

The Implementation of Healthy Start-Départ Santé intervention in Canadian Childcare Centres: A Realist Evaluation

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Abstract

Background

Healthy Start-Départ Santé (HSDS) is a 10-month, bilingual (English and French) program which aims to educate childcare centre staff about the activity and nutritional needs of young children, as well as teaching them how to incorporate healthy practices into their daily routines. This study examines “How, for whom, and in what contexts is the HSDS intervention effectively implemented and sustained in early learning childcare centers?”

Methods

We conducted a realist evaluation to assess the HSDS program. After formulating an initial program theory (described in a previously published paper) we tested and refined the theory using interview data from childcare centre directors and staff. Purposive sampling was used to recruit centres with differing characteristics (levels of engagement with HSDS, length of time since training, and geographic and cultural diversity in clientele). Twenty-five interviews from 23 centres were completed. Participants were asked questions directly related to the program theory (e.g., Does the program line up with your personal values and goals around healthy child development?) to confirm, refute, or refine elements of the initial theory. Interviews were coded by context, mechanisms, and outcomes and separated according to the stages of Training, Implementation, and Sustainability. Codes specific to physical activity and nutrition were created. NVivo 11 was used for data management.

Results

Our study found that the HSDS program was effectively implemented and sustained when staff had positive attitudes toward the program, identified with its goals and values, and were willing to actively participate in activities. Other key components for staff included a sense of responsibility for child health, increased understanding of the benefits of promoting healthy behaviours, and access to resources in support of behavioural change. For children, the program was successful when they had multiple opportunities to be physically active and try a variety of foods, and when they could develop competence in physical activities.

Conclusions

The HSDS final program theory can be tailored to various contexts and/or similar programs to facilitate improved physical activity and healthy eating in childcare centres.

Contributions To The Literature

- This realist evaluation identifies and explains how theoretical factors contribute to improved physical activity and dietary health in young children exposed to the HSDS program

- Results can be used to guide HSDS implementation, or similar childhood physical activity and dietary interventions, across a variety of contexts (e.g., daycare, homecare, preschool)
- Using realist evaluation allowed us to investigate the complexity of implementing and sustaining a childcare intervention
- This study identifies children's and care providers' intrinsic motivations as well as external factors contributing to a successful intervention

Background

Introduction

Early childhood interventions that target physical activity and nutrition have been shown to reduce children's risk of obesity.(1) In Canada 11.7% of children between two and five years of age are overweight and 7.3% are obese.(2) Obesity in childhood can adversely affect physical health, social and emotional well-being, academic performance, and overall quality of life.(3) Childhood obesity can have long-term sequelae, including hyperinsulinemia and hypercholesterolemia—risk factors for the development of coronary heart disease, type 2 diabetes (4) and all-cause mortality.(5) Whereas sedentary behaviour is an established risk factor for obesity,(6) physical activity in young children has been consistently associated with positive motor development, cardiometabolic, bone and skeletal health, as well as psychosocial health and cognitive development.(7, 8) As childhood obesity (\leq five years of age) has been shown to predict obesity in adulthood,(9) and achieving and maintaining a healthy weight is more difficult once obesity occurs,(10) prevention strategies aimed at young children may have the greatest return by curbing the need for future, on-going intervention.

Obesity prevention strategies within childcare settings can have broad reaching effects. In Canada, the use of childcare services has grown over the last three decades, with 54% of parents currently using childcare for children aged four years and younger. Most of these children attend for at least 30 hours per week (11) and typically receive at least one meal and snack per day within the centres.(12) Up to 70% of children's daily nutrient uptake may be consumed within a childcare setting.(13) However, research from the US shows widespread deficiency in consumption of whole grains and fruits or vegetables in childcare centres.(14, 15) Meals in Canadian childcare centres have also been shown to underrepresent all food groups, with the exception of grains, and often do not meet nutritional requirements for young children. (16) Poorly balanced diets, including those with high energy intake from fat (17) and low fibre,(18) have been shown to contribute to childhood obesity, and are often highly palatable and habit forming. In addition to dietary risk factors for obesity, children attending childcare centres are often sedentary throughout the day.(19–21) Given the amount of time many children spend in childcare centres over the course of their childhood and that this is where they are exposed to dietary and physical activity patterns in the formative years, childcare centres are an important environment in which to target obesity prevention strategies.

Healthy Start-Départ Santé

Healthy Start-Départ Santé (HSDS) is a 10-month, bilingual (English and French) program, which focuses on physical activity and healthy eating in childcare settings. HSDS began as a pilot project in 2012 with 10 early learning childcare centers (ELCCs) and currently aims to deliver the program to 205 out of a total of 330 licensed centers in the province of Saskatchewan, Canada and 25 out of 656 licensed centers in New Brunswick, Canada by 2020.

The aim of HSDS is to increase opportunities for physical activity and healthy eating in toddlers and children attending ELCCs. As such, the primary focus is to educate centre staff about the activity and nutritional needs of young children, as well as teaching them how to incorporate healthy practices into their daily routines. ELCC staff attending the program receive six hours of training, a one- to two-hour booster training session three to six months after the completion of the initial session, and follow-up telephone calls or emails every month for the duration of the 10-month program. At the end of the initial training session, participants are provided with resource kits containing information on physical activities, recipes and ideas for healthy eating, and tools for engaging in the physical activities suggested.

HSDS recommends that centres daily provide a minimum of 180 minutes of active play, incorporating both structured and unstructured play (including outdoor and adventurous play), and that they teach fundamental movement skills to children. In addition, a key aim of the HSDS program is to increase physical literacy in both ELCC staff and children. Physical literacy is the motivation, confidence, physical competence, knowledge, and understanding needed to imbue a sense of value and responsibility for engagement in physical activities for life.(22)

In regards to healthy eating, HSDS recommends that centres adopt Ellyn Satter's "Feeding Relationship and Division of Responsibility" model,(23) whereby adults have the responsibility of creating a positive eating environment and ensuring there is a variety of healthy food offered at each meal, and children are responsible for serving their own food and deciding what and how much they would like to eat. A vital component of this model is the need to repeatedly offer children different types of food. Children, particularly at the preschool age, are predisposed to favour sweet and salty tastes, but can acquire a taste for other food through repeated exposure. Children are encouraged to touch, smell, and try various foods at mealtimes but may choose whether or not to eat them. Adults often feel they need to control children's food intake; however, HSDS advises adults to encourage children to identify internal satiety cues, rather than relying on external controls, so that children learn to self-regulate hunger and satiety levels.

HSDS respects the autonomy and limitations of time and space in ELCCs and thus is not intended to be a prescriptive program whereby centres are required to incorporate all aspects of the program into daily routines in order to be successful. Centres can make changes to their programs to the extent that they feel able, avoiding changes which are perceived to be beyond their capacity. This may, however, limit success in creating a level of change that leads to effective child outcomes; yet, it may also attract

centres which would not otherwise consider the program. (More information about the HSDS program is available in a protocol paper describing a randomized controlled trial evaluating HSDS efficacy.)(24)

ELCCs face many challenges in implementing a program such as HSDS. These commonly include a lack of resources, such as space, equipment, and finances, as well as high staff turnover. A question that arises, then, is why some centres, are successfully implementing HSDS while others, facing similar challenges, are not. To answer this question, this study examines “How, for whom, and in what contexts is the HSDS intervention effectively implemented and sustained in early learning childcare centers?”

Methods

Rationale for Realist Evaluation

Evaluations often focus on assessing program effectiveness. However, ascertaining that a program has an effect does not explain how or why the effect occurs. In contrast to more commonly used forms of evaluation, realist evaluation (RE) seeks to understand why, how, and under what circumstances a program delivers (or does not deliver) the desired outcomes.

Realist evaluation belongs to the school of theory-driven inquiry; consequently, the main unit of analysis for evaluation is the program theory rather than the program activities. Program theories are central to realist evaluation as they provide plausible explanations as to how and why a program works (or does not work) within a particular context. Theory-driven evaluation directs the focus of the assessment from the success of the outcomes to the causal theory underpinning the program. It changes the question of ‘does it work’ to the more complex

question of ‘what works, for whom, in what contexts, and how’.(25) In realist evaluation, generative causation explains how social programs cause effects. Generative causation is understood as the reasoning of participants in response to program resources, within particular contexts, which result in change;(26) thus, it is not the program itself that causes change. Unlike generative causation, successionist causation assumes that event A causes event B. For example, successionist causation assumes that the provision of physical activity equipment, such as jump ropes or a climbing structure, will create higher levels of physical activity in children. In contrast, generative causation would attribute children’s use of the new equipment to their internal responses to the equipment, for instance, the enjoyment they feel in using the climbing wall. If they were to stop having fun playing on it, they would no longer use the equipment despite its availability.

Realist explanation assumes that successful outcomes occur only when the program activates certain mechanisms in certain contexts. Thus, RE aims to understand the underlying mechanisms (M) which produce change, the contextual factors (C) necessary to activate these mechanisms, and how the combination of context and mechanisms produces outcomes (O).(27) The context-mechanism-outcome (CMO) configuration is the central feature of RE. CMO configurations enable the evaluator to understand how contexts, mechanisms, and outcomes interact and thereby gain a deeper understanding of the

success of an intervention. An RE begins by formulating an initial program theory (IPT), which is an initial explanation about how and why a program should achieve its objectives. The IPT is tested and refined, resulting in a final program theory, which specifies the links between the context of the intervention, the underlying mechanisms of change, and the desired outcomes.

Developing the Initial Program Theory

Multiple sources of data were used to create an IPT for the HSDS program, including: 1) a review of the internal program literature and attendance at various HSDS meetings, 2) interviews with the program developers and implementers, and 3) peer-reviewed literature on similar interventions targeting healthy nutrition and/or physical activity in ELCCs. The process of creating the IPT is described in a previously published methods paper.(28)

Testing the Initial Program Theory

The IPT was tested and refined using interview data from ELCC directors and staff. Purposive sampling was used to recruit centres with differing characteristics, including levels of engagement with HSDS, length of time since HSDS training, and geographic and cultural diversity in clientele. Our purpose in sampling differing types of ELCC's was to gain insight into how the HSDS program worked in different contexts in order to confirm, refute, or refine different elements of the IPT. In total, 25 interviews from 23 centres were completed.

Data Collection

ELCC directors and staff were interviewed in person or by phone, either individually or in small groups according to their preference. Interviews of small groups of staff were counted as one interview despite more than one person sharing their perspective. Before starting the interview, participants were informed that the interviewer was not an HSDS employee and that the discussion would remain confidential. Participants were assured that they could be open and honest about their feelings and experiences with HSDS without fear of repercussions. Permission was obtained to record the interview. During the interviews, participants were asked questions directly related to the program theory (e.g., Does the program line up with your personal values and goals around healthy child development?). Participants were asked their opinion on aspects of the theory (e.g., Some people feel that centers have a responsibility to enhance healthy child development, whereas others feel that this is the responsibility of the parents. What are your thoughts on this?). Interviews were transcribed and uploaded to NVivo 11 (29) for analysis.

Data Analysis

Data analysis was an iterative process. Fourteen interviews were initially analyzed in order to ascertain the quality of the questions and whether the questions were addressing the program theory with sufficient detail. Interviews were coded by context, mechanisms, and outcomes and separated according to the stages of Training, Implementation, and Sustainability. Codes specific to physical activity and nutrition were created. After the initial interviews, the questions were honed slightly in order to address certain

areas more precisely. The remaining interviews were coded and analyzed in the same way as the initial interviews.

Results

During initial contact, we discovered a few centres had stopped using HSDS altogether. Although these centres declined to be interviewed, there did not seem to be a distinct reason for ending the program. Rather, program activities had gradually decreased, often due to internal issues such as staff turnover, to the point where centre staff had forgotten about the resources provided by HSDS and were operating according to their own physical activity and eating models.

Participants generally said that the ideas and materials presented by HSDS were useful and that they felt supported by the trainers. Most of the centres indicated that they had made some sort of change, to a greater or lesser extent, as a result of the training. Many had integrated ideas for physical activity, predominantly for indoor play. Directors usually reported more changes to nutrition than physical activity, with a greater variety of foods being introduced, including those which were likely to be unfamiliar to the children. Participants frequently expressed appreciation for recipe ideas which incorporated unfamiliar ingredients. Implementation was commonly seen as a process of small changes rather than a radical transformation of practices.

We observed multiple mechanisms contributing to the decision to implement the program. These included staff identifying with the goals and values of the program, valuing the HSDS reminders to engage in healthy activities, feeling motivated to continue with current activities, and perceiving support from HSDS trainers. However, one of the initially proposed mechanisms in the IPT, collaborative learning (see (28)), did not appear to be important to participants and did not affect program implementation.

All participants felt a sense of responsibility for facilitating healthy development of the children attending the ELCC. As such, many staff recognized the need to actively participate and interact with the children throughout the day. Adult role modelling of both physical activity and healthy eating was found to be very helpful in encouraging children to increase their healthy behaviors. Staff also reported the importance of providing children with multiple opportunities for stimulating play to encourage participation in physical activity as well as repeatedly offering new foods in order to allow children to become accustomed to them.

The following mechanisms contributed to the sustainability of the program, in other words, the likelihood that staff would continue to utilize HSDS within their centres beyond the follow-up period: staff's perception of responsibility for healthy child development and self-efficacy, program feasibility, staff's commitment to active participation, willingness to persevere through implementation difficulties, and understanding of the benefits of healthy activity.

An additional mechanism, perception of program ownership, proposed in the IPT, (see (28)) did not appear to affect sustainability. This may indicate that while staff will use resources which they feel will

promote healthy childhood development, it is not necessary for staff to feel a sense of ownership for these resources.

The concept of family-style eating, as advocated by the Ellyn Satter “Feeding Relationship and Division of Responsibility” model,(23) was difficult for many participants to accept. Some of those who chose to implement it did so because they had seen it successfully implemented elsewhere. Those who fully committed to this model typically found that it improved children’s eating habits. Children liked to be able to decide what to eat and would often choose to eat the healthy food offered. Including the children in food preparation had a beneficial effect on their diet by encouraging a sense of ownership for the meal. However, many centres were unwilling to implement these changes, as they did not think it was feasible for their environment and could potentially lead to chaos, waste, and extra expense.

Some directors found it difficult to motivate their staff to change existing practices and to increase active participation with the children. Staff did not want to physically exert themselves with the children or eat with them and some directors stopped trying to enforce it. Disengaged staff usually meant a lack of success in implementing various physical activities and family-style eating. Other directors made their expectations clear and persisted in encouraging staff to maintain the positive changes. These centres appeared to be more successful in comprehensively implementing the HSDS. Additional barriers to change included financial issues, lack of access to healthy foods, and lack of space. Despite these challenges, several centres were able to implement HSDS to some extent.

Inclusion of Substantive Theory

To increase the credibility and evidence-base of our program theory we sought to apply substantive social science theory—established formal theory that describes the process of reasoning or cause of actions. The Extended Normalization Process Theory (ENPT) (30) gave insight into the Implementation component of our program theory, and the Self-Determination Theory (SDT) (31, 32) helped to explain the Sustainability component of our program theory.

Extended Normalization Process Theory

The ENPT explains how the implementation of an intervention becomes embedded into complex organizational contexts via facilitating or inhibiting factors.(30) It describes implementation as an interaction between actions taken with different components of an intervention and the social-cognitive and social-structural resources drawn on to enact those actions. Four constructs form the basis of the ENPT: capacity, potential, capability and contribution. Successful implementation depends on *capacity*—the existing social environment enabling co-operation between people to modify existing norms and roles—and supplying necessary resources. *Potential* refers to the commitment required for implementing and embedding an intervention into practice. Commitment to change is contingent upon the extent to which people value the anticipated changes and perceive that the changes are feasible for their environment. (33) The *capability* to enact an intervention depends on both workability (e.g., adjustment of roles and responsibilities), and integration (i.e., how implementation is linked to the existing social system).

Contribution refers to the work of implementation; it depends on how people make sense of an intervention and their role within it, the enactment of the intervention, as well as reflexive monitoring of the effects of the intervention. These constructs are iterative, continuously interacting to form a social process.

Implementation of HSDS depends on staff capacity to co-operate and work together to achieve program goals. Capacity is initially enhanced through the ongoing support of HSDS staff who provide encouragement and feedback during implementation. Translating capacity into potential depends on the staff's commitment to implementing HSDS. This, in turn, is contingent upon the staff's perception of the value and feasibility of the program. Centres where staff valued the program and adjusted their practices in order to fully implement it tended to report more beneficial outcomes for the children. Conversely, centres where staff did not value the program and were unwilling to change their existing practices usually did not implement the program as intended and failed to realize positive outcomes.

The capability of staff to implement HSDS depends on the extent to which they can adjust their roles and responsibilities to incorporate program objectives, as well as their perception of how well HSDS fits in with their existing programming. Staff who feel a sense of responsibility for healthy child development and want to promote it within their centre often see the value in the principles and practical ideas of HSDS and are willing to make changes, even when such changes prove to be challenging.

Successfully implementing HSDS requires staff investment. Staff must make sense of the program and their role within it, be committed to the program, and willing to appraise the effects of implementation on themselves and on others (positive or negative). When there is congruency between staff attitudes and program values and goals, and staff recognize the usefulness of the program resources, their contributions are significant. In contrast, when staff do not feel that the program is meaningful or when they have a negative appraisal of the effects of the program, staff contributions are minimal.

All centres appeared to encounter obstacles to implementation, such as a lack of resources or staff resistance to change. Successful implementation of HSDS appeared to rest upon the ability of the director and staff to overcome obstacles and integrate new ideas into their existing practices. The extent to which the HSDS was implemented varied between centres due to differences in staff attitudes, motivation, and commitment.

Self-Determination Theory

The SDT explains intrinsic (or autonomous) and extrinsic (or controlled) motivation processes in people. (31, 32) *Intrinsic motivation* involves engaging in an activity because the activity itself is experienced as interesting and satisfying. *Extrinsic motivation* involves regulation of behavior through pressure (i.e., rewards or punishment) to behave, think, or feel in certain ways. In order to explain how socio-contextual factors impact motivation and behavior, SDT outlines three innate psychological needs: the need for autonomy, competence, and relatedness. Contexts that support these innate needs often foster higher levels of intrinsic motivation and more positive behavioural outcomes.

ELCC staff expressed the idea that children would be more engaged in healthy behaviors if they were intrinsically motivated and cared for in an environment that facilitated intrinsic motivation. For example, staff believed if children were given a choice of whether to engage in an activity, such as vigorous physical play or healthy eating, they would engage if it was enjoyable, if they felt capable of doing it, and if people with whom they have a positive relationship were also engaged.

SDT helps to illuminate the relationship between staff practices and child health outcomes. ELCC staff are asked to implement an intervention that requires effort, but for which they do not reap direct rewards (although there may be unintended benefits such as better-behaved children). The benefits are primarily intended for the children, for whom the educators feel a sense of responsibility. This sense of responsibility induces self-sacrificing behavior on the part of the staff. When staff find meaning and value in promoting healthy child development, this can increase their intrinsic motivation to continue with the program. Additionally, ELCC staff can encourage the development of healthy habits in children by working to increase child autonomy, competence, and relatedness, as these factors can influence intrinsic motivation.

ELCC staff may not think that participating in children's physical activity and eating with children is inherently interesting or enjoyable and thus they may not be intrinsically motivated to do so. However, well-internalized extrinsic motives, such as a perception of responsibility for the healthy development of children, can be a powerful force for action.

Child autonomy is enhanced by creating a healthy environment in which children are free to choose what and how much food they would like to eat and in which physical activities they would like to participate. A sense of competence can be fostered in children when they participate in food preparation, learn about the health benefits of different foods and physical activities, and are given opportunities to develop fundamental motor skills. Giving reasonable explanations for healthy behaviors, such as teaching children about the health benefits of vegetables and exercise, supports children's growth in autonomy and competence and helps them understand why they should behave in certain ways. Finally, creating an emotionally warm environment that involves encouragement and role modeling can lead to feelings of relatedness between children and their teachers, impacting children's behavioural choices.

Conversely, creating a controlling environment, in which children are pressured into certain eating and physical activity behaviors, undermines intrinsic motivation and lowers levels of autonomy, competence, and relatedness. For example, although it is tempting for adults to offer rewards, such as a dessert for eating disliked foods or finishing a meal, such practices can weaken children's intrinsic motivation for healthy eating. Children may engage in the desired behavior, not because they are intrinsically motivated to do so, but in order to earn the reward, which can lead to a refusal to eat without the continual promise of a reward. Receiving external rewards can decrease intrinsic motivation for the task, leading to resistance in eating; however, positive feedback can enhance intrinsic motivation through increasing levels of autonomy, feelings of competence in the task, and positive feelings towards the person giving

the feedback.(34) The SDT thus provides an explanation of why autonomy, competence and relatedness are important elements fostering successful HSDS implementation.

Final Program Theory

The final program theory is illustrated in Fig. 1.

Training

Context

ELCC staff have an initial positive attitude towards HSDS and believe that the program will be helpful to them. The staff want to make positive changes to facilitate healthy child development.

Mechanism

The training content reinforces reasons to engage in healthy activities and reminds staff of what should be done. Staff identify with the goals and values of the program and feel supported by the HSDS trainers.

Outcome

Participants learn ways to incorporate new activities into their programs to facilitate healthy child development and decide to implement the program.

Implementation

Context

ELCC staff have sufficient knowledge from the training about the requirements of healthy child development and practical ideas for physical activities and healthy eating. Staff have a positive attitude and are committed to facilitating healthy living in children.

Mechanisms

ELCC staff find the program resources helpful as they are quick and easy to use and understand, they save time, they do not require expensive equipment, and they provide helpful ideas. Staff are willing to incorporate HSDS program content into their centres and feel able to implement and participate in the program activities. Staff find the continuing program support helpful in maintaining motivation and momentum for change. Staff feel responsible for children's physical, social, and emotional development and understand they can shape children's attitudes by the way they talk about and role model healthy eating and physical activity. Staff understand that when children are more active, eating healthier foods, and feel a sense of autonomy over their decisions, they have a better chance of good health over the life course. Furthermore, children engaged in healthy behaviours have an increased attention span, are less fidgety, and have improved overall classroom behavior.

Outcome

ELCCs implement the program. Staff can overcome barriers to implementation to create an environment conducive to increased physical activity and healthy eating as well as increased decision-making by the child.

Sustainability (Staff)

Context

ELCC staff have access to adequate resources, sufficient knowledge about the physical activity and healthy eating requirements of children, as well as a positive attitude and commitment towards facilitating healthy living in children.

Mechanisms

Staff see the program activities as feasible; they feel confident and able to make continual changes to their environment to incorporate physical activity and healthy nutrition into their existing routine. Staff are willing to interact physically with children; they are comfortable in leading and modelling physical activities and healthy eating. Staff are willing to persevere through the difficulties of implementing changes. Staff feel responsible for children's physical, social, and emotional development and understand that they can shape children's attitudes by the way they talk about and role model healthy eating and physical activity. Staff understand that when children are more active, eating healthier foods, and feel a sense of autonomy over their decisions, they have a better chance of good health over the life course. Furthermore, children engaged in healthy behaviours have an increased attention span, are less fidgety, and have improved overall classroom behavior.

Outcome

Staff role model and teach healthy behaviors and provide sufficient opportunities for healthy eating and physical activity for children.

Sustainability (Child)

Physical Activity

Context

Children have multiple opportunities to be physically active with a variety of activities and can express their preferences for different activities. Fundamental motor skills enable children to participate successfully in physical activity. Staff give positive feedback for participation, they role model activities and have fun participating with the children.

Mechanisms

Children respond positively to staff participation and feedback. Children with fundamental movement competence are more confident in participating in physical activities and have better social interactions with other children. Participation in decision-making increases feelings of self-efficacy and intrinsic motivation for physical activities. Children have fun and enjoy participating.

Outcome

Children engage with the activities. Children's level of autonomy, physical competency, and physical activity increase.

Nutrition

Context

Access to internal and external resources enables the centre to offer consistently healthy food. Staff teach children about healthy nutrition, role model healthy eating, and include children in food preparation and decisions about what and how much they want to eat. Staff give positive feedback for healthy choices and role model healthy eating.

Mechanisms

Children become more aware of different foods and are more willing to try new foods through repetitive offering. Participation in decision-making and food preparation increases feelings of self-efficacy, intrinsic motivation for healthy eating, and food ownership. Seeing their teachers and peers eat different foods encourages children to try them.

Outcome

Children become more receptive to healthy foods. Children's levels of autonomy increase, and they make healthy food choices.

Although the theory is presented as a linear sequence of events, it is a representation of a more complicated scenario in which feedback loops can reinforce different aspects of the theory. For example, positive responses by children to activities and strategies used by staff can reinforce staff feelings of self-efficacy and their commitment to continue with the program.

Discussion

Our study found that the HSDS program supported the incorporation of new physical activity and healthy eating in ELCCs when staff had positive attitudes toward the program, identified with its goals and values, and were willing to actively participate in activities. The staff's sense of responsibility for child health, increased understanding of the benefits of promoting healthy behaviours, and access to resources to support behavioural change were key components to successful implementation. In addition, the

program was successful when children had multiple opportunities to be physically active and try a variety of foods, and when they could develop competence in physical activities.

Our findings correspond and reinforce that of other studies investigating components of successful physical activity and nutrition interventions for young children. In a systematic and realist review examining interventions to increase physical activity in children 0 to 5-years old, researchers found that targeting behaviour change in adult caregivers was essential to encouraging change in children's behaviour.(35) Other reviews have likewise reported the need for enthusiastic adult role modelling in interventions aimed at encouraging children's acceptance and uptake of healthy foods.(36–38) Our findings replicate these results and further explain why they occur and how they affect program function. As outlined in our final program theory, program sustainability was contingent upon staff having adequate resources and knowledge about healthy child behaviours and positive attitudes toward the program, in conjunction with a willingness to model physical activity and healthy eating. Both the context (resources, knowledge, attitudes) and the mechanisms (role modelling) of these adult-dependent components were needed for sustaining opportunities for healthy eating and physical activity among children in the ELCCs.

Allowing children to self-select food is another important component of successful nutritional interventions for young children.(38) Our findings confirm and further explicates the theoretical explanation for why meals provided in this context lead to greater acceptance of a nutritional diet among young children. As per our program theory, allowing children to decide what and how much they want to eat, as well as providing them with nutritional information and including them in food preparation, increases children's decision-making capacity, sense of self-efficacy, and intrinsic motivation for healthy eating, leading to healthier food choices.

Other important components for successful HSDS implementation which are explained in our final program theory and have been noted in the literature include length of the intervention,(39) adequacy of training and support resources,(40) and the need for a theoretical framework and behavioural change theory underpinning program activities.(41) As noted elsewhere, intervention length of equal or greater than six months is an important component of successful physical activity interventions for young children.(39) Also, research has shown that the provision of on-going support from intervention program staff to enable childcare providers to overcome barriers to implementation is crucial in program success.(40) In our study we likewise found that staff required sufficient training and continuing HSDS support (over a 10 month period) to maintain motivation and momentum for change. This allowed ELCCs to overcome implementation barriers and establish new physical activity and mealtime routines.

An additional strength of our study is that it provides a theoretical framework, based on behavioural change theory, to explain how, for whom, and in what contexts the HSDS intervention works as planned. Having a theoretical foundation for an intervention program aligns with recommendations from a review consolidating the evidence on healthy eating programs for pre-school aged children in childcare settings.(41) The value of anchoring intervention activities to a program theory is that it provides an explanation

and filter for understanding how the program operates and how activities could be tailored to differing contexts without losing the fundamental principles of the program.

Limitations

It was not possible to interact personally with the children attending the ELCCs to gain insight into their perceptions and behavior and to determine the programs' success in increasing physical activity and healthy eating. However, using the ELCC staff as a proxy for the children and tapping into their understanding of child behavior helped to refine the 'Sustainment: Child' portion of the theory. The evaluation focused on understanding the organizational context rather than the child context. Although the ultimate beneficiary of the program is the child, children will not benefit from the program if the program is not implemented and sustained in the centres.

Use of self-report rather than objective measures of outcome could be seen as a limitation; however, we do not believe that to be the case. The outcomes were an aid to identifying program success in different contexts and were not themselves the unit of study. The evaluation was not designed to assess the desired program outcomes of increased levels of physical activity and healthy eating in children. When participants stated they had made changes, the context and mechanisms of those changes were probed.

Conclusion

Providing a program theory that outlines why, how, and under what circumstances the program is likely to be successful offers a solid base for the continued sustainability and scale-up of the HSDS. Successful replication of the program involves transfer of the program theory and not merely the program activities. As the program grows and develops, it will be necessary to periodically re-evaluate and refine the program theory in order to promote effective program implementation, contributing to maximal impact on the health and development of young children.

Abbreviations

HSDS Healthy Start-Départ Santé

ELCC Early learning childcare center

CMO Context-mechanism-outcome

RE Realist evaluation

IPT Initial program theory

ENPT Extended Normalization Process Theory

SDT Self-Determination Theory

Declarations

Ethics approval and consent to participate

The study was conducted according to the guidelines of the Declaration of Helsinki and ethics approval for this study was obtained from the University of Saskatchewan Research Ethics Board (# 14–291). All participants consented to study proceeding as described.

Consent for publication

Not applicable.

Availability of data and materials

The datasets generated and analyzed during the current study are not publicly available due to the identifiable nature of these qualitative and childcare centre-specific data but are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Author's contributions

Authors contributed to the study in the following manner: conceptualization,

N.M. and F.F.; methodology, N.M., F.F. and D.N.Mc.; analysis, F.F.; resources, N.M.; data curation, F.F. and N.M.; writing, review and editing, F.F., D.N.Mc., and N.M.; supervision, N.M.; project administration, N.M.; funding acquisition, N.M. All authors have read and

agreed to the published version of the manuscript.

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Figures

Figure 1. Healthy Start-Départ Santé Final Program Theory

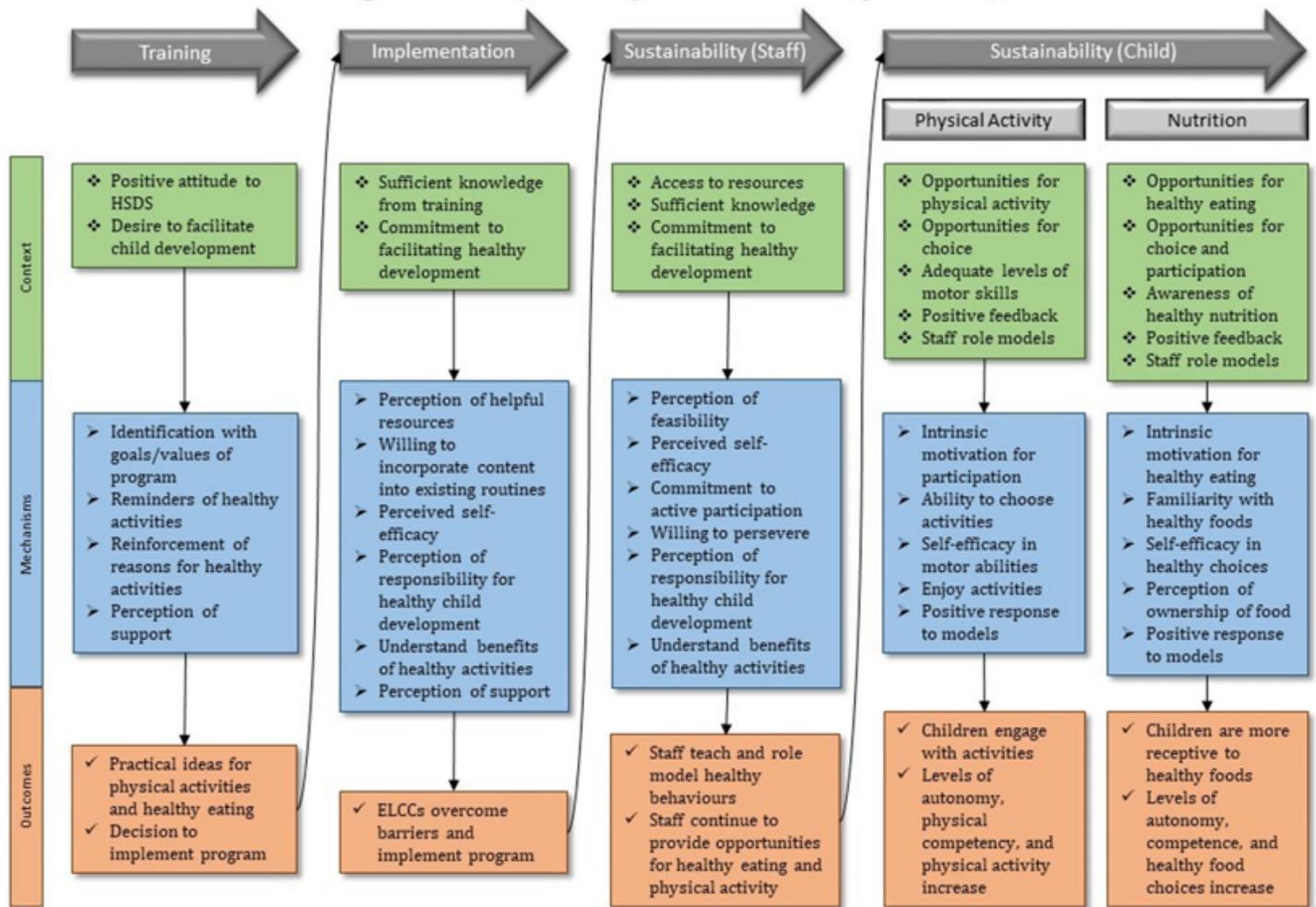


Figure 1

Healthy Start-Départ Santé final program theory