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Development of a Child-Rearing Support Program Implemented by Public Health Nurses in Japan: Aiming to Reduce Mothers' Irritation

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Abstract

Child abuse in Japan has been increasing annually, with 225,509 consultation cases handled by child guidance centers in 2023—an all-time high. One contributing factor is maternal cognitive distortions, such as perfectionism and victimized cognition, which can increase mothers' stress and irritability in parenting. This pilot study developed a short-term intervention program led by public health nurses, aiming to reduce mothers' irritability by addressing these cognitive distortions through cognitive behavioral therapy (CBT) principles. Fourteen mothers of children aged 1 to 6 participated in three online sessions (each 30 - 40 minutes, once a week for three weeks) focusing on externalizing irritating moments, brainstorming coping strategies, and recognizing unhelpful thinking patterns. Participants were assessed before the program, immediately after, and one month later, using measures of irritability, perfectionism, and victimized cognition. Results indicated a statistically significant reduction in mothers' irritability, which persisted one month after the intervention. While there was a modest trend toward improvement in perfectionism, no significant change was observed in victimized cognition. These findings suggest that a brief, CBT-based program implemented by public health nurses can be valuable in reducing maternal irritability in a preventive context. However, as the study lacked a control group and used a single-group design, further research with randomized controlled trials (RCTs) or quasi-experimental designs is needed to rigorously verify the program's effectiveness and long-term sustainability.

Keywords

Public Health Nurse, Parenting Support, Irritability, Cognitive Behavioral Therapy, Perfectionism, Victimized Cognition, Child Abuse Prevention

1. Introduction

1.1. Current Situation of Child Abuse and Importance of Child-Rearing Support

In recent years, social concern regarding child abuse has been rising in Japan. According to the Ministry of Health, Labor and Welfare, the number of consultation cases handled by child guidance centers nationwide exceeded 100,000 in FY2015 and has continued to increase since then. In FY2023, 225,509 cases were reported, the highest number ever recorded, indicating the seriousness of the situation. The occurrence of abuse is compounded by various factors, such as parents' mental stress, lack of support from the surrounding environment, and economic difficulties [1] [2].

In this context, the need for preventive parenting support is emphasized to prevent abuse before it occurs. Approaches to abuse prevention are essential not only for welfare support and legal development but also for addressing the mental health and cognitive characteristics of parents in the child-rearing setting [3] [4]. Maternal and child health activities targeting expectant mothers and mothers with infants and toddlers at an early stage play a crucial role in identifying high-risk cases of abuse and connecting them to support [5] [6]. The role that public health nurses play in infants' and toddlers' health checkups and other such activities is extremely important in that they understand the child-rearing situation of mothers through individual interviews, family support, and collaboration with other institutions.

1.2. Mothers' Irritation and Its Definition

Negative emotions experienced by mothers during child-rearing are diverse, but this study focuses on "irritability". In Japanese, it is often interchanged with "anger", but it differs in that it may refer to discomfort that is more latent and chronic than anger [7]. Additionally, many mothers are aware of their irritability but struggle to communicate their feelings effectively to others. In Japan, due to cultural reasons, the slang term "ira-ira" (meaning irritability) is more commonly used than "anger" in the context of child-rearing.

In child-rearing situations, it is reported that mothers' nerves are heightened, and irritation builds up when their children do not behave as expected, when siblings quarrel constantly, or when crying at night persists [8] [9]. Even if these irritations are minor, if they become chronic, they increase the mothers' sense of difficulty and stress in raising their children, raising the risk of negative comments to the children and possibly leading to physical and psychological abuse [10] [11].

The Social Welfare Organization Saiseikai Imperial Gift Foundation [12] website defines irritation as "a nervous state when things do not go as expected or when there are unpleasant stimuli". Based on this definition, in this study, irritability in child-rearing was defined as "a state in which a mother feels irritated because child-rearing is not going as planned or she feels that unpleasant stimuli are occurring". For example, it refers to the unpleasant feeling that arises when your child starts playing just before you go out in the morning, or when you see your child spilling their

baby food while feeding them.

1.3. Relationship between Inappropriate Coping Behaviors and Maltreatment

Mothers who are irritated may be driven by their feelings to respond to their children violently or ignore their children's wishes [3]. Even if it does not lead to serious physical violence or neglect, continuously talking to the child in a way that denies their personality, or using unilateral reprimand or coercion, may affect the child's mental and physical development [13].

The term "child abuse" often evokes images of "serious acts of violence", but in recent years, it has been more broadly referred to as "maltreatment". This includes not only visible acts like hitting and yelling but also excessive control and derogatory remarks [14]. In this study, we address unpleasant or harmful reactions toward children as "inappropriate coping behaviors for children" and examine them from a perspective that includes everything from everyday childcare irritation to serious responses toward children.

1.4. Parenting Stress Brought on by Perfectionism and Victimized Cognition

Among the cognitive traits possessed by mothers, "perfectionism" and "victimization" are particularly associated with inappropriate behavior toward children [1] [15] [16].

Perfectionism is characterized by the belief that "everything must be done perfectly" and "failure is unacceptable", making it difficult to respond flexibly. In child-rearing, where many situations do not go as planned, perfectionist mothers often experience increased stress and self-denial over minor misunderstandings, amplifying their irritation [8].

Victimized cognition, on the other hand, is a pattern of thinking that perceives children's behavior as malicious and hostile, such as "the child is acting on purpose to annoy me" or "the child is making fun of me" [15]. Mothers with strong cognitive tendencies like these tend to perceive even the slightest behavior of their children negatively and are more likely to feel irritated.

I hypothesized that addressing "irritability" by mitigating mothers' perfectionism and victimized cognition would reduce the risk of inappropriate coping behaviors toward their children.

1.5. Significance of Preventive Parenting Support by Public Health Nurses

Based on the Maternal and Child Health Act, public health nurses provide health guidance to mothers and children during pregnancy and through infants' and toddlers' health checkups. They can identify child-rearing worries and stresses that mothers have early on and connect them to the community and specialized institutions [6] [17]. For example, introducing a simple program that applies anger management and cognitive-behavioral therapy could help mothers control their

emotions during child-rearing [18] [19].

There are a few parenting support programs that can be implemented quickly and at low cost due to limited time, budget, and resources. Therefore, this study aimed to create a program for public health nurses to use during brief interactions with mothers, such as during infants' and toddlers' health checkups and childcare consultations, and to examine its preliminary effectiveness.

2. Methods

2.1. Research Design

This study consisted of two major phases: (A) an interview survey of public health nurses and (B) a preliminary effectiveness test of the program. However, this is a pilot study with a single-group repeated-measures design and no control group. Therefore, it should be noted that there are limitations in rigorously verifying causal relationships.

2.2. Interview Survey of Public Health Nurses

1) Objective

The purpose of this study is to explore the points of contrivance and disincentives considered by public health nurses when creating and introducing this program.

2) Target population and survey procedures

Semi-structured interviews were conducted with six public health nurses (one male, five female) who had 3 to 15+ years of experience in maternal and child healthcare activities. The survey took place from September to December 2020. Written consent was obtained before the interviews, explaining the study's purpose and methods. The interviews were recorded, transcribed verbatim, and similar responses were categorized.

3) Analysis Method

The verbatim transcripts were carefully read. Words related to contrivance and disincentives for program implementation were extracted, and similar semantic contents were grouped and categorized. The analysis was checked by at least two experts in public health nursing and psychology to enhance reliability.

2.3. Program Creation and Outline

1) Creation policy

Considering the interview suggestions, such as "the program can be implemented in a short time", "visually easy-to-understand teaching materials" and "a system that allows mothers to reflect on their daily lives", a series of three sessions was designed. Each session was intended to last 30 to 40 minutes and be conducted using Zoom.

2) Theoretical Basis

The basic model of cognitive behavioral therapy (CBT), based on cognitive therapy [20], was applied using the framework that events, automatic thoughts, feel-

ings, and actions mutually influence each other [21]. The focus is on exercises in "cognitive reappraisal", where participants become aware of thinking habits such as perfectionism and victimized cognition and explore more flexible ways of perceiving events.

3) Specific Contents

1st Session

Reflecting on frustrating situations during child-rearing, ask participants to write down "what events occurred" and "what were the feelings and thoughts at that time" (externalization). Next, brainstorm methods (problem-solving lists) that mothers usually use to cope with irritation (coping), and discuss their potential use. Homework has been shown to be effective in parent training aimed at revising the mother's cognitive framework [22]. Therefore, as homework, ask the mothers to record any frustrating situations again before the next session.

Second Session

Share the frustrating situations recorded for homework to encourage cognitive reappraisal, and discuss the mother's coping behaviors and thought patterns. Explain the cognitive-behavioral therapy model and how to self-monitor tendencies toward perfectionism (e.g., "thinking I should ~" or "failure is not acceptable") and victimized cognitions (e.g., "my child is purposely annoying me"). Specifically, ask, "What if we looked at this from a different perspective?" and "What is the intention behind the child's behavior?"

Third Session

As a summary of the first two sessions, the mothers reflect on "what they noticed" and "what coping strategies they would like to use in the future". They are assisted in becoming aware of their thought patterns and tendencies to view their children's actions and words from a victimized perspective. Continued self-monitoring is encouraged after the course, with guidance to connect with local public health nurses and clinical psychologists as needed.

2.4. Preliminary Effectiveness Verification of the Program

1) Participants

Fourteen mothers with children aged 1 - 6 years living in the Kanto area were asked to participate. Recruitment was conducted by posting notices through childcare support facilities and nursery schools/kindergartens. Written consent was obtained after explaining the study's purpose and procedures. The survey was conducted online via Zoom from September to December 2021.

2) Measurement Period

a) Immediately before the start of the 1st program (before the course);

b) Immediately after the 3rd program (immediately after the course);

c) One month after the end of the course.

3) Measurement Details

Face sheet: Mother's age, children's age and gender, number of siblings, and employment status.

Perfectionism: Four items measuring perfectionism (e.g., "I feel that everything must be perfect") were adopted from the "Mothers' Cognitive Style Scale" [23] and measured using a 5-point scale.

Victimized cognitive: The 5-item victim perception scale developed by Aida & Okawara [15] was used (5-point scale). The reliability and validity of this scale have been confirmed [15].

Irritability: Participants were asked to select the most irritating situations with their children (e.g., eating, going out, crying, sleeping, etc.) and indicate their degree of irritation on a scale from 0 to 10, with 0 being "not at all irritating" and 10 being "very irritating". Nakagawa and Miyamoto [11] confirmed that mothers' perfectionism and victimized cognition affect the "irritability" of child-rearing.

4) Analysis Method

Of the 14 participants, missing values were excluded, and the mean scores for each scale (perfectionism, victimized cognition, and irritability) were compared before, immediately after, and one month after the course. A one-way analysis of variance (within-subjects factor) was performed, and the Bonferroni method was used for multiple comparisons. The significance level was set at 5%.

5) Ethical Considerations

Participants were informed of the study's purpose, objectives, program content, data use, and privacy protection both in writing and orally in advance. Their consent to participate was obtained by returning the consent form. This study was approved by the Ethics Committee of Tsukuba University (approval number: Tsukuba University 2020-44A). Participation was voluntary, and it was assured that no disadvantage would occur if participants withdrew during the study.

6) Reason for Not Establishing a Control Group

As a preliminary practical study, this research adopted a single-arm, before-and-after comparative design because the primary objective was to confirm the program's acceptability and feasibility. However, a randomized controlled trial (RCT) or quasi-experimental design with a control group should be used to more rigorously examine the program's effects.

3. Results

3.1. Interview Survey Results: Considerations and Disincentives Factors When Introducing the Program

Based on interviews with six public health nurses, the following categories were identified as important considerations when introducing the program.

1) Points of Contrivance

- Prepare materials that are easy to understand visually.
- Use recording sheets and homework to help mothers reflect on frustrating daily situations.
- Break sessions into segments of about 30 minutes, as longer durations can be challenging.
- Avoid using jargon when explaining cognitive-behavioral therapy concepts.

2) Inhibiting Factors

- Securing time for training at local governments or during infant and toddler health checkups is challenging.
- Public health nurses find it difficult to provide cognitive behavioral therapy.
- Public health nurses are concerned about their knowledge of cognitive behavioral therapy, making it hard to introduce without training.
- It is challenging to motivate mothers to participate in the program if they do not recognize irritation as a problem.

In creating this program, we incorporated these findings as much as possible (e.g., visual materials and short-time structures).

3.2. Attributes of Program Participants

The 14 mothers who participated in the program and survey ranged in age from 29 to 44 (mean 35.3, $SD = 4.38$), and their children ranged in age from 1 to 6 (mean 3.44). Employment status was "full-time housewife" for 6, "part-time worker" for 5, and "full-time worker" for 3. The number of siblings was "one child" for 7, "two siblings" for 5, and "three siblings" for 2.

3.3. Changes in Perfectionism and Victimized Cognition

Changes in scores before, immediately after, and one month after the course were examined using a one-way ANOVA. The results (n = 13) showed significant differences in perfectionism scores ($F = 4.59$, $df = 1.83, 21.92$, $p < 0.05$). However, multiple comparisons using the Bonferroni method revealed only significant trends immediately after the course ($p = 0.07$) and one month later ($p = 0.06$).

The victimized cognition (n = 13) did not show a significant difference at $F = 1.05$ ($df = 2, 24$, $p = 0.36$) before and after the program (Table 1).

Table 1. Descriptive statistics and results of a one-way ANOVA on changes in cognitive factors and irritability.

	Before the course		After the course		One month later		
	M	*SD*	*M*	*SD*	*M*	*SD*	*F*
Cognitive factors							
Perfectionism	9.69	4.35	8.08	3.97	7.54	3.43	4.59*
Victimized cognition	8.23	4.78	8.00	5.12	7.54	4.20	1.05
Irritability	4.00	1.04	2.92	0.79	2.17	0.72	18.27***

*$p < 0.05$, ***$p < 0.001$.

3.4. Change of Irritability

The mothers' scores (n = 12) on a 10-point scale for "most frustrating situations" averaged 4.00 ($SD = 1.04$) before the program, 2.92 ($SD = 0.79$) immediately after the program, and 2.17 ($SD = 0.72$) one month later. A one-way analysis of variance showed a significant difference ($F = 18.27$, $df = 1.80, 19.80$, $p < 0.001$). Multiple

comparisons using the Bonferroni method indicated that scores before the course were higher than immediately after taking the course ($p < 0.05$), immediately after taking the course > 1 month later ($p < 0.05$), and scores before > 1 month later ($p < 0.001$). The results showed that the mothers' irritability decreased stepwise immediately after the course and then one month later.

4. Considerations

4.1. Irritability Reduction through a Cognitive Behavioral Therapy Approach

In this study, based on the cognitive-behavioral therapy model, a public health nurse implemented a program incorporating exercises to review cognitions (perfectionism and victimized cognition) in child-rearing situations. Notably, the mothers' irritability was significantly reduced and continued after one month.

Similar programs addressing anger and irritability include anger management and stress management training. However, these programs are challenging to disseminate widely due to time and financial constraints [22]. If offered online as a short-time program in a series of three sessions, mothers with infants and toddlers could easily participate from home. Additionally, by reflecting on their own frustrating situations through homework, they could more readily attempt cognitive reappraisal in their daily lives.

4.2. Effects and Challenges of Intervention on Perfectionism and Victimized Cognition

In the present study, a weak but significant trend change was observed in perfectionism, but no clear change was observed in victimized cognition. This may be because victimization may be linked to deeper-rooted issues such as individual attachment disorders or past trauma, which are difficult to transform with only a brief, short-term intervention [14].

Some mothers with entrenched perfectionism and victimized cognition may require long-term follow-up and professional counseling, even if they become aware of these issues through the current program. Therefore, it is important to establish a system where public health nurses are continuously involved and can connect these mothers to clinical psychologists and medical institutions as needed.

4.3. Possibility of Preventive Support by Public Health Nurses

The program developed in this study can be completed in a relatively short time and has the advantage of reaching many mothers from a preventive perspective. By setting up a 30-minute session between infants' and toddlers' health checkups and childcare lectures, and offering the program on a flexible schedule, such as three consecutive weeks or every other week, it is expected to be effective in preventing the increased risk of abuse.

Furthermore, some mothers may be significantly affected by unique stressors, such as postpartum hormonal imbalance and childcare during the "Terrible 2's"

period. Conducting a detailed analysis of these specific factors and modifying the program to target them would be beneficial. For example, it may be effective to consider variations like "for mothers with 0-year-old children" or "for mothers with multiple siblings", depending on their needs.

4.4. Limitations of Not Having a Control Group and Future Research

This study was designed as a single-group repeated measures design and did not establish a control group for rigorous comparison of intervention effects. Therefore, we cannot rule out the possibility of a placebo effect due to the passage of time, a change in the mothers' attitudes, or the influence of other external support.

To demonstrate the program's effectiveness with higher evidence, it is essential to conduct a randomized controlled trial (RCT) where target and control groups are randomly assigned, or at least a quasi-experimental design with a waiting group. Additionally, increasing the sample size and examining differences in effects due to maternal and child attributes (e.g., maternal age, child age, sibling status, employment status) would clarify the program's versatility and limitations.

In addition, it is important to follow up on the program over a longer period, such as 6 months to 1 year, to determine if the effects are maintained after the intervention. Long-term follow-up would help understand whether changes of irritability and cognition are temporary or if they increase or decrease with changes in the living environment and the child's developmental stage.

5. Conclusions

In this study, public health nurses developed a short-time program incorporating cognitive-behavioral therapy to reduce mothers' irritability and examined its preliminary effects. Irritability decreased continuously from immediately after the course to one month later, suggesting the usefulness of the CBT approach in child-rearing. However, there are limitations in changing cognitive characteristics such as perfectionism and victimized cognition, indicating that some mothers may require more long-term and specialized responses.

This pilot study used a single-group design without a control group, which significantly limits both internal and external validity. Future validation requires a rigorous study design, such as an RCT, and consideration of long-term support to extend the follow-up period. Additionally, flexible revision of the program and development of variations should be encouraged to accommodate the diverse backgrounds of mothers. I believe that if public health nurses implement an approach focusing on irritability in preventive support settings, it may reduce the risk of child abuse and contribute to positive relationships between mothers and children.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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