

An assessment of a new reminder therapy technique for ceasing digit sucking habits in children

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Twenty-one digit-sucker children aged 4-12 old years participated in the assessment of a new reminder therapy technique called "long sleeve sleeping gown". The result of this study indicated that fifteen children (71.4%) out of 21 were able to stop digit-sucking habits after the application of long sleeve's gown during child's bedtime for 6 weeks. The children who failed to cease this digit-sucking habit (28.6%) were found to not accept to complete the trial period or their mothers thought that they were too young to stop the habit. Among the success group no child was reported to return to digit-sucking 3 months after implementation of long sleeves gown.

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INTRODUCTION

Digit sucking is a common childhood behavior, which has an adaptive value for children up to the fourth year of life.¹ Chronic practice may lead to dental and skeletal problems including open bites, cross bites or constricted maxillary arches, increased overjet and the probability of developing class II malocclusions.² Accidental ingestion of harmful substances³ and digital malformation⁴ have also been associated with digit-sucking habit.

In addition to the risks associated with this habit, many parents express a high degree of concern about when and how such habit ought to be discontinued.⁵ Other parents have been advised by physicians to ignore the habit.⁶ Some parents, however, are unable or unwilling to ignore the digit sucking habit and lacking positive attitude and specific treatment advice, may resort to methods such as threats, nagging, punishments, which worsen rather than improve the habit.^{1,7} Furthermore, in cases where digit sucking habit is clearly leading to other problems, parents should be

informed about the treatment alternatives.⁸

Several clinical techniques have been devised, implemented and reported in the literature on the stopping of digit sucking habit.¹¹⁻¹⁴ The most common treatments concentrate on the "reminder therapy" technique. Two methods that belong to the reminder therapy technique were previously suggested and applied. These are the response prevention therapy, and the appliance therapy. The former involves the application of bitter taste solution, thumb guard, mitten, wearing socks, boxing gloves, thumb splint, adhesive tape and others.⁹⁻¹¹ The appliance therapy method involves the use of orthodontic appliance either fixed or removable of various designs to make the digit sucking habit unpleasant and difficult to be practiced.¹²⁻¹⁴

It has also been reported that children tend to practice digit sucking habit more often during rest and sleeping times,¹⁵ while the digit sucking is less often practiced as children become active during playtime and when they start school.¹⁶

However, a review of the above-mentioned methods revealed that the majority of the methods were either difficult to implement in children, or could easily be removed by the child allowing him to resume the habit. Recently, Al-Emran (2000)¹⁷ introduced a reminder therapy-type technique called "long sleeve sleeping gown" for ceasing digit sucking habit in children. He claimed that this new method overcomes many of disadvantages that arise from other techniques. However, this method has not yet been evaluated on a test group of children to assess its effectiveness on ceasing the digit sucking habit. The aim of this study was to determine the effectiveness of the long sleeve sleeping gown technique on ceasing digit sucking habit in a group of children.

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MATERIAL AND METHODS

Twenty one digit sucker children of both sexes aged between 4 and 12-years were involved in this study (Table 1). Information regarding digit-sucking activity and timing of habit practice in the present sample was obtained through an interview with each child’s mother at the initial clinical visit. At the same visit the adverse effect of digit-sucking habit on dental occlusion and facial esthetic was thoroughly explained by the author to the child and the mother.

All children were self-motivated and encouraged to stop the habit by themselves, before applying the present technique. One week interval was allowed to evaluate self-motivation as the sole agent to cease digit sucking habit in children and this week was called initial visit (iv.) After a week, a long sleeve sleeping gowns were introduced to the children’s mothers for their children to wear (Fig. 1). The gown was fabricated from soft cotton decorated fabric that was appealing to children. The children were instructed to wear the gown at night before they went to bed. The long sleeves were unbuttoned from the wrist of the child to cover the fingers and extended by an arm length material.

Each mother was requested to observe the child one hour after sleep and one hour before their bed time was over, and record whether the child was still keeping the gown during sleep, whether the child indicated sleeping disturbances and/or the child managed to practice the habit while wearing the gowns. The mothers were

Table 1: Age and gender of the study groups.

		Sample No. 21 (%)
Age groups		
	4 - 6 years	7 (33.3)
	7 - 9 years	8 (38.1)
	10 -12 years	6 (28.6)
Sex		
	Male	7 (33.3)
	Female	14 (66.6)

instructed to button the end of the sleeves if their children were able to reach their digits and practice the habit during sleep. The gown was used for 6 consecutive weeks during which the children were regularly followed-up by the investigators. The first follow up visit was one week after receiving the gown (v1), while the second follow up visit was 2 weeks after receiving the gown (v2). The third follow up visit was 4 weeks (v3) and the fourth follow up visit was 6 weeks after receiving the gown (v4).

After 6 weeks, children were observed for another 6 weeks without wearing the gowns to evaluate the effect of this technique and to record any relapsing cases.

The relationship between the effect of applying the gown on the cessation of digit-sucking habit and the child’s age, sex, time of habit practice, and existence of other habits or objects related to an emotional attachment were also observed.

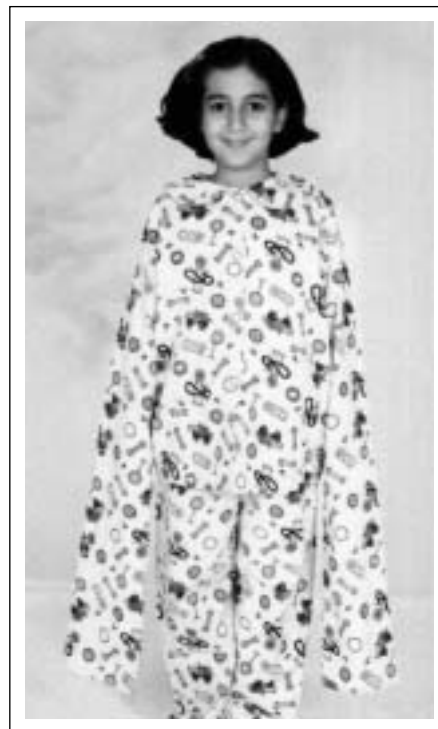


Figure 1: Long Sleeve sleeping gown.

RESULTS

Success Rate

The application of long sleeve sleeping gown revealed a success rate of 71.4% in the present sample. 68.8% of the children who were practicing digit-sucking habit during day and night time, and 80% of those who were only night digit-suckers were able to stop the habit. The children who failed to cease their digit-sucking habit (28.6%) were unable to complete the trial period or their mothers thought that they were too young to stop the habit. Among the success group no child was reported to return to digit sucking 3 months after implementation of long sleeve gown.

Changes in digit-sucking habit behavior

At the start of this trial all children (100%) were practicing digit-sucking habit during sleep as this was reported by their mothers at the initial clinical visit. One week after the initial visit (iv) at which self-motivation was applied on children to stop the habit without interference the percentage of sucking-habit among children showed a slight decrease to 95%. When the gown was implemented, the percentage of children with the habit markedly decreased to reach 31% after one week follow up period (v1). This was followed by slight increase of 34% at the 2nd visit (v2), followed by a decline to 28% at the end of follow-up trial period (v4).

The frequency of sucking-habit during daytime showed a significant decrease from a mean of 4.25 times per day at baseline for the present sample to 1.66 times per day time after the initial visit (iv) and to 1.15 per day time following the first follow-up visit (v1) of intervention. This frequency showed slight increase to 1.6 per day time at the third follow up visit (v3) then start to decline to reach 1.49 time/day at the last visit (v4) of the follow-up trial period.

The results of monitoring the children during the 6 weeks trial period for whether they were wearing the gown, had disturbance during sleep and/or they were able to practice digit sucking while wearing the gown are summarized in Table 2. Although the results of these three variables indicated slightly higher reading during the initial phase of the trial, there was a decline at the final phase.

Table 2: Observation of the three variables used to measure treatment success in all children as recorded during each follow up visit.

Visit No	% of wearing the gown	% of sleeping disturbance	% of digit sucking (night)
Visit 1	78.6	4.1	31
Visit 2	83	1.2	34
Visit 3	64	0.85	33
Visit 4	57	0	28

Relationship between the success rate and other related variables

It was found that as the child's age increased the long sleeve gown technique became more effective and the success rate increased (Table 3). Whereas, when the child's sex was considered it was noticed that 85.7% of male children stopped the habit compared to 64.3% of female children.

The relationship between the presence of other habit or object attachment associated with digit sucking habit and the success of applying the present technique revealed that 76.9% of children without other habit or object attachment stopped digit sucking compared to 62.5% of children with.

Table 3: Relationship between the age group and success rate (cessation of digit sucking).

Age Groups	No	Success No (%)
4-6	7	4 (57.1)
7-9	8	5 (62.5)
10-12	6	6 (100)

DISCUSSION

The harmful effects of digit-sucking habit on occlusion and facial esthetic were explained to mothers and children at the initial clinical visit using clinical pictures, and orthodontic study models of patients who had digit-sucking habit. Many studies advised the use of motivation and habit awareness as a key to successful elimination of the habit in children.^{13,18}

The intention of "long sleeve sleeping gown" technique was to prevent digit-sucking at night and to evaluate the effect on habit activity during day time. All children understood in a simple language that this sleeve would make it difficult for the digit to reach their mouth during sleep, so with time there would be no more digit in their mouth. This way of introducing the use of gown made of soft cotton colored decorated fabric which was appealing to children added to the acceptance of this technique. Mothers were requested to check for any digit sucking activity twice during child's sleep. The time interval for 1st and 2nd follow up visits was 7 days each. This was important to reinforce the children to continue wearing the gown. Instructions were given to mothers to close the sleeves end if the child accepted the gown but managed to reach their digit and practice sucking during sleep. Fifteen children (71.4%) were able to stop digit sucking habit at the end of follow up period of this study. Children who did not continue wearing the gown during the trial period were not excluded but were considered failure cases. Another study did not include children who did not complete the follow up period.¹⁹

The long sleeve sleeping gown proved to have a number of advantages over the other methods as a

reminder therapy technique for habit cessation. Adair (1999)¹¹ advocated the use of an elastic bandage wrapped across the elbow at night. As pressure was exerted by the bandage it removed the digit from the mouth and with time the child got tired and slept. Although bandaging the elbow seems harmless, there have been reports of undesirable effects, such as sleep disturbance and nightmares.²⁰ Other methods like using the tape or plaster on the digit might cause the digit to sweat and be more prone to infections. The use of gloves wrapped around the wrist poses the risk of a decrease blood flow or can be removed easily by the child during sleep.²¹ Bitter gels have also been used but with a limited result¹⁰ and creating the possibility of eye irritation especially in young children.²⁰ Habit breaking appliances also have a number of disadvantages such as speech and eating difficulties¹² and presents risks of poorer oral hygiene, decalcification of enamel surfaces and soft tissue damage.²² Levin (1958)⁹ described a method of altering the child's pajamas sleeve so that the child could not move his/her hand and the habit was rendered impossible. This method was not recommended by some since this tended to increase the child's frustration and wakefulness.²³

The present technique did not prevent the free hand movement, however, it made it difficult for the child to reach his / her hand out of the long sleeve . In addition, it overcame all previously mentioned shortcoming of other methods. However, child willingness and motivation to wear the gown and the mother's cooperation were essential factors for treatment success. In this study, child self-motivation as the sole agent to cease the habit had little effect on ceasing digit sucking habit.

Following the implementation of the present technique, the frequency of digit sucking habit during the daytime continued to decrease between follow up visits. This led to the conclusion that controlling digit sucking habit during nighttime had great effect in many cases in eliminating the habit during daytime. Since children tend to practice the habit more at night and for longer intervals and it was difficult for parents to instruct their children during night time stop the habit. It seems reasonable to assume that when the present technique was able to control the habit during its maximum activity, most of the children were able to overcome the remaining part of the digit sucking habit during the day by themselves, with some reinforcement by their parents.

Regarding the difference in success rate between age groups, we found a 100% success rate in the 10-12 year age group. This might be due to increased level of understanding and the strong desire in older children to stop the habit.

The relationship between success rate and child's sex, revealed that the male children recorded slightly higher rate of success than female children This might

be due to the fact that females were often more emotionally affected than male, and they often reported an increased prevalence of digit sucking habit than male.²⁴

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