



Oral health-related quality of life of preschool children receiving silver diamine fluoride therapy: A prospective 6-month study

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ARTICLE INFO

Keywords:

Silver diamine fluoride
Dental caries
Preschool children
Oral health
Quality of life

ABSTRACT

Objectives: The aim of the study was to investigate the effect of silver diamine fluoride (SDF) therapy on the oral health-related quality of life (OHRQoL) of preschool children and their families in a school-based setting.

Methods: A prospective study was conducted in six kindergartens in Hong Kong. Parents of the children were invited to complete an oral health questionnaire and to have their child undergo a dental examination. The decayed, missing and filled teeth (dmft) index was adopted for recording oral health status. The Chinese Early Childhood Oral Health Impact Scale (C-ECOHIS) was used to evaluate the OHRQoL of the children and their families. Children with untreated caries were treated with SDF. The Wilcoxon Signed Ranks Test was used to determine the changes in C-ECOHIS scores before and after SDF treatment for six months.

Results: At baseline, 117 preschool children aged 4–5 years received SDF treatment for caries arrest. Their mean (SD) dmft score at baseline was 4.9(3.8). After six months, 113(96.6%) returned a completed questionnaire. Their mean(SD) C-ECOHIS scores at baseline and follow-up were 7.4(6.6) and 7.8(6.4), respectively. The overall differences between pre- and post-treatment scores were not significant ($p = 0.301$). Concerning parent section, a negative impact was found ($p = 0.014$), whereas no significant impact was found in the child section ($p = 0.831$).

Conclusion: Based on the 6-month results, the SDF treatment conducted in a school setting did not affect the overall OHRQoL of preschool children and families.

Clinical significance: These results can provide important information to dental professionals regarding the use of SDF for caries control.

1. Introduction

Tooth decay is the most prevalent chronic disease in childhood [1]. In Hong Kong, approximately half of kindergarten children in Hong Kong have tooth decay, and most of them (93%) are left untreated [2]. Children with untreated dental caries may suffer from dental infection, orofacial pain or the inability to chew and eat. Studies revealed that untreated caries is associated with worse oral health-related quality of life (OHRQoL) [3]. This may affect the quality of life of their family members and eventually impact their communities. A restorative approach alone is insufficient for improving oral health inequality, especially in deprived communities [4]. Therefore, non-invasive treatment, such as caries-arresting treatment, has gained more attention in community dental care.

Recently, several systematic reviews concluded that silver diamine fluoride (SDF) therapy can be a therapeutic option for controlling tooth

decay in children due to its safety, efficacy and cost-effectiveness [5]. However, most of the clinical outcomes in caries arrest studies were based on clinicians' judgements [6,7]. As commonly known, a side effect of SDF is the blackening of carious lesions [8]. It remains unknown if tooth discoloration on carious lesions may affect child's social and psychological aspects. In the US, the use of SDF has recently gained more interest among pediatric and general dental practitioners [9]. To date, limited information exists regarding the effect of SDF treatment on patient-reported outcomes. The assessment of OHRQoL has been proved to be a valuable tool in assessing adult patients' needs and patient-based outcomes [10]. However, preschool children are incapable of abstract thinking, which most likely underlies health perceptions; thus, parents must be their representatives in reporting the impacts of any dental disease or treatments. The Early Childhood Oral Health Impact Scale (ECOHIS) was proposed and validated to assess the impact of dental health problems and treatment experiences on the quality of

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<https://doi.org/10.1016/j.jdent.2018.12.004>

Received 9 October 2018; Received in revised form 4 December 2018; Accepted 12 December 2018

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life of children aged 3–5 years old and their families [11]. A recent Chinese version of the ECOHIS (C-ECOHIS) demonstrated good reliability and validity [12].

As of now, no information exists regarding the OHRQoL (individual's physical, social, and psychological wellbeing) of children after participating and using SDF in a school oral health program. The aim of this study was to assess the changes of the OHRQoL of preschool children and their families using the C-ECOHIS questionnaire on 4- to 5-year old children who had dental caries and received SDF treatment for caries control in a school oral health program. The results of this study can provide important information to dentists and to dental public health professionals, as well as to parents in making decisions regarding the use of SDF for caries control in the school setting.

2. Methods

Ethics approval was obtained from the Institutional Review Board of the University of Hong Kong/Hospital Authority Hong Kong West Cluster (UW 17–414). Six kindergartens that were not involved in any research study were selected. An invitation letter was sent to the parents of the children in the selected schools, explaining the purpose and procedures of the study. Written parental consent was sought and received before the children participated. This study was conducted from November 2017 to June 2018. Eligibility criteria were preschool children aged 4–5 years old who have had at least one dentin caries and had never previously received SDF treatment, and whose parents or guardians were able to read and write in Chinese. Exclusion criteria included children who were uncooperative, refused examination or had major systemic illnesses. The study children were examined and followed up in their kindergarten classrooms.

2.1. Sample size calculation

The sample size calculation was estimated using the software G*Power 3.1.9.2 (University of Düsseldorf, Germany) based on these assumptions: 1) the mean Chinese ECOHIS score before treatment was approximately 15 (SD = 7) [13]; 2) the minimal important difference (MID) would be around 3 for those reporting that their conditions at least 'improved a little' [14], and thus, the anticipated mean Chinese ECOHIS score after treatment would be 12 (SD = 7); and 3) the power of the study was set at 90% ($\beta = 0.10$) and with the two-sided test at the 0.05 statistical significance level. With an anticipated 20% dropout rate, the minimum sample size to be recruited at baseline would be 83 children. Based on our previous results [7], the caries prevalence of Hong Kong children aged 4–5 years old was approximately 40%; therefore, 216 children were screened. With an anticipated 70% response rate, at least 309 parent-child dyads were invited to join the study.

2.2. Clinical examination

One examination team, which consisted of one examiner (DD) and one assigned recorder, conducted a clinical oral examination and recorded the caries experience and oral hygiene status in a chart at baseline and at six-month follow-up. The examiner was trained and calibrated by the experienced dental epidemiologists (LECM, CCH). Clinical examinations of the children were performed in kindergarten classrooms mainly through careful visual inspections with the aid of World Health Organization Community Periodontal Index (CPI) probes (405/WHO probe, Otto Leibinger, Mühlheim, Germany) and dental mirrors attached to handles with light-emitting diodes for intra-oral illumination (MirrorLite, Kudos Crown Limited, Hong Kong, China).

Children were examined in the supine position. The decayed, missing and filled teeth index (dmft) was used for recording the caries status. Caries was diagnosed at the cavitation level following the criteria of the WHO [15]. Regarding lesion activity, carious lesions were

explored with a CPI probe. All surfaces of each tooth were assessed. At tooth level, a carious lesion was recorded as active if softness was detected upon gentle probing, and it was classified as arrested caries if the dentine surface was hard to probe [6,7]. Color of the lesions was not the criteria for assessing the lesion activity. Caries arrest rate of each child was defined as the number of arrested SDF-treated surfaces at 6 months in a child divided by the number of active caries lesions receiving SDF at baseline of the same child. The mean of the caries arrest rates was defined as the sum of caries arrest rates of all participants divided by the total number of participants. Coding for caries experience and lesion activity used in the present study as follows; 0 = sound, 1 = active dentin caries, 2 = arrested dentin caries, 3 = filled, with caries, 4 = filled, without caries, 5 = missing due to caries, 6 = missing for any other reason, 9 = not recorded. The oral hygiene status was measured using the visible plaque index (VPI) [16]. The buccal and lingual surfaces of six index teeth (55, 51, 63, 71, 75 and 83) were examined, and the presence or absence of visible plaque on caries surfaces was recorded. The modified 'pufa' is used to assess the presence of oral conditions resulting from untreated caries [17,18]. The index is recorded separately from the dmft and scores the presence of either a visible pulp (p) or an abscess, (a) including the ulceration (u) of the oral mucosa due to root fragment and a fistula (f). Thus, for an individual preschool child, the dmft and modified 'pufa' score can range from 0 to 20.

Duplicate examinations on 10% of the preschool children were carried out to assess intra-examiner agreement regarding caries experience and lesion activity at tooth level. After each examination, an individual oral health report stating the number of decayed teeth and the oral hygiene status of the examined child was given to his or her parents, and the parents could seek dental treatment with their own financial means.

2.3. Questionnaire survey

A parental questionnaire was administered before and after the parents joined the program for six months. At baseline, information on the children's demographic background and OHRQoL were collected via a self-completed parental questionnaire. At the six-month follow-up examination, the same parent was asked to complete the questionnaire survey. The Chinese version of the ECOHIS (C-ECOHIS), which is a validated tool for measuring the OHRQoL of preschool children, was adopted [12]. It contained 13 items corresponding to two sections: a 1) child impact section (nine items) consisting of four descriptive domains (symptoms – one item; function – four items; psychological – two items; self-image/ social interaction – two items) and 2) parent impact section consisting of two domains (parent distress – two items and family function – two items). The response categories for the C-ECOHIS were coded: 0 = never; 1 = hardly ever; 2 = occasionally; 3 = often; 4 = very often; 5 = don't know. The total C-ECOHIS scores and scores for individual domains were calculated as a simple sum of the response codes, after all 'Don't know' responses were recoded to missing. The total scores ranged from 0 to 52, with higher scores indicating greater degrees of oral impact on the quality of life of the child.

2.4. Intervention

Participating children with dentin caries were treated with 38% silver diamine fluoride (SDF) (Saforide, Toyo Seiyaku Kasei Co. Ltd., Japan) in a school-based setting. Steps of the SDF treatment were as follows: 1) position the child supine on the bench; 2) isolate the child's decayed teeth with dental gauze; 3) apply SDF on the carious lesion(s) in the same sextant with a micro applicator simultaneously; 4) gently rub the lesion surfaces with the micro-applicator while continuing to isolate the decayed tooth for around 1 min [19]; 5) after the application, inform a class teacher that the child should not eat or drink, or rinse his or her mouth for at least 30 min. A dental assistant helped preparing the materials and timing during the application process. After

the intervention, an individual report on the child's oral health status was sent to his or her parents.

3. Statistical analysis

Data were analyzed using the software SPSS 24.0 for Windows (IBM Corp. Armonk, NY, USA). Intra-examiner agreement in the diagnosis of dental caries was assessed by using Cohen's Kappa statistics. The McNemar-Bowker test was used to compare the distribution of the C-ECOHIS before and after SDF treatment. Changes in C-ECOHIS scores were generated by subtracting the post-treatment score (T1) from the pre-treatment score (T0). A positive change or an improvement of OHRQoL was indicated if the post-treatment score was lower than the pre-treatment score, whereas a negative change or a deterioration of OHRQoL was indicated if the post-treatment C-ECOHIS score was higher than the pre-treatment score. Children could have zero change or the level of impacts on OHRQoL would remain unchanged. Due to the non-normal distribution of the mean differences of the ECOHIS scores, the Wilcoxon Signed Rank Test was adopted. An indication of the magnitude of the statistical change was assessed by determining the effect size (ES) (mean change [T0–T1]/ standard deviation) [13]. The level of statistical significance for all tests was set at 0.05. Multiple logistic regression models were adopted to determine if other family- and child-related factors were associated with the negative impact of SDF. The backward stepwise procedure was performed until only variables demonstrating a statistically significant association ($p < 0.05$) remained in the final model.

4. Results

Among the 434 preschool children invited, 398 (91.7%) provided informed consent. On the day of the baseline examination, 36 children were absent. Thus, 362 children were screened. Among these, 117 children had dentin caries ($dt > 0$) and were then treated with SDF. The value of the Kappa statistics for caries assessment was 0.96. After six months, all (100%) remained in the study; however, four participants who missed more than two items (out of 13 items) of C-ECOHIS, were excluded from the analysis. Therefore, 113 (96.6%) study dyads were included in the analysis. Among the 113 questionnaires, eight missing values were computed using the mean of the remaining items of the ECOHIS score in each participant. Their mean (SD) age was 4.6 (0.3) years. The demographic and clinical characteristics of the children are displayed in Table 1. Among these, 54 children (47.8%) were boys. Their mean (SD) dmft was 4.9 (3.8). Most (69.9%) of the children had 1–5 decayed teeth. In total, 516 active dentine caries teeth were treated with SDF at baseline. The mean (SD) number of active caries teeth receiving SDF therapy at baseline was 4.6 (3.6). A majority (86.7%) of them had dental caries on their upper anterior teeth. The prevalence of oral conditions resulting from untreated caries (modified pufa score > 0) was 10.6%. Their VPI score was 0.47 (0.19). A majority of the respondents (77.9%) were mothers. Around half of the fathers (51.3%) and mothers (45.1%) had completed secondary education.

The frequency of ECOHIS responses (%) at baseline and follow-up examinations are displayed in Table 2. At baseline, 'difficulty pronouncing any words' (56.6%), 'pain in the teeth or mouth' (54%), and 'had difficulty eating' (54%) were the most frequently reported items in the child impact section. Regarding the family impact section, the items of 'feeling guilty' (57.5%) and 'upset' (55.8%) were the most frequently reported regarding parental distress. After SDF treatment, there was a higher proportion (66.4%) of the item of 'feeling guilty' compared with that reported at the baseline examination ($p = 0.044$, McNemar-Bowker test). For other items, no differences were found between the distribution of ECOHIS responses before and after SDF treatment ($p > 0.05$).

After six months, the overall caries arrest rate at tooth level was

Table 1

Demographic characteristics of children with dental caries and their oral health status (n = 113).

Parent and child characteristics	Frequency	Percentage
Sex		
Male	54	47.8
Female	59	52.2
Relationship of respondent to the child		
Mother	88	77.9
Other family member	25	22.1
Mother's education level		
Up to junior secondary school	34	30.1
Secondary school	51	45.1
Post secondary school/ University	28	24.8
Father's education level		
Up to junior secondary school	30	26.5
Secondary school	58	51.3
Post secondary school/ University	25	22.1
Dental caries in upper anterior teeth		
Yes	98	86.7
No	15	13.3
Parent and child characteristics	Mean	SD
Caries experience (dmft index)	4.9	3.8
Consequence of untreated caries (modified pufa)	0.2	0.8
Visible plaque index (VPI)	0.47	0.19

43.0% (222 arrested SDF-treated teeth/ 516 active caries teeth at baseline). At subject level, the mean (SD) of caries arrest rate of 46.4% (38.0%). On average, half of the active caries teeth in each child became arrested after 6 months. No significant differences were found in the changes of C-ECOHIS scores between children with arrested caries and those with active caries ($p = 0.736$, Mann-Whitney U test). Some parents (23%) had brought their children to visit their own dentists during the six months. No significant differences were found between the C-ECOHIS scores regarding the dental visit experience ($p = 0.735$, Mann-Whitney U test).

Table 3 displays the mean (SD) of the overall C-ECOHIS scores at baseline and follow-up, which are 7.4(6.6) and 7.8(6.4), respectively. The mean changes of the C-ECOHIS score were not normally distributed ($p = 0.001$, Shapiro-Wilk normality test). The results of the Wilcoxon Signed Ranks Test indicated that no significant differences were found between the changes of the overall C-ECOHIS ($p = 0.301$) and the child impact section's C-ECOHIS scores ($p = 0.831$). Therefore, multiple logistic regression analysis was not further performed. However, in the section regarding parent impact, a negative change of the C-ECOHIS scores was found ($p = 0.014$, Wilcoxon Signed Ranks Test). The effect size was small (0.28). In the parent impact section, a significantly negative change was observed only in the domain of 'parent distress' ($p = 0.010$, Wilcoxon Signed Ranks Test), whereas no changes were found in the domain of 'family function' ($p = 0.060$, Wilcoxon Signed Ranks Test).

Table 4 displays the number and percentage of the children and families who had positive, zero or negative impacts on OHRQoL following SDF therapy. Multiple logistic regression analysis on the section of parent impact was performed. All potential variables, namely sex, the relationship of the respondent to a child, the father's and mother's education levels, caries involving the upper anterior teeth, previous dental experience, the caries arrest rate, the dmft, the modified pufa and the VPI score, were also included in the base model. The results of the final model indicated that the dmft score was the only significant variable associated with the parent impact, whereas the other factors were not. Children with higher dmft scores had a higher chance of having negative impacts on their families after receiving SDF treatment at six months (OR = 1.12, 95% CI:1.01–1.25, $p = 0.035$).

Table 2
Frequency of ECOHIS response (%) at baseline and follow-up examination (n = 113).

Items	Baseline					6-month follow-up					p-value ^c
	Never	Hardly ever	Occasionally	Often	Very often	Never	Hardly ever	Occasionally	Often	Very often	
Child impact section^a											
<i>Symptom</i>											
a) had pain in the teeth, mouth or jaws?	46.0	37.2	13.3	2.7	0.9	45.1	34.5	19.5	0.9	0.0	0.869
<i>Function</i>											
b) had difficulty drinking beverages?	50.4	40.7	8.8	0.0	0.0	54.9	33.6	10.6	0.9	0.0	0.444
c) had difficulty eating some foods?	46.0	38.1	15.0	0.9	0.0	54.0	37.2	7.1	0.9	0.9	0.077
d) had difficulty pronouncing any words?	43.4	34.5	18.6	2.7	0.9	49.6	33.6	14.2	1.8	0.9	0.100
e) missed school?	75.2	23.0	1.8	0.0	0.0	77.9	20.4	1.8	0.0	0.0	0.942
<i>Child psychology</i>											
f) had trouble sleeping?	63.7	31.9	4.4	0.0	0.0	69.9	25.7	4.4	0.0	0.0	0.399
g) been irritable or frustrated?	58.4	37.2	3.5	0.9	0.0	61.1	30.1	8.0	0.9	0.0	0.343
<i>Social interaction</i>											
h) avoided smiling or laughing?	69.0	26.5	4.4	0.0	0.0	66.4	30.1	2.7	0.9	0.0	0.886
i) avoided talking?	71.7	26.5	1.8	0.0	0.0	71.7	24.8	3.5	0.0	0.0	0.545
Parent impact section^b											
<i>Parent distress</i>											
j) been upset?	44.2	35.4	15.9	3.5	0.9	38.9	30.1	20.4	8.8	1.8	0.156
k) felt guilty?	42.5	36.3	15.0	3.5	2.7	33.6	31.9	23.9	8.8	1.8	0.044
<i>Family function</i>											
l) had to take hours or days off work?	61.1	31.0	6.2	0.9	0.9	54.9	32.7	12.4	0.0	0.0	0.470
m) affected the family's economic situation?	61.1	31.9	5.3	0.9	0.9	49.6	37.2	9.7	2.7	0.9	0.054

^a How often has your child because of dental problems or the need for dental treatments?
^b How often have you or another family member because of your child's dental problems or dental treatments?
^c McNemar-Bowker test.

Table 3
Total and individual domain of the C-ECOHIS score before and after SDF therapy (n = 113).

	Mean(SD) Baseline (T0)	Mean(SD) Follow up (T1)	Mean (SD) Difference (T0-T1)	Effect size	p-value ^a
Total score	7.4(6.6)	7.8(6.4)	-0.5(6.0)	-0.08	0.301
Child impact	4.7(4.3)	4.4(4.1)	0.3(4.2)	0.07	0.831
Symptoms	0.8(0.9)	0.8(0.8)	0.0(0.8)	0.0	0.822
Function	2.4(2.1)	2.1(2.1)	0.3(2.1)	0.14	0.172
Child psychology	0.9(1.1)	0.8(1.1)	0.0(1.2)	0.0	0.816
Social interaction	0.7(1.0)	0.7(1.1)	0.0(1.2)	0.0	0.979
Parent impact	2.7(2.9)	3.4(3.1)	-0.8(2.9)	-0.28	0.014
Parent distress	1.7(1.8)	2.2(2.0)	-0.5(1.9)	-0.26	0.010
Family function	1.0(1.4)	1.3(1.4)	-0.3(1.4)	-0.21	0.060

^a Wilcoxon Signed Ranks Test.

5. Discussion

SDF treatment has recently been regarded as an evidence-based effective measure for caries management for children and those with special needs [20]. Several clinical trials and systematic reviews reported the positive clinical outcomes on caries prevention and caries arrest [5,21]. Although SDF has several advantages, such as effectiveness, ease of use and the fact that it is safe [6,8], the known side effects of black staining on carious lesions may hinder the adoption of SDF treatment [22]. Psycho-social impact cannot be determined by using clinical parameters alone. Information regarding changes in quality of life after joining a community-based oral health program is limited. Based on our search in PubMed on 13th September 2018, the present study is the first study investigating the impacts of non-invasive treatment with SDF treatment on the OHRQoL of preschool children in the school-based setting. This information allows oral health professionals to choose the appropriate care and treatment when implementing school oral health programs.

Table 4
Number (%) of the children who had changes (positive or negative) or had no changes of the C-ECOHIS scores in total and in each domain.

	Positive change ^a no. (%)	No change ^b no.(%)	Negative change ^c no.(%)
Total score	45(39.8)	20(17.7)	48(42.5)
Child impact	46(40.7)	21(18.6)	46(40.7)
Symptoms	23(20.4)	67(59.3)	23(20.4)
Function	46(40.7)	36(31.9)	31(27.4)
Child psychology	26(23.0)	63(55.8)	24(21.2)
Social interaction	19(16.8)	71(62.8)	23(20.4)
Parent impact	27(23.9)	35(31.0)	51(45.1)
Parent distress	26(23.0)	42(37.2)	45(39.8)
Family function	19(16.8)	61(54.0)	33(29.2)

^a Positive change = C-ECOHIS score of the follow up was lower than that of the baseline (positive impact on OHRQoL).
^b No change = C-ECOHIS score of the follow up was equal to that of the baseline.
^c Negative change = C-ECOHIS score of the follow up was higher than that of the baseline (negative impact on OHRQoL).

Our results indicated that the overall OHRQoL of preschool children had been unchanged or stabilized after non-invasive treatment with SDF at the six-month follow-up examinations. This might be explained in various ways. First, the baseline or pre-treatment ECOHIS scores were relatively low (seven out of 52). In other words, a low level of need for any changes existed. Despite having untreated decay teeth, a majority of the children (83.2%) seldom or never had dental pain experience prior to SDF treatment. Compared with the previous study, the pre-treatment ECOHIS scores of children who had sought dental treatment in clinics were higher (17 out of 52) [14]. As previously alluded to, the impacts of ECC on OHRQoL were low in the study population; therefore, the effects or consequences of any treatment may be subtle to detect. Furthermore, it should be noted that the results of SDF treatment on children's OHRQoL were based on the school-based setting without parental involvement. Patient communication and

empathy may affect clinical outcomes and quality of life [23]. In other settings, where a dentist-child-parent relationship is established, or where there is a high level of dental treatment need, the impact of SDF treatment on OHRQoL of children may be different.

The parental acceptance of black staining was reported as the most-cited obstacle to adopting SDF treatment [22]. Contradictorily, the present study revealed that SDF treatment had no significant impact on child psychology, self-image and social interaction. Similar findings were found that dental aesthetic issues did not influence the self-confidence of the preschool children [24]. This may be explained by the fact that body image awareness had not fully developed at their very young ages. Despite the dark staining on carious lesions, studies revealed that the parental impression of SDF application was favorable compared with advanced pharmacological approaches involving conscious sedation or general anesthesia [25,26]. When choosing caries management methods, dental esthetics may not be a priority for their young children.

Interestingly, the impact of SDF treatment is more remarkable on parental distress, particularly in the item of ‘felt guilty’. Presumably, some existing carious lesions, that had been unnoticeable, became more apparent after SDF application. Some parents may acknowledge the unfavorable oral health statuses of their children following the baseline assessment and had reflected on it. Further qualitative studies interviewing parents of the SDF-treated children should be conducted to gain a deeper understanding regarding the parental distress. The present study found that a negative impact of SDF on parent distress was significantly related to higher dmft scores. An epidemiological survey also reported that parents often felt guilty with the increased severity of ECC in their children [27]. Care must be taken to parents whose children have multiple decayed teeth, as they may tend to have higher levels of distress following SDF treatment. The parent-child relationship is a complex and dynamic interaction. Most dental research focused on the relationship between ECC and socioeconomic factors [28], whereas less is known about parental perceptions toward child oral health. Although ‘felt guilty’ is thought to be one of the negative consequences of SDF treatment, it, in fact, may positively help to change behaviors. Parents of the SDF-treated children with increased levels of guilt may be more strongly motivated to change. Possibly, dental professionals may take this opportunity to reinforce proper oral care practices for children.

The present study had several strengths, including a high response rate (91.7%), high retention rates (100%) and a sufficient sample size following the sample size estimation. The distribution of children’s sex and demographic background were as estimated, representing kindergarten children in Hong Kong. Nevertheless, the limitations of the present study should also be addressed. Due to the ethical issue, the so-called baseline-controlled study was designed, in which children’s OHRQoL after SDF treatment was compared with their baseline statuses. Thus, possible bias would occur due to a lack of blinding and randomization. In addition, the present study was conducted among Chinese dyads (preschool children and their parents). These results may not be generalizable to other ethnic populations or to other age groups with different cultures and different caries severity levels. The 6-month study period should be discussed. Although black staining occurs right after the SDF application, the overall impact of caries arresting treatment including tooth functioning and family function in term of economics may take time to be observed. The present 6-month results can be also compared with the results of the previous studies [7,8]. Nevertheless, further studies evaluating both immediate and longer-term effect of SDF treatment on OHRQoL of children are required to confirm or refute these findings. In addition, the colour changes of the lesions should be recorded. Possibly, the colour of pre-treatment lesions may be also another factor influencing the acceptability of parents and children towards the SDF therapy.

6. Conclusions

In summary, the difference of C-ECOHIS scores between pre- and post-SDF treatment are not significant, indicating that the overall OHRQoL level of preschool children is not affected following SDF therapy at six months. However, the subgroup analysis revealed that the impact of SDF treatment on parental side is remarkable. Parents whose children have higher caries experience are more likely to have increased levels of parental distress following SDF treatment.

Acknowledgement

The authors are thankful to Ms. Samantha KY Li for her advice in the area of statistical analysis. The authors declare no conflict of interest. This research did not receive any specific grant from funding agencies in the public, commercial or not-for-profit sectors.

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