

What's Better for Children; an Electric or Manual Toothbrush?

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Abstract

Is an electric toothbrush better than a regular toothbrush for children? Who should use an electric toothbrush? These are some of the questions that parents are confused about. Unfortunately, scientific research has not found a definite answer to these questions. Many scientific studies have been conducted to investigate the effectiveness of hand or electric toothbrushes in reducing gum disease and removing plaque. A review of some studies has revealed that, in general, there is no significant difference between hand-held and electric toothbrushes in the ability to plaque removal and gum disease prevention. However, evidence showed that certain types of electric or rechargeable toothbrushes called rotary-oscillating toothbrushes were better and more effective than hand-held toothbrushes but if the correct brushing method is followed.

Introduction

Oral hygiene should become an important part of everyone's daily routine. Without proper cleaning of teeth, at least twice a day, and without the annual dental visit, the teeth would face problems such as plaque and calculus formation, dental caries, loss of tooth enamel, gum disease, and other problems. If it is left untreated it may lead to irreparable damage. Periodontal disease caused by a lack of attention to oral hygiene can lead to loosening of the teeth, and eventually loss of them by causing infection and inflammation of the gums. While regular brushing and keeping good oral hygiene would prevent these problems, using an electric toothbrush could offer more benefits for achieving an optimal level of dental health. It seems parents may be unaware of the time and frequency of tooth brushing. A survey conducted exclusively by the Online Research Unit for The Royal Children's Hospital in Melbourne reveals that the majority of parents (81%) reported being confident about how to care for their child's teeth properly, although many were confused about the time and frequency of tooth brushing [1]. Experts believe in addition to the brushing technique, the number of brushing times, the duration of brushing, and the type of toothbrush that could directly affect the removal of dental plaque [2-6]. To be able to choose the best type of toothbrush, one should be familiar with the types of toothbrushes available and find out enough about the benefits of each one. This article introduces the benefits of choosing an electric toothbrush, as well as some of its types. There is another subtlety to note; although the electric toothbrush has no special

advantages over the hand toothbrush, the point of using it is the enthusiasm that everyone (especially the child) has for that. It is human nature that every new change in life improves his behavior, and an electric toothbrush is no exception. Anything that raises the child's interest or promotes his enthusiasm for brushing his teeth will be a brilliant idea. Parents should not be stunned when their children are eager to brush with a colorful and singing electric toothbrush without any fussing and complaint [7]. The advantages and disadvantages of both toothbrushes have been compared to help patients to make better decisions.

History

The earliest electric toothbrushes were first introduced by Tomlinson Moseley in 1937 [8]. In 1954, one company invented a new type of electric toothbrush in Switzerland [9]. Electric toothbrushes were initially improved for patients with limited motor skills and orthodontic patients (such as those with braces) [10].

In the early 1960s, the General Electric automatic toothbrush was introduced [11] that was cordless with rechargeable NiCad batteries and although portable [12]. The first ultrasonic toothbrush was manufactured in the U.S. in 1992, the same year the FDA gave its approval for daily home use. Initially, this kind of toothbrush worked only on ultrasound, but a few years later, a motor was added to give the new brush additional sonic vibration.

Today, several ultrasonic toothbrushes simultaneously provide both ultrasound and sonic vibration [13]. Nowadays, the use of electric toothbrushes has become more accepted among people, and it has become especially popular among children.

Types of Electric Toothbrushes

Toothbrushes have not been changed much since the 1930s. The first electric toothbrushes came on the market in the 1960s [10] at a higher price than hand-held toothbrushes. Electric toothbrushes have more cleaning power than regular toothbrushes. Among the types of electric toothbrushes, we can mention sonic toothbrushes and ultrasonic toothbrushes. Here are some of the differences between these two types of toothbrushes. There is

also information on hand toothbrushes to compare the benefits of electric toothbrushes with regular toothbrushes. Electric toothbrushes are available in different colors and shapes. High-tech sonic toothbrushes have interchangeable heads in different shapes and sizes that are designed for sensitive teeth, and even for special purposes such as teeth whitening and gum massage. Some types of sonic toothbrushes have a pressure sensor to warn the user if excessive pressure is applied. Other features of this high-tech toothbrush include a digital warning to change the brush when it wears out. Many electric toothbrushes have a timer, so the user can be sure of their brushing time according to the recommended time (two minutes) or track and improve the brushing time of each part of the teeth. Many have a toothbrush case and travel charger (Table 1).

Table 1

| Type | Rotation/ Movement per minute | Description |
|---------------------------|-------------------------------|---|
| Hand toothbrush | 300 to 600 | This type of toothbrush works manually and does not require a battery. Hand-held toothbrushes are inexpensive and should be replaced almost every three months. |
| Sonic electric toothbrush | 24,000–48,000 | In standard electric toothbrushes, the toothbrush would remove all kinds of food debris, and stains from the teeth by rotating and vibrating. These types of electric toothbrushes work with batteries and after a few weeks, their batteries should be replaced or recharged. Brushes for this type of toothbrush should be replaced every three months or when it is worn. |
| Ultrasonic toothbrush | 2,400,000 | This type of toothbrush moves faster than regular electric toothbrushes, and its brush vibrates instead of rotating, creating a variety of movements (3D movements) to remove plaque, stains, and food particles. Furthermore, it massages the gums and generally increases oral hygiene. The brush of this type of toothbrush should be changed every two to three months. These types of toothbrushes work with electricity (are chargeable). It has a timer, pressure sensor, travel charger, digital brush replacement warning, and a variety of brushes with special features. |

Electric Toothbrush vs. Manual Toothbrush – Pros and Cons

Good oral health habits should start at an early age [16]. Dentists recommend that the child should start brushing teeth as soon as the first one erupts. If parents are considering an electric toothbrush, they should wait until the child is at least three years old. It is not recommended to use an electric toothbrush for children younger than the age of three [17]. However, both types of toothbrushes could effectively work for keeping teeth clean from removing plaque [18,19] as long as they are used properly. An electric toothbrush with fantasy features could motivate young kids to keep their teeth healthy all life.

Manual toothbrushes

Pros [20,21]

- a) Inexpensive, depending on the design and the manufacturer
- b) Wooden toothbrushes are environmentally friendly
- c) Usually, have an easy-grip handle
- d) Easy to pack when traveling
- e) Tongue cleaning
- f) Availability

- g) More flexibility
- h) More variety

Cons [20,21]

- a) No built-in timer
- b) Difficult to reach and clean the back area of teeth
- c) Takes a lot more effort to clean the teeth
- d) Difficult to apply the exact amount of pressure to teeth and gums
- e) Inconvenient for some people to hold in hands, especially for people with weakening manual dexterity like arthritis or handicapped

Electric Toothbrush

Pros [20,21]

- a) Optional features such as a timer, LCD screen, pressure sensor, ultrasound indicator, Bluetooth, and cleaning modes
- b) Some models have a built-in timer that let us know the duration of brushing
- c) Having pressure sensors to prevent from over-brushing on the teeth and gums, so, less force required

- d) Availability of different size brush heads and other features
- e) Having larger ergonomic handles make them easier to use for people with pain in their hands and arms.
- f) Increasing brushing speed
- g) Improvement of the result of brushing
- h) Making tooth brushing fun for kids
- i) Facilitating the brushing
- j) Removing extrinsic stains and colors on the teeth surfaces

Cons [20,21]

- a) Quite expensive, depending on features, facilities, and brands
- b) Requiring regular charging or battery replacement
- c) Durability; can be damaged by falling down

Who Should Use an Electric Toothbrush?

Children over 3 years old

Electric toothbrushes are always very attractive for children, and they look at the toothbrushes as special toys. Besides, electric toothbrushes have small heads that allow easy access to different areas of children's mouths. Some electric toothbrushes have features designed to make them even more appealing, such as lights, music, and sound effects. These features not only encouraging the child to brush but can also help them brush for the recommended amount of time. Some believe that buying an electric toothbrush could persuade Child's Enthusiasm. In other words, children may be particularly excited about using an electric toothbrush, either because of its novelty or because they have seen their parents using it. This can make it easier to get them into a routine of brushing twice a day.

Those who brush hard

For those who are in the habit of brushing hard, it is a warning that damages the gums and teeth and causes the gums to recede. The electric toothbrush makes it easier for them to be gentle with the gums and teeth.

The elderly with limited muscle ability

Older people can benefit from buying an electric toothbrush. In old age, due to reduced ability of muscles and joints, or certain diseases such as Parkinson's, it is difficult to control precise tasks such as brushing for these people. An electric toothbrush can help seniors maintain good dental hygiene without much effort and spending too much time.

Physically or mentally disabled, especially children

Children with physical or mental problems are also among the people for whom giving an electric toothbrush as a gift can be very helpful. These children usually cannot brush properly, and this is

done by their parents or educators. Therefore, the person who takes care of these children could brush the disabled child's teeth more easily and effectively.

Adolescents undergoing orthodontic treatment

For adolescents who have orthodontic treatments, it is more likely food residue would be trapped between their teeth and brackets. Hence, if the teeth have not been brushed properly, orthodontics itself could cause tooth caries around the brackets. The electric toothbrushes, especially the ultrasonic ones, could clean the area around the brackets in a short time and could prevent tooth decay. But before buying it, consultation with the dentist about buying the right type and the right way to use has been recommended.

Patients on supportive periodontal therapy

Yukna et al. evaluated the effectiveness of ultrasonic toothbrushes in patients during the phase of periodontal treatment. The results showed this type of electric toothbrush may be a useful device in maintaining plaque reduction. Furthermore, may improve the gingival conditions in patients during supportive periodontal therapy [22].

Conclusion

The first step to achieving the goal and ensuring the cleanliness of children's teeth is to choose the right toothbrush. Using dentist-approved toothpaste, flossing, and brushing with a high-quality electric toothbrush, at least twice a day, and parents would be able to clean children's teeth much cleaner than a regular toothbrush which resulting in healthy gums and clean teeth. The important point is that the brushing method is a more important factor than the type of toothbrush. Studies have shown that brushing with a regular toothbrush if the manual method is complete and correct, will have the same result as electric toothbrushes. Therefore, if it is felt that the manual method is incomplete, using an electric toothbrush can be useful. Electric toothbrushes are effective in removing plaque and reducing gingivitis. They are as safe as manual toothbrushes and have good adaptability. Both types of toothbrushes are available in a wide range of colorful and attractive designs to fascinate kids of all ages which of course, includes those with their favorite characters. When young children find their favorite toothbrushes, good and proper oral hygiene habits would be developed in their life.

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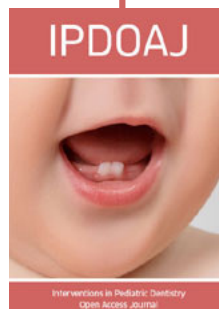
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