curriculum Vitae

A Nederlandse samenvatting

Nederlandse samenvatting

Inleiding

Jeugdzorgrichtlijnen zijn essentieel om het welzijn van kinderen en gezinnen te waarborgen, vroege interventie te bevorderen en ernstige ontwikkelings-, psychische- en sociale gevolgen te voorkomen. Een effectieve implementatie van deze richtlijnen verbetert de langdurige gezondheid, veiligheid en stabiliteit, waardoor kinderen kunnen opgroeien in een veilige omgeving. Het implementeren van richtlijnen over onderwerpen zoals huiselijk geweld en kindermishandeling is echter complex, door het gevoelig onderwerp, de kwetsbaarheid van gezinnen en de systemische uitdagingen binnen de jeugdzorg.

De laatste jaren is er meer aandacht voor de uitdagingen van richtlijnimplementatie, waarbij verschillende raamwerken zijn ontwikkeld om het proces te begeleiden, met de focus op zowel implementatiedeterminanten als gedragsveranderingstechnieken en strategieën om deze determinanten aan te pakken. De invloed van gedragsveranderingstechnieken en strategieën op determinanten en implementatie uitkomsten blijft echter onduidelijk. Bovendien worden determinanten in dergelijke raamwerken in isolatie bekeken en zonder rekening te houden met de complexe onderlinge samenhang tussen determinanten. Het begrijpen van hoe determinanten, gedragsveranderingstechnieken en strategieën met elkaar samenhangen, maakt effectievere en op maat gemaakte strategieën mogelijk die de impact maximaliseren en de uitkomsten voor kinderen en gezinnen verbeteren.

Het doel van dit proefschrift is om het proces van de implementatie van jeugdzorgrichtlijnen te ontrafelen, met een specifieke focus op richtlijnen gericht op kindermishandeling en huiselijk geweld. We streven ernaar om een dieper inzicht te krijgen in de relaties tussen determinanten, strategieën, gedragsveranderingstechnieken en de implementatie van jeugdzorgrichtlijnen. Daarnaast willen we subgroepen van zorgverleners identificeren op basis van hun unieke profielen van implementatiedeterminanten.

Belangrijkste bevindingen van dit proefschrift

De implementatie van richtlijnen wordt beïnvloed door verschillende determinanten. **Hoofdstuk 2** identificeerde relevante determinanten voor de implementatie van richtlijnen met betrekking tot kindermishandeling en huiselijk geweld, zoals de beschikbaarheid van middelen, tijdsdruk, kennis van de richtlijnen, zelfeffectiviteit en communicatieve vaardigheden. In **Hoofdstuk 3** werd aan experts gevraagd om de relevantie van determinanten die de implementatie van jeugdzorgrichtlijnen beïnvloeden, te beoordelen. Hun antwoorden benadrukten ook het belang van kennis over het gebruik van richtlijnen en communicatieve vaardigheden. Andere cruciale factoren waren het betrekken van zowel het management als de zorgprofessionals, verplichte

educatie, de aanwezigheid van implementatieleiders en managementondersteuning. **Hoofdstuk 5** laat zien hoe de determinanten elkaar kunnen beïnvloeden. Vijf subgroepen van zorgprofessionals werden geïdentificeerd, elk gedefinieerd door een unieke combinatie van determinanten.

In **Hoofdstuk 3** en **Hoofdstuk 4** werden implementatiehypotheses geformuleerd en geëvalueerd met betrekking tot de relatie tussen determinanten, gedragsveranderingstechnieken, strategieën en implementatie uitkomsten. Het succes van gedragsveranderingstechnieken en strategieën wordt bepaald door de mechanismen die daadwerkelijke verandering tot stand brengen. Deze mechanismen, zoals kennis, overtuigingen en sociale invloed, verklaren hoe en waarom gedragsveranderingstechnieken leiden tot daadwerkelijke gedragsverandering, en overbruggen de kloof tussen toegepaste technieken en uitkomsten. Terwijl gedragsveranderingstechnieken specifieke acties zijn om gedrag te veranderen, verduidelijken mechanismen het proces achter de daadwerkelijke verandering. Het begrijpen van deze mechanismen maakt duidelijk waarom bepaalde strategieën effectief zijn en biedt inzicht in hoe ze verder verfijnd kunnen worden.

Een holistische benadering van implementatieonderzoek

Hoewel dit onderzoek ons begrip heeft vergroot met betrekking tot determinanten, gedragsveranderingstechnieken, strategieën en de invloed ervan op de implementatie van jeugdzorgrichtlijnen, kunnen we niet volledig concluderen dat ons doel is bereikt. Implementatie moet niet vanuit een vereenvoudigde benadering worden bekeken. Het zou te eenvoudig zijn om te stellen: "*Je hebt te weinig kennis, dit belemmert de implementatie, dus we geven instructies via educatieve bijeenkomsten en het probleem is opgelost.*" In werkelijkheid is dit proces veel complexer: implementatie vereist een holistische benadering die samenhangende determinanten, gedragsveranderingstechnieken, strategieën, mechanismen en implementatieresultaten omvat. Bovendien is het herkennen van de onderlinge samenhang van determinanten ook essentieel. Implementatieproblemen komen doorgaans voort uit de complexe interactie van meerdere determinanten, in plaats van geïsoleerde barrières en facilitators, en hoe ze zich manifesteren binnen verschillende contexten. Daarnaast kan een dieper begrip van het *hoe* en *waarom* van bepaalde strategieën waardevolle inzichten bieden in waarom sommige benaderingen wel en andere niet succesvol zijn.

De erkenning van de onderlinge samenhang tussen implementatiedeterminanten, evenals de rol van gedragsveranderingstechnieken en onderliggende mechanismen, is een belangrijke vooruitgang in het vakgebied. Onderzoek bevindt zich echter nog in een vroeg stadium, met meer focus op theoretische raamwerken dan op praktische toepassingen. Bovendien vangen de huidige raamwerken de holistische benadering, zoals in dit proefschrift beschreven, niet volledig. Er is behoefte aan een raamwerk dat de onderlinge samenhang van determinanten,

gedragsveranderingstechnieken, strategieën, mechanismen en uitkomsten erkent en duidelijke richtlijnen biedt voor de toepassing van deze holistische benadering in implementatieonderzoek. Specifiek zou een dergelijk raamwerk praktische stappen moeten bieden voor het onderzoeken en evalueren van de relaties tussen deze elementen en hoe ze gezamenlijk het algemene implementatieproces beïnvloeden. Dit zou onderzoekers, zorgverleners, en beleidsmakers in staat stellen om gerichtere, effectievere strategieën toe te passen en hun benaderingen voortdurend te verfijnen om de uitkomsten in de praktijk te verbeteren.

Een holistisch raamwerk voor implementatieonderzoek

Deze inzichten leidden tot de ontwikkeling van een nieuw raamwerk dat een gestructureerde, theorie gedreven benadering biedt voor het analyseren van het implementatieproces. Dit raamwerk begeleidt onderzoekers bij het identificeren van samenhangende contextuele determinanten en het toepassen van gedragsveranderingstechnieken binnen strategieën die zijn afgestemd op deze specifieke contexten. Het benadrukt ook het belang van het begrijpen van hoe en waarom strategieën gedragsverandering teweegbrengen door onderliggende mechanismen te evalueren. Het raamwerk bevordert een cyclisch proces van continue feedback en verfijning, waardoor interventies kunnen worden aangepast aan opkomende uitdagingen.

Om deze holistische benadering te operationaliseren, biedt het raamwerk handvatten over geschikte analytische methoden en aanbevelingen voor evaluatie. Het benadrukt de noodzaak om rekening te houden met de complexe relaties tussen determinanten, gedragsveranderingstechnieken, strategieën, mechanismen en uitkomsten tijdens het evaluatieproces. Door dit te doen, stelt het onderzoekers in staat om een dieper begrip te krijgen van de dynamische interacties in het implementatieproces. Het raamwerk bouwt voort op bestaande modellen door belangrijke hiaten aan te pakken, zoals de onderlinge verbondenheid van determinanten, het bieden van een gestructureerd overzicht, analytische begeleiding en het integreren van een cyclisch proces voor continue verbetering. Het versterkt huidige modellen door ontwikkeling en evaluatie van implementatie hypothesen te integreren en biedt een allesomvattende benadering voor duurzame en effectieve implementatie in de praktijk.

Conclusie

Dit proefschrift benadrukt de complexiteit van het implementeren van richtlijnen in de jeugdzorg, vooral met betrekking tot kindermishandeling en huiselijk geweld en benadrukt dat dit proces vaak uitdagend en context specifiek is. Het benadrukt de noodzaak van een holistische benadering van implementatieonderzoek, die de onderlinge samenhang van verschillende determinanten en de causale relaties tussen determinanten, BCT's, strategieën, mechanismen en uitkomsten erkent. Het ontwikkelde raamwerk beoogt een brug te slaan tussen theorie en praktijk door inzicht te bieden in hoe en waarom bepaalde strategieën wel of niet succesvol zijn

in specifieke contexten. Uiteindelijk, net zoals verandering noodzakelijk is om effectief in te spelen op nieuwe omstandigheden, moet implementatieonderzoek zich verder ontwikkelen om te voldoen aan de behoeften van praktijkprofessionals. Dit proefschrift draagt bij aan deze ontwikkeling door een meer gestructureerde benadering van implementatieonderzoek aan te bieden—een benadering die niet alleen de implementatie zelf benadrukt, maar ook zorgt dat de uitkomsten zijn afgestemd op specifieke contexten, wat leidt tot concrete verbeteringen in het welzijn van kinderen en gezinnen.

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Other publications

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6. **Dubbeldeman, E. M.**, Kiefte-de Jong, J. C., Ardesch, F. H., Boelens, M., van der Velde, L. A., van der Steen, S. G., Heijnders, M.L., & Crone, M. R. (2024). Intervention Characteristics and Mechanisms and Their Relationship with the Influence of Social Prescribing: A Systematic Review. Health & Social Care in the Community, 2024(1), 5597259.

7. Oosterveld, B., **Dubbeldeman, E. M.**, Brakema, E. A., Broese, J. M. C., Chavannes, N. H., & van der Kleij, R. M. J. J. (2023). Klimaatvriendelijker voorschrijven en gebruik van inhalatiemedicatie.

8. Bontje, M. C., de Ronde, R. W., **Dubbeldeman, E. M.**, Kamphuis, M., Reis, R., & Crone, M. R. (2021). Parental engagement in preventive youth health care: Effect evaluation. Children and Youth Services Review, 120, 105724.

Papers submitted

9. Gerding, I. L. L., **Dubbeldeman, E. M.**, Crone, M. R., van der Kleij, R. M. J. J., Diderich, H. M. *Determinants influencing the implementation of a guideline to detect child abuse*

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and neglect (the 'Child Check') in Dutch mental healthcare organizations. [under review].

10. Groenestein, S. F. F., Crone, M. R., **Dubbeldeman, E. M.**, Lottman, S., Kiefte-de Jong, J. C., Bussemaker, J. & van der Pas, S. *Exploring family typologies and health outcomes in a Dutch primary care population of children living in urban cities in the Netherlands: A latent class analysis.* [under review].
11. Groenestein, S. F. F., Plag, S., **Dubbeldeman, E. M.**, Vermeiren, R. R. J. M., Bussemaker, J., van der Pas, S., & Crone, M. R. *Exploring syndemic vulnerability among adolescents living in urban cities in the Netherlands: A latent class analysis.* [under review].
12. **Dubbeldeman, E. M.**, Boelens, M., Bloemen-van Gurp, E. J., Dierx, J., Spreeuwenberg, M. D., Kiefte-de Jong, J. C. *A Longitudinal Psychometric Evaluation of a Context-Sensitive Positive Health Questionnaire for Measuring Broad Health in Dutch Adults*. [submitted].

Presentations at (inter)national conferences

1. Development of a Context-specific Positive Health Questionnaire. Association for Researchers in Psychology and Health, 2025. Heerlen, the Netherlands (oral presentation).
2. Exploring Gender Differences in Syndemic Vulnerability in Two Dutch Rural Cities: Leiden and The Hague. European Public Health Conference, 2024. Lisbon, Portugal (poster display).
3. Exploring Gender Differences in Syndemic Vulnerability in Two Dutch Rural Cities: Leiden and The Hague. European Society of Health and Medical Sociology, 2024. Antwerp, Belgium (oral presentation).
4. Exploring Syndemic Vulnerability among Children 0-12 Living in Urban Cities in the Netherlands: A Latent Class Analysis. 10th Work Conference Health Campus, 2024. The Hague, the Netherlands (poster pitch).
5. Elucidating the Role of BCTs and Corresponding Strategies on Determinants and Implementation Performance: A Cross-Sectional Study. European Health Psychology Society, 2023. Bremen, Germany (poster pitch).
6. Social Prescribing [Welzijn op Recept]. 9th Work Conference Health Campus, 2023. The Hague, the Netherlands (insight session).
7. The Implementation Tool. Jeugd in Onderzoek, 2022. 's-Hertogenbosch, the Netherlands (workshop).
8. Expert consensus on multilevel implementation hypotheses to promote uptake of youth care guidelines: a Delphi study. 5th UK Implementation Science Research Conference, 2022. Online (oral poster presentation).

Courses

1. Qualitative Comparative Analysis, Erasmus University Rotterdam (Coursera), Course completed on May 20th, 2025
2. FSS - Finding Typologies in Data, VU University Amsterdam, Course completed on June 6th, 2023
3. Basis Project Management for Postdocs, Leiden University, Course completed on May 12th, 2023
4. Population Health: Syndemics, Leiden University (Coursera), Course completed on March 16th, 2023
5. Presenting Skills for Researchers, Leiden University, Course completed on November 11th, 2022
6. Basic course for clinical investigators (BROK®), the Netherlands Federation of University Medical Centres, Course completed on July 4th, 2022
7. Scientific Conduct for PhDs (Science), Leiden University, Course completed on June 23rd, 2022
8. Team Based Learning, Leiden University, Course completed on August 31st, 2021

Teaching activities

1. Coordinating the MasterMinds Challenge (part of clinical internship Health, Prevention, and Lifestyle), Master Medicine, Leiden University, academic year 2024/2025
2. Supervising a resident in training – LEA symbols and E-hook visual tests in youth healthcare: differences in outcome and duration in children, academic year 2024/2025
3. Supervising a resident in training – Vision screening in youth healthcare: old vs. revised guidelines for children, academic year 2024/2025
4. Supervising a resident in training – Speech and language delays in children within youth healthcare, academic year 2024/2025
5. Coordinating the Syndemics Course, Master Population Health Management, Leiden University, academic year 2023/2024 and 2024/2025
6. Supervising students during Project Case II, Master Population Health Management, Leiden University, academic year 2023/2024
7. Assisting in 'Lijn Samenwerking, Gezondheidsbevordering en Leiderschap', Bachelor Medicine, Leiden University, academic year 2022/2023
8. Facilitating 'Start tot Arts', Bachelor Medicine, Leiden University, academic year 2021/2022 and 2022/2023
9. Supervising a researcher – Determinants influencing the implementation of the Childcheck, year 2020–2023

Curriculum Vitae

Evelien Dubbeldeman was born on October 15th, 1985, in Leiderdorp, the Netherlands. In 2004, she started the Bachelor's program Communication and Multimedia Design at The Hague University of Applied Sciences, where she completed her propaedeutic year. After a brief break, she shifted to the Bachelor's program in Human Movement Technology at the same university in 2006. During this period, she remained actively involved in Haag Uit, a student association for ICT & Media, where she had been engaged during her previous study. She also completed an internship in Kakinada, India, where she focused on supporting girls affected by the consequences of polio and developed mini wheelchairs to improve their mobility. Her interest in science started during her final internship at the Dutch Organization for Applied Scientific Research. Evelien earned her Bachelor’s degree in 2010.

In 2012, Evelien started the (Pre-)Master's program in Human Movement Science at VU University Amsterdam, graduating in 2014. In 2018, she earned her second Master's degree in Health Science from the same university. During this Master's program, she completed her final internship at the Public Health and Primary Care (PHEG) department of the LUMC. In 2020, she began working as a junior researcher at the same department, where her research project evolved into a PhD trajectory two years later. During this trajectory, Evelien worked on various research projects, including studies on social prescribing, syndemic vulnerability, climate-friendly prescribing of inhalation medication, and the development of questionnaire for assessing holistic health.

Currently, Evelien is working as a postdoctoral researcher at PHEG and as the project coordinator for ELAN-GGZ at the Department of Psychiatry. Within this ELAN-GGZ project, she is responsible for coordinating the development of a cross-domain data infrastructure, enabling the secure linkage of routinely collected data from various domains–such as medical records and data from Statistics Netherlands–to support improved care, research, and policy.

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