

Fidelity of motivational interviewing in an oral health intervention with caregivers of young children

Tamara RIPPLINGER^(a) 
Andreia Morales CASCAES^(b) 

^(a)Universidade Federal de Pelotas – UFPel, Graduate Program in Dentistry, Pelotas, RS, Brazil.

^(b)Universidade Federal de Santa Catarina – UFSC, Department of Public Health and Graduate Program in Dentistry, Florianópolis, SC, Brazil.

Abstract: The aim of this study was to assess the fidelity of a motivational interviewing (MI) intervention with caregivers of young children in primary healthcare in Southern Brazil. Seven trained interventionists conducted one MI session with each caregiver at their home. The sessions were audio-recorded and a randomly selected subset ($n = 109$) was coded by a single reviewer using the Motivational Interviewing Treatment Integrity 3.1.1. criteria (MITI 3.1.1.). This instrument establishes parameters of MI proficiency for beginners and experts measuring the global ratings of five MI principles (evocation, collaboration, autonomy/support, direction and empathy), the global MI spirit score, and the behavior counts of MI basic skills: to inform, to ask, and to listen. The mean global MI spirit rating was 4.0 (95%CI 3.9–4.1). Mean MI principle scores ranged from 3.8 (95%CI 3.7–3.9) to 4.3 (95%CI 4.2–4.4). The overall reflection-to-question ratio was 0.9 (95 CI 0.8–1.0), % open questions was 76.3 (95%CI 73.1–79.6), % complex reflections was 66.1 (95%CI 63.1–69.1), and % MI-adherent information was 94.1 (95%CI 93.5–94.5). Interventionists with higher scores conducted more and longer sessions than those with lower scores ($p = 0.012$). Those with beginner proficiency had a higher proportion of caregivers changing their oral health knowledge ($p = 0.005$). In conclusion, a good degree of MI fidelity was found, with higher fidelity among interventionists who conducted more interviews and spent more time talking with caregivers.

Keywords: Motivational Interviewing; Oral Health; Primary Health Care; Child.

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Corresponding Author:

Andreia Morales Cascaes
E-mail: andreiacascaes@gmail.com

Introduction

Motivational interviewing (MI) is a collaborative, goal-oriented form of counseling designed to elicit and strengthen intrinsic motivation for change.¹ Counseling involves a flexible mix of informing, questioning, and listening skills to evoke the person's own reasons and solutions for change.² Training research indicates that proficiency in MI usually requires a period of practice with feedback and coaching from a knowledgeable counselor.³

MI has shown an encouraging base of evidence of efficacy in a variety of health settings, including pediatric care, where this treatment method helps with prevention, early detection, and problems related to

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behavior, development, and social change.^{4,5} Systematic reviews analyzing the first studies of MI in dentistry demonstrated limited and controversial evidence of the effectiveness of MI in improving dental outcomes, suggesting that more and better studies are needed to understand the roles of MI in dental practice.⁶⁻⁸

If MI is effective in several areas, why not in dentistry? In this context, it is important to be clear about what is meant when MI is offered. In order to assess success or failure of an MI interventions, more information is needed about the fidelity of its implementation, specifically how comprehensively the principles and skills of MI were delivered to participants.⁹ Treatment fidelity refers to the methodological strategies used to monitor and improve the reliability and validity of behavioral interventions and should be assessed throughout a study, using a reliable coding procedure that allows for comparison across trials.¹⁰

Treatment fidelity can affect the internal and external validity of an intervention study, as well as the size of its effect and statistical power.¹¹ Most MI studies in oral health have not reported any treatment fidelity measurements, which makes it difficult to understand whether or not the findings can be attributed to this approach. In view of the above, knowledge of the fidelity of MI contributes to the design of future studies and to a deeper understanding of this innovative approach to behavior change in pediatric dentistry. Authors investigating the effectiveness of MI interventions in the dental field suggest that future research should assess the fidelity of this method.^{6,7} The aim of this study was to evaluate the fidelity of an MI oral health intervention with caregivers of children aged 0 to 3 years, registered in primary healthcare centers in Southern Brazil. We also investigated the association between interventionists' proficiency level and participants' variables to assess caregivers' knowledge and children's oral health behavior outcomes.

Methods

Study approval

This research was approved by the Research Ethics Committee of the Faculty of Medicine of Federal

University of Pelotas (process number 1.206.247). All adult participants signed a written informed consent form.

Study location, design and participants

This study was carried out in the city of Pelotas in Southern Brazil. Pelotas has an estimated population of 328,000 inhabitants, with 92% of the population living in the urban area of the city and 98% having access to fluoridated water. In 2016, there were 97 healthcare establishments in Pelotas belonging to the Brazilian National Health System (SUS), including 50 Primary Healthcare Centers (PHC), one Emergency Care Center, and two Dentistry Specialty Centers, besides the 2 Dental Schools that provide public and free services to the population.

We analyzed MI interventions conducted with caregivers of children aged 0 to 3 years who participated in the first phase of a community randomized controlled trial (RCT) integrating primary healthcare (Brazilian Registry of Clinical Trials protocol number = RBR-74jbm). The full RCT protocol has been published elsewhere¹² and the flowchart for this study is shown in Figure. The children and their caregivers were randomly selected from a registry list at two PHCs, with 170 child-caregiver dyads being the intervention group that received the MI (Figure). Baseline recruitment occurred from September to December 2015 and the first follow-up from September to December 2016. Each caregiver received one MI session during the first phase of the study (n = 161) conducted from February to June 2016 at the participants' homes. Only sessions with full audio recording were eligible for this study (n = 134). Twenty-five of them were excluded due to reviewer training, totalizing 109 analyzed MIs (Figure).

MI training and intervention protocol

A team of seven interventionists received a didactic and practical MI training that consisted of workshops on MI philosophy with theoretical foundations, key constructions, intervention strategies, case discussions, role playing, and possible responses of the participants. The training was conducted by a psychologist who is an expert in MI and experts in nutrition and dentistry to provide specific knowledge

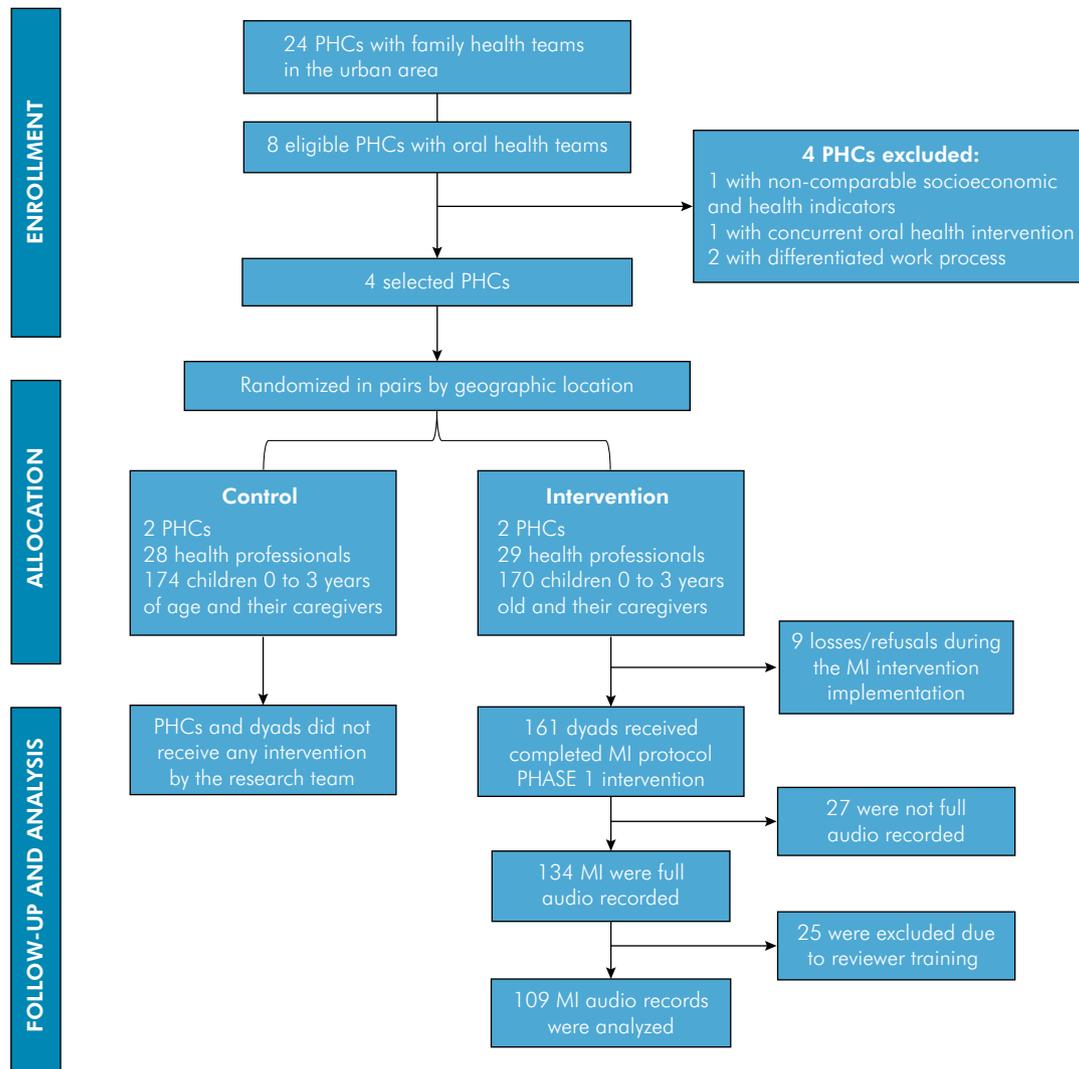


Figure. Intervention flowchart for the MI fidelity study. Pelotas, Brazil, 2015–2016.

related to oral health and recommendations for healthy eating in early childhood. Practical guidance on the approach during the home visit was also part of the training. Interventionists received a manual with the training content and an illustrated album to support the provision of information to participants during the MI session.

MI sessions were to last no longer than 45 minutes and follow a structured script with topics that explored the three target behaviors for early childhood caries (ECC) prevention in this research phase: a) oral hygiene; b) sugar consumption; c) use of preventive dental care. The MI approach began with asking permission to share information about

target behaviors as reported by caregivers during the baseline data collection. Open questions and reflective listening were used to get the caregiver to talk about the target behaviors and understand values and motivations related to readiness for change. During the conversation development, adherent information was provided to raise awareness, increase the caregivers' knowledge about their children's oral health care, and provide support for changing behaviors perceived by the participants as needing change. The illustrated album helped provide adherent information on ECC prevention. Interventionists were instructed to use an empathic style and to listen respectfully to the family's

problems without judging or criticizing caregivers' thoughts, which emphasizes the main idea of MI.

Empathy should be used throughout the session, as well as evocation to help the caregiver remember his or her own unique elements that can become reasons to change their child's oral health behavior. The interventionist had to work on building motivation for behavior change by discussing a plan for changing the behavior(s) identified as needing change. At the end of the session, the interventionist made a summary of the conversation. This required complex reflective listening, attempting to highlight the main aspects discussed during the visit, supporting the autonomy of the actions already taken by the caregiver. Before the end of the session, the interventionist presented the caregiver with an informational brochure summarizing the guidelines for oral health care in early childhood. At the conclusion of the session, the interventionist thanked the participants for their attention and time and scheduled an appointment for a preventive dental visit for their child at the local PHC dentist.

The MI sessions were accompanied by local community health workers, who also collaborated in reinforcing and monitoring the targeted behaviors after the MI intervention, during routine home visits they make to families at regular intervals.

During the study, the intervention team met with the researchers every two weeks to monitor performance and provide feedback. The main objective was to review the MI principles and skills and ensure fidelity to the protocol throughout the study. Feedback was provided by a researcher with experience in MI who selected a random MI session for each interventionist performed in the previous two weeks. Sessions were fully assessed based on the Motivational Interviewing Treatment Integrity (MITI 3.1.1)¹³ instrument. MITI 3.1.1 is a behavioral coding system designed to measure treatment fidelity for MI clinical trials and to provide structured, formal feedback in non-research settings, such as clinician training that helps improve the way interventionists conduct MI. MITI 3.1.1 measures global ratings and behavior counts, as presented below, and establishes parameters of proficiency for beginners and experts

that allow analysis of interventionist performance and the degree of MI fidelity.

MI fidelity assessment

The MITI 3.1.1 instrument was used to score MI fidelity, classifying interviews in a single review of the audio recording.¹³ MITI 3.1.1 scores interventionists on five MI principles (evocation, collaboration, autonomy/support, direction and empathy) and also determines a global MI spirit score by counting the average scores for evocation, collaboration, and autonomy/support. Both the global MI spirit score and the scores for the five principles are reported on a five-point Likert scale, with the higher the score, the better the interventionist's performance. The instrument also allows evaluation of the basic MI skills: to inform, to ask, and to listen. This part of the evaluation involves verifying the ratio of open-ended to close-ended questions, the ratio of complex to simple reflections, the ratio of adherent to non-adherent information, and the ratio of reflections to questions.

Based on the MITI 3.1.1, individuals with beginner proficiency level in MI should obtain a minimum global spirit score of 3.5, with a 1:1 reflection to question ratio, 50% open-ended questions, 40% complex reflections, and 90% adherent information¹³. Expert interventionists should obtain a minimum average of 4.0 for their global spirit score, a 1:2 reflection to question ratio, 70% open-ended questions, 50% complex reflections, and 100% adherent information¹³.

The audio-recorded MI sessions were coded by a single reviewer with prior training in MI. This reviewer received theoretical training on the MITI 3.1.1, which involved discussing five audio recordings using the MITI 3.1.1 criteria with an external reviewer. Intra-reviewer variability, as measured by intraclass correlation (ICC), was evaluated in a random sample of 20 MI audio recordings, with two repeated evaluations 30 days apart. The reviewer was rated as having moderate intra-reviewer reliability for percent complex reflections (ICC 0.57), good evocation (ICC 0.78), and good percent MI-adherent information (ICC 0.82), and was rated excellent (ICC higher than 0.90) for all other MITI 3.1.1 criteria evaluated.

Statistical analysis

The collected data were analyzed using the Stata 14.2 statistical program (Copyright 1985-2015 StataCorp LP). Mean scores and corresponding 95% confidence intervals (95% CI) were calculated for the global MI spirit rating and for each of the five principles recommended by MITI 3.1.1. The percentage of adherent information was calculated by dividing the number of adherent information behaviors by the total number of adherent and non-adherent behaviors and multiplying by 100. The proportion of open-ended questions was calculated dividing the number of open-ended questions by the total number of questions and multiplying by 100. Complex reflections were quantified as the number of complex reflections divided by the total number of simple and complex reflections and multiplying by 100. The ratio of reflections to questions was obtained by dividing the total number of reflections by total number of questions. All means and percentages were calculated individually for each interventionist as well as for the group.

Variables such as the average time of the interview in minutes, whether another adult and/or child participated in the MI session, the participant's motivation (reported by the interventionist) and the interventionist's self-evaluation of the session, classified as "good"/"very good" (yes or no) were also evaluated. The number and proportion of caregiver-child pairs with changes (follow-up minus baseline) in the study outcomes (caregiver oral health knowledge and child oral health-related behaviors) were compared between experts and beginner interventionists based on the global MI spirit score and 95% CI.

Results

Of the 161 caregivers who received the MI intervention, 109 were analyzed in this study and 52 were excluded (Figure). There were more married caregivers (91.7%) in the group included in the study than in the group not included (76.2%; $p = 0.009$).

Slightly more than half of the children were girls (52.3%), most of whom were white (84.4%) and had a mean age of 22.3 months. Caregivers had an average

of 8.8 years of formal education. The mother was the primary caregiver in 88.1% of the participants. The average monthly *per capita* family income was R\$ 399.4, which is equivalent to US\$ 100.9 (Table 1).

Mean scores for evocation, collaboration, autonomy/support, direction and empathy varied from 4.0 to 4.3 among interventionists. The global spirit score was 4.0 (95% CI 3.9–4.1). The interventionist who conducted most interviews (Staff 1; $n = 31$) had a MI global spirit mean score of 4.1 (95% CI 3.9–4.2) and the interventionist who conducted fewest interviews (Staff 4; $n = 6$) had a mean score of 3.4 (95% CI 3.3–3.6). Four interventionists scored at the expert level and three scored at the beginner level (Table 2).

All interventionists scored at the beginner level for percent of adherent information, representing an average of 94.1% (95% CI 93.5–94.5). The overall average for percent open-ended questions was 76.3% (95% CI 73.1–79.6), with all interventionists scoring at the expert level (Table 2). The average percentage of complex reflections was 66.1% (95% CI 63.1–69.1), which also gives interventionists the proficiency of experts. The reflection to question ratio was 0.9 (95% CI 0.8–1.0), slightly lower than the beginner level described in MITI 3.1.1 (Table 2).

Table 1. Baseline characteristics of children and their caregivers ($n = 109$). Pelotas, Brazil, 2015.

Variables	Sample distribution
Child	
Female, n (%)	57 (52.3)
White, n (%)	92 (84.4)
Age (months), mean (SD)	22.3 (1.1)
Has private health insurance, n (%)	39 (35.8)
Caregiver and family	
Mother is the primary caregiver, n (%)	96 (88.1)
Caregiver age (years), mean (SD)	30.5 (0.9)
Caregiver education (years), mean (SD)	8.8 (0.3)
Caregiver is married or lives with a partner	100 (91.7)
Family per capita income (in Brazilian reais)	399.4 (21.2)
Family covered by conditional cash transfer program, n (%)	21 (19.4)

SD = standard deviation. US\$ 1.00 = BRL R\$3.96 (30th September 2015).

Table 2. Global scores and behavior counts for all interventionists combined and individually (n = 109). Pelotas, Brazil, 2016.

MITI 3.3.1 measures	All	Staff 1	Staff 2	Staff 3	Staff 4	Staff 5	Staff 6	Staff 7
	n = 109	n = 31	n = 19	n = 16	n = 6	n = 7	n = 19	n = 11
Evocation, mean (95%CI)	4.0 (3.9–4.2)	4.1 (3.9–4.2)	4.2 (3.9–4.4)	4.6 (4.3–4.9)	3.1 (2.8–3.4)	3.5 (3.1–3.9)	3.8 (3.6–4.0)	3.8 (3.5–4.0)
Collaboration, mean (95%CI)	3.8 (3.7–3.9)	3.9 (3.9–4.0)	4.0 (3.9–4.1)	4.0 (3.8–4.2)	3.3 (2.9–3.7)	3.7 (3.3–4.0)	3.7 (3.5–3.9)	3.5 (3.2–3.8)
Autonomy, mean (95%CI)	4.0 (4.0–4.2)	4.1 (4.0–4.3)	4.3 (4.0–4.5)	4.2 (3.9–4.2)	3.8 (3.5–4.1)	3.7 (3.3–4.0)	4.0 (3.8–4.1)	3.8 (3.5–4.0)
Direction, mean (95%CI)	4.2 (4.1–4.3)	4.4 (4.2–4.5)	4.3 (4.0–4.6)	4.8 (4.6–5.0)	3.5 (3.0–3.9)	3.7 (3.1–4.2)	3.9 (3.6–4.2)	4.2 (3.9–4.4)
Empathy, mean (95%CI)	4.3 (4.2–4.4)	4.6 (4.5–4.8)	4.6 (4.4–4.8)	4.5 (4.2–4.8)	3.3 (2.9–3.7)	3.8 (3.3–4.3)	4.3 (4.0–4.5)	3.9 (3.7–4.0)
Global MI spirit, mean (95%CI)	4.0 (3.9–4.1)	4.1 (4.0–4.2)	4.2 (4.0–4.3)	4.3 (4.1–4.4)	3.4 (3.3–3.6)	3.7 (3.5–3.8)	3.9 (3.8–4.1)	3.8 (3.6–3.9)
MI-adherent statements, % (95%CI)	94.1 (93.5–94.5)	92 (91.3–92.8)	95 (94–96)	95.4 (94.2–96.9)	96.5 (94.8–98.2)	93.6 (92.5–94.7)	93.5 (92.0–95.0)	95.8 (94.5–97.0)
Open-ended questions, % (95%CI)	76.3 (73.1–79.6)	76.0 (69.7–82.3)	77.6 (70.2–85)	78.3 (70.5–86.2)	78.1 (66.9–89.3)	82.3 (77.1–87.5)	76.8 (69.1–84.5)	66.5 (52.4–80.6)
Complex reflections, % (95%CI)	66.1 (63.1–69.1)	66.6 (63.5–69.7)	65.2 (60.4–70)	76.5 (65.8–87.2)	44.4 (26.0–62.8)	60.9 (55.0–66.8)	64.1 (59.6–68.5)	69.8 (55.2–84.4)
Reflection-to-question ratio	0.9 (0.8–1.0)	1.0 (0.8–1.2)	0.9 (0.7–1.1)	1.0 (0.8–1.1)	0.5 (0.3–0.8)	0.7 (0.6–0.8)	0.9 (0.7–1.1)	1.1 (0.9–1.4)

Beginner competence: Mean global spirit core = 3.5; Reflection-to-question ratio = 1.0; % Open-ended questions = 50; % Complex reflections = 40; % MI-adherent statements = 90; Expert competence: Mean global spirit score = 4.0; Reflection-to-question ratio = 2.0; % Open-ended questions = 70; % Complex reflections = 50; % MI-adherent statements = 100.

Table 3. MI characteristics according to interventionists' proficiency level (n = 109). Pelotas, Brazil, 2016.

MI characteristics	Expert level ^a	Beginner level ^b	p-value
Session duration in minutes, mean (SD)	39.8 (8.4)	32.7 (8.2)	< 0.001 ^c
Participation of another adult, n (%)	30 (36.2)	9 (39.1)	0.793 ^d
Child was present at the session, n (%)	46 (55.4)	11 (47.8)	0.518 ^d
Caregiver motivation assessed as good/very good, n (%)	68 (81.9)	22 (95.6)	0.104 ^d
Interventionist self-performance evaluated as good/very good, n (%)	68 (81.9)	21 (91.3)	0.278 ^d

^astaff 1, 2, 3 and 6 (n = 85); ^bstaff 4, 5 and 7 (n = 24). ^cp-value of T-test. ^dp-value of Pearson's Qui-square.

Table 3 describes some characteristics that could be related to the performance of MI interventionists. Only the duration of the MI session was associated with interventionist performance, that is, those with an expert-level global score spent more time with caregivers than those at beginner level (p < 0.001). Table 4 demonstrates that the proportion of caregivers who had a change in oral health knowledge was higher among interventionists with a beginner proficiency level (p = 0.005).

Discussion

In this study, a good level of MI fidelity was found, as the variation in proficiency ranged from beginner to expert levels. Despite the growing literature on MI interventions in the dental field, treatment fidelity has rarely been addressed. Most evaluations have focused only on outcomes. To date, this was the first oral health intervention study implemented in a primary healthcare

Table 4. Number and percentage of child–caregiver dyads with changes in study outcomes according to interventionists’ proficiency level (n = 109). Pelotas, Brazil, 2015–2016.

Outcomes	Expert level ^a	Beginner level ^b	p-value ^c
	n (%)	n (%)	
Caregiver oral health knowledge increased	53 (67.1)	23 (95.8)	0.005
Child improved oral hygiene ^d	55 (71.4)	18 (78.3)	0.517
Child stopped drinking sugar-sweetened baby bottle before bed	14 (17.7)	4 (16.7)	0.905
Child reduced frequency of sweet food and sugar-sweetened beverages consumption to less than 4 times/day	16 (20.5)	1 (4.2)	0.063
Child visited the dentist for routine / prevention	45 (57.7)	15 (62.5)	0.676
Child visited the dentist at PHC	50 (64.1)	13 (54.2)	0.381

PHC = primary healthcare center; ^aStaff 1, 2, 3 and 6 (n = 85); ^bstaff 4, 5 and 7 (n = 24). ^cp-value of Pearson’s Qui-square; ^dbrushing twice a day with fluoride toothpaste + brushing always before sleeping + using adequate amount of toothpaste for age.

setting and in a developing country to report MI fidelity measurements.

Few published trials have reported the MI fidelity process in detail. Weak MI treatment fidelity was reported by Ismail et al.¹⁴ in an intervention with null findings for ECC prevention in low-income African American children. Henshaw et al.¹⁵ conducted an MI intervention in caregivers of young children living in public housing with high levels of treatment fidelity. Their intervention resulted in caregiver knowledge increases but did not improve the children’s oral health behaviors or caries increment.¹⁵ Jamieson et al.¹⁶ described good levels of MI fidelity in an intervention to prevent ECC among Indigenous children in South Australia. Later, these authors reported ECC prevention among those children whose mothers underwent an MI during pregnancy.^{17,18} Our study reported positive changes in caregivers’ oral health knowledge and children’s behavior outcomes in a previous publication.¹⁹

Proficiency in delivering the main MI components is one of the most complex elements of treatment fidelity analysis and depends not only on the interventionists’ technical skills, but also on the ability to establish an interpersonal relationship that generates collaboration and empathy with the participant. Our findings showed that higher MI proficiency levels were not related to higher oral health knowledge of caregiver and children’s behavioral change, similar to the findings of a previous study with American Indian children.²⁰ This does not mean that MI is ineffective,

but rather suggests that achieving the minimum standards of MI proficiency may be sufficient to produce changes in outcomes.¹⁹ This argument leads to the conclusion that satisfactory findings for MI fidelity in studies with positive effectiveness reinforce the validity of this approach to improving dental outcomes in different contexts.^{15–19} Understanding the degree of MI fidelity favors the evidence that this approach, when applied to caregivers, contributes to oral health behavior change¹⁹ and caries prevention in children,^{17,18} in addition to improving caregivers’ knowledge of their children’s oral health.^{15,19} MI is a versatile strategy and can be integrated into primary care,¹⁹ child health care in school settings,²¹ or clinical dental settings.²² Moreover, alternative forms of implementing MI such as telephone, internet communication, messaging services, and telehealth have shown promising findings in improving health outcomes^{23–25} and may be especially useful given the current COVID–19 pandemic situation. Relationship between caregiver–child dyads and the interventionist may have changed during the pandemic, suggesting that the use of MI by remote strategies is a needed research area.

On the other hand, some challenges also influence the effectiveness of MI-based interventions, as some studies describe high levels of treatment fidelity and no positive results in behavioral change and caries prevention.^{15,26} The complexity of the socioeconomic and cultural determinants of ECC in vulnerable populations leads children and their families to

experience great social problems that make them less able to prioritize oral health behavioral change.²⁷ Programs that have high levels of fidelity but are not producing the desired effects should be redesigned. Multilevel and multidisciplinary interventions that can intervene in the different mechanisms that lead to ECC need to be implemented. MI can contribute to this by being one, but not the only, of the strategies to be adopted, thus enhancing the effect of such interventions.

It is assumed that the face-to-face training strategies, as well as the regular structured feedback to maintain and develop MI skills throughout the study, provided the adequate quality to interventionists' performance, reflecting the satisfactory fidelity found in this and previously published studies.^{15,16,20,28} We emphasize that interventionists who conducted a greater number of MI interventions scored higher, indicating that it is possible to learn MI skills and reach an expert level over time with practice.

Longer MI duration was associated with higher fidelity scores. Although it seems short (about 7 minutes), this is valuable time for performing MI skills, especially reflective listening to what participants are saying and thus more effectively direct the behavior change plan. We also found in the literature that longer sessions (45–60 minutes) showed better MI findings⁷. Investing in sufficient time to perform MI is compensated by the benefits of motivating caregivers to care, which may improve children's outcomes. We found no statistically significant difference in the interventionists' performance related to the participation of another adult or the presence of the child at the MI session. In a previous study, their presence was suggestive of a decrease in the interventionist's performance due to the difficulty in maintaining the attention of the participant who was concerned about the child or even due to interference in their conversation caused by the opinion of another adult.¹⁷

Caregiver motivation was also not associated with the interventionist's MI proficiency level, which leads us to believe that the interventionist's skills could be the main factor affecting the quality of MI delivery. However, this finding must be interpreted with caution for two reasons. First, this information

was reported by the interventionist rather than by the caregiver, which may not reflect the participant's true motivation. Second, because the MITI 3.1.1. evaluates MI fidelity based only on the interventionist's performance, it was not possible to gain a deeper understanding of participants' behaviors and what they said about change during the session. More in-depth and detailed coding systems exist, but are costly and time-consuming and are therefore rarely used in clinical trials.²⁹ Participants' behaviors related to receiving the intervention and translating treatment skills into practice also influence study outcomes for MI interventions involving caregivers and should be addressed in future studies in order to better understand MI fidelity.

We can highlight several strengths of our study. One of them is the use of the MITI 3.1.1., which is simple and fast and widely used in studies involving MI, allowing comparability across trials.²⁹ Intervention studies with child caregivers assessing MI fidelity were conducted on specific and vulnerable populations such as Indigenous people, low-income African Americans, and people living in public housing, limiting generalization of the findings to other target populations. Our study was conducted in a primary healthcare setting, a level of care widely available in Brazil and in other countries with public health systems based on primary healthcare. In this context, members of the auxiliary team and community health workers can be trained to apply this approach to families, thus broadening the scope of oral health interventions. As a limitation, we cite the fact that the coded MI did not undergo an external evaluation, although the only reviewer in this study had experience with MI, and had good intra-reviewer reliability.

Conclusions

In this study, the interventionists achieved beginner and expert proficiency in MI, demonstrating a good level of treatment fidelity. Expert level was observed among interventionists who conducted more interviews and spent more time talking with caregivers. The proportion of caregivers that had changes in oral health knowledge was higher

among interventionists with beginner proficiency level. As this is a promising area with growing research on behavioral interventions, future studies should assess the fidelity of such interventions to understand how they work to achieve changes in children's dental outcomes.

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