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REVIEW ARTICLE

A Mini Review of Dental Care for Kindergarten Children from Pediatric Dentists

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ABSTRACT

The prevalence of caries among kindergarten children in Shenzhen of China is very high, which could cause them various harm. Dental care for kindergarten children from pediatric dentists is a project that has the advantages of being widespread and low-spending in Shenzhen. In order to promote the project with the cooperation of kindergarten doctors and teachers, this mini review aims at the summary of the experiences of dental care from us.

Background

The prevalence of caries among kindergarten children in Shenzhen of China is very high, 56.5-79%. However, the parents' attention and willingness to visit the dentists are very low, as low as 30%^[1]. It means that most of the children suffering from caries cannot receive the proper treatment. Dental care for kindergarten children from pediatric dentists is a beneficiary project jointly cooperated by health department, maternity and child healthcare hospitals at all levels and kindergartens at all levels, which has the advantages of being widespread and low-spending^[2].

The oral examination includes: caries, malformed teeth, traumatic teeth, malocclusion, first molars needed pit and fissure sealing, mucous, etc^[3]. The pediatric dentists will record and feedback the unusual according to the examination, and the parents need to make an appointment with the pediatric dentists for their children as soon as possible. After the treatment, the parents are asked to bring the certificate back to the kindergarten. It is this "feedback-binding" model that maximizes the monitoring of oral diseases of kindergarten children.

Among all oral diseases, only caries has the highest prevalence rate and it also is the most harmful to children^[4], so the main target of dental care for kindergarten children is the prevention of caries. Fluoride plays a great role in the prevention of caries^[5]. There are several types of fluoride, the foam fluoride and the paste "Dulux fluoride" are commonly used in our city^[6,7]. Among them, fluoride foam has the advantages of quickness and convenience. Since the average number of children per kindergarten in our city is about 400, and since kindergarten children are less cooperative and have a shorter time of insisting, fluoride foam is the most feasible means.

Objective

Since this project requires the participation of pediatric dentists, kindergarten doctors and

teachers, this mini review aims at the summary of the dental care from us in kindergarten with the 17 years of experience of our department.

I. The work of pediatric dentists

1. Preparation before the activity

(1) Training for pediatric dentists

The pediatric dentists are the main implementers of the activity, and it is important for them to master the correct procedure of the activity. Therefore, the principal needs to provide proper training to the team before each activity. The training points are located at the time of making the plan, one day before the activity and before the departure on the day of the activity. The regular activity consists of two parts: oral examination and fluoride foam applying, which requires 4 dentists, divided into 2 groups, to work together. The details of the training will be described in the following.

(2) Communication with kindergarten doctors

- ① Give the kindergarten doctors blank checklists that match the number of children and distribute them to teachers of each class with instructions to write the names of the children in advance on the day of the event.
- ② Make the appointment of the date and time of the activity.
- ③ State the number and names of pediatric dentists participating in the activity and ask the kindergarten doctors about the required proof of identity and health of COVID-19.
- ④ Inform the kindergarten doctors of the activity to train the kindergarten teachers in advance.
- ⑤ Arrange the activity site at kindergarten in advance: one small pillow, two small wooden tables, two small chairs for dentists, two large chairs for dentists, four trash cans, four packs of paper towels, cups that match the number of all children, and small chairs that match the number of children in one class.

(3) Preparation of items

- ① Suitcase 1# (for oral examination): hand sanitizer, gloves, disposable sheets, disposable mouth mirrors that more than the number of children, several packs of cotton swabs, pencils, erasers.
- ② Suitcase 2# (for fluoride foam applying): hand sanitizer, gloves, disposable sheets, more several bottles of fluoride foam and trays that more than the number of children.
- ③ Dentists' overalls and masks.

2. The work in the activity

(1) Set-up of the site

Determine the items to be placed correctly at the activity site.

- ① Group 1# (oral examination): one wooden table, two small chairs, one pillow, one trash can, paper towels, Suitcase 1# and two pediatric dentists.
- ② Group 2# (fluoride foam applying): one wooden table, two large chairs, one trash can, paper towels, suitcase 2# and two pediatric dentists.

(2) Oral examination

Oral examination team needs two pediatric dentists, one dentist conducts oral examination and the other records the examination results^[6]. The pediatric dentists and a kindergarten teacher work together. Dentist 1# receives a blank checklist from the child and directs the child to lie on the table with his or her head on a pillow and his or her mouth opening widely and continuously. Dentist 1# verbalizes the examination results using the mouth mirror while dentist 2# records the results in the checklist with a pencil. After the examination, the child will be guided to have fluoride foam.

(3) Making of fluoride foam trays

Fluoride foam applying needs two pediatric dentists. Dentist 3# makes the fluoride foam tray and dentist 4# places the tray into children's mouth. Since fluoride foam is volatile, it needs to be used within a short period of time after it is squeezed out. When children enter the site, pediatric dentist begin

to make the fluoride foam tray. Firstly, shake the fluoride foam bottle vigorously to mix the foam and air fully; Secondly, squeeze the fluoride foam into the trays with the bottles upside down and then; Last, since the foam will expand rapidly and the palatopharyngeal reflex of kindergarten children is obvious, it is appropriate to squeeze the foam less than the half of the depth of the tray.

(4) Placement of the fluoride foam tray

With the assistance of the kindergarten teachers, pediatric dentist 3# puts the one tray into each child's mouth by rotating it asking the child to open his or her mouth widely, and then asks him or her to bite the tray firmly, while placing the cup under the lower lip to catch the saliva.

(5) Communication and reassurance with fearful children

According to our experience of 17 years, an average of two children in a class are afraid of dental examination or fluoride foam placement. There are several ways for pediatric dentists and kindergarten teachers.

- ① Not force the child, and let he or she stands by temporarily to observe other children being examined and fluoride foam placed.
- ② For children who refuse to be examined, pediatric dentists can explain to them that dentists will only use a mirror to count how many teeth children have.
- ③ Children who do refuse to lie down may be examined by standing up.
- ④ Children who do refuse fluoride foam, pediatric dentists may explain to them that it is tasteful strawberry-flavored cream.
- ⑤ For children who are fearful, the help of the kindergarten teacher is necessary.
- ⑥ Children with persistent fears, parents may be advised to make their own appointments for pediatric dentistry visits later.

(6) Cleaning the activity site

For the garbage generated by the activity, the pediatric dentists need to take the initiative to clean up properly. First of all, put the unused items back into the suitcase, and then put the contaminated gloves, sheets, mouth mirror, swabs, trays, paper towels into the medical waste bag at kindergarten.

3. Feedback and improvement after the activity

(1) Examination results feedback

At the end of the activity, the pediatric dentists will bring all the examination checklists back to the department and fill out the examination results into the feedback forms. It takes about one week before dentists inform the kindergarten doctors to pick the feedback forms up and distribute them to the kindergarten teachers of each class.

(2) Analysis of kindergarten children's opinions

After the activity, kindergarten teachers will interview and collect children's opinions about this activity, and then report to the kindergarten teachers, and finally doctors organize the opinions to the pediatric dentists. These opinions are important for pediatric dentists to make continuous improvement in the following activities.

4. Oral health education

In addition to provide regular dental care for children in kindergartens, pediatric dentists also carry out oral health education, aiming at improving the oral health level of children, parents, kindergarten doctors and teachers from the perspective of cognition^[8]. The contents of oral health education mainly include basic oral health maintenance methods, which are carried out in various forms: lectures in kindergartens, lectures in public media (online), games and lectures in "Teeth-care day" in hospitals and community free medical examinations and lectures.

II. the work of the kindergarten doctors

1. Preparation for the activity

(1) Training kindergarten teachers to introduce the activity to parents

Before the activity, kindergarten teachers will introduce the procedures and benefits of the activity to the parents, including the hazards that can be avoided by early detection and treatment of oral diseases and the importance of fluoride foam for caries prevention^[9]. For this, kindergarten doctors are needed to train teachers in advance using their basic medical knowledge.

(2) Compiling the registration list

After the kindergarten teachers introducing the activity to the parents, they actively encourage parents to enroll the activity for their children. The teacher will give the registration list and the fees collected from parents to the kindergarten doctor, who will prepare for the activity in advance according to the list. The fees will be transferred to the hospital after the activity.

(3) Training for kindergarten teachers

Kindergarten teachers are the first in charge of the children, so their knowledge of the activity is critical. Before the activity, the kindergarten doctors need to train the teachers about the procedure of activity in detail so that the it can be completed better^[6].

(4) Set-up of the site

The site is divided into two large areas in opposite directions: the pediatric dentist area and the children area. The pediatric dentists area is arranged according to the above-mentioned part of "the work of the pediatric dentists", and the children area needs to place small chairs in lines with the number of children of each class.

2. The work in the activity

(1) Command of the scene

① The kindergarten doctors are mainly located at the entrance range of the activity site, and inform kindergarten teachers of each class in turn to lead their children to enter the site according to the schedule.

② When children arrive at the entrance, the kindergarten doctors assist the teachers to line up children into one line, check the number of children, distribute one cup to each child, distribute again to observe the order, determine the start with the pediatric dentists, and assist the teacher to lead the children get into the site.

③ When children have been placed fluoride foam trays and are seated on the small chairs, the kindergarten doctors notify teachers of the next class in order to lead the children to the activity site. If they arrive early, doctors arrange them to wait in a safe position outside the activity site.

(2) Response to emergencies

A common emergency for this activity is vomiting in children. Children are prone to vomiting due to crying, strenuous exercise or after eating for a short period of time. The kindergarten doctors tell the teachers to prepare in advance and to avoid strenuous exercise or eating half an hour before the dental care. In case of vomiting, the kindergarten doctors will arrange another doctor to take the child to the infirmary for rest and contact the cleaning staff to clean and disinfect the site.

(3) Cleaning of the activity site

The pediatric dentists organize all the items, while the waste and garbage generated from the activity will be put into the medical waste bag in kindergarten. Therefore, the kindergarten doctors only needs to work with the cleaning staff to bring the tables and chairs to their original position, and to centralizethe medical waste bag.

3. The work after the activity

(1) Giving feedback of the children's opinion to the pediatric dentists

After the activity, the kindergarten teachers interview children about the activity, including what they like and what they don't like. These opinions then are reported to the kindergarten doctors, and finally are given to the pediatric dentists in order to make continuous improvement.

(2) Receiving examination results

It takes about one week for the pediatric dentists to compile all the children's examination results and give feedback forms for them. The kindergarten doctors pick the feedback forms from dentists and distribute them to the kindergarten teachers of each class, who put them in each child's school bag and let the children take them home to their parents.

III. Work of kindergarten teachers

1. Preparation for the activity

(1) Introducing the activity to parents

In order to let the parents fully understand the significance of the health care dental activity and at the same time more children participate in the activity, the kindergarten teachers introduce the activity through parents' meeting online or offline^[10]. After receiving training from the kindergarten doctors, the teachers can really master all the medical knowledge of the activity and better promote it to the parents.

(2) Registration

After the kindergarten teachers introducing, they ask parents to register for their children and collect the fees. The teachers give the registration lists and the fees to the kindergarten doctor.

(3) Psychological construction for children

Since kindergarten children are generally afraid of unfamiliar people and things, especially children in primary class who are exposed to the

activity for the first time. Before the activity, the psychological construction by kindergarten teachers is important, not only to prepare children psychologically in advance, but also to promote the activity. The psychological construction mainly concluded in the following.

① Explain that pediatric dentists are good friends of children and they come to the kindergarten to help children defeat tooth decay bugs, so children should not be afraid of them.

② Explain the procedure of the activity. The dentists first check the teeth with a small mirror and then give children a taste of strawberry-flavored or orange-flavored cream, all of which are painless.

(4) Preparation for half an hour before the activity

Due to the tendency of vomiting, as well as the inevitable throat irritation from fluoride foam and trays, the kindergarten teachers try not to arrange physical education classes or meals for half an hour before the planned time point of the activity. In addition, teachers apply psychological construction of the children again.

2. The work in the activity

(1) Division of labor and order maintenance at the activity site

Each class is equipped with three kindergarten teachers, one to guide children to receive examination, one to guide children to receive fluoride foam, and one to guide children to sit on small stools in order. Three teachers help each other and assist other teachers after finishing their own work.

① Guiding to receive the oral examination: under the instruction of the pediatric dentists, teacher 1# guides children to lie on a wooden table with their mouths open continuously and self-restrain the movement of their heads and limbs.

② Guiding to receive fluoride foam: under the instruction of the pediatric dentists, teacher 2# guides children to come up to the dentists, open the

mouth widely and bite the fluoride foam tray, and collect the saliva flowing out of the mouth with a cup placed to the chin.

③ Guiding to sit and wait: teacher 3# guides children to sit and wait on a small chair at the children area in order, during which the children are encouraged to bite the fluoride foam tray continuously, and lead some children to receive the fluoride foam again if the trays fall off.

(2) Helping pediatric dentists communication and reassurance with fearful children

For children, the kindergarten teachers are the most familiar person in the kindergarten and the only persons who they want to rely on. If children become fearful during the activity, the teacher can take the initiative to comfort and explain, using the above methods to reassure them.

3. The work after the activity

(1) Highlight the points for attention to the children

In order to ensure the anti-carries effect of fluoride foam, kindergarten teachers remind children not to rinse their mouth, eat or drink within half an hour after the activity from time to time.

(2) Interview children's opinions and report to kindergarten doctors

After the activity, the kindergarten teachers interview the children in order to know the children's opinions and suggestions about the activity. Especially, to interview children who are afraid. By doing so, the children's fear of the activity can be gradually dispelled, and the pediatric dentists can make continuous improvements in the following activity.

(3) Remind parents to make an appointment with the pediatric dentists

The purpose of the activity is to provide early detection of oral diseases for kindergarten children in the most low-spending and convenient way. About

one week after the activity, the kindergarten doctors will distribute the feedback forms from the pediatric dentists to the teachers of each class, and the teachers send the feedback forms to the parents through the children. The feedback forms might record the children's illness in caries, malformed teeth, traumatic teeth, malocclusion, first molars needed pit and fissure sealing, mucous, etc. At the mean time, the teachers remind the parents to make an appointment with the pediatric dentists for the relevant treatment. After the treatment, the teachers collect the certificate to ensure that the children have received the appropriate treatment.

Conclusion

This mini review summarized the dental care from pediatric dentists in kindergarten in Shenzhen with experiences, which would give some inspiration to medical workers and staffs working in kindergartens. Finally, we could do better to improve children's dental health.

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