



TOOTHBRUSH CONTAMINATION: A HEALTH HAZARD

Dental Science

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ABSTRACT

Oral hygiene is the practice of keeping the mouth and teeth clean to prevent dental problems like, dental caries, gingivitis, periodontitis and bad breath. Tooth brushing is the most effective and commonly used method. Along with the brushing methods, disinfection of toothbrush is also equally important for maintenance of health of oral tissues. There is complete lack of awareness among public regarding tooth brush maintenance. So, it is of utmost importance to educate the public about proper storage, replacement and disinfection of tooth brushes. Hence, the purpose of this review is to explore about tooth brush contamination, its possible role in disease transmission and methods that can prevent tooth brush contamination.

KEYWORDS:

Oral hygiene, Toothbrush contamination, Microorganisms.

Introduction

Oral health is an integral part of general health. It directly and indirectly reflects the overall well-being of an individual, thus maintaining oral hygiene becomes a crucial factor. 1 oral hygiene was in practice as early as 3000 B.C. by the Sumerians. Brushing teeth is the primary mode of oral hygiene practice. Today, toothbrushes are in all kinds of designs and forms to provide better comfort while brushing teeth. 2 Unfortunately, proper care of toothbrush is often neglected this may play a significant role in disease transmission and increase the risk of infection since they can serve as a reservoir for microorganisms. The reason attributed to this would be lack of awareness among the public regarding toothbrush maintenance. So, it is of utmost importance to educate people about proper storage, replacement and disinfection of tooth brushes. Considering this aspect, the purpose of this review is to explore about tooth brush contamination, its possible role in disease transmission and methods that can prevent tooth brush contamination.

Materials and Methods

TOOTHBRUSH CONTAMINATION AND ITS EFFECT ON THE ORAL CAVITY: The oral cavity is home to hundreds of different types of microorganisms; therefore it is not surprising that some of these microorganisms are transferred to a toothbrush during use. 3 It may also be possible for microorganisms that are present in the environment where the toothbrush is stored to establish them on the brush. The toothbrush is not naturally favorable towards the growth of microbes, but can sustain bacterial life once they are transferred onto the toothbrush. As early as 1920, Cobb reported the toothbrush as a cause of repeated infections in mouth. Different modes of transfer are responsible for the bacteria on the toothbrush such as contact with the mouth, cross contamination, and the bacteria in the toilet community. 4 Organisms that can survive for a certain amount of time are diverse, ranging from fungus to bacteria to viruses. The contamination mostly increases when toothbrushes are shared or stored together. Re-infection of the oral cavity is possible owing to injuries of the gingiva that can occur during tooth brushing. Brushing with a contaminated brush introduces new microorganisms while simultaneously reducing the existing normal flora. The area of tooth brush in which the tufts are anchored is especially prone to heavy contamination. Fluids and food debris can be drawn into the spaces between tufts by capillary action; this may lead to bacterial growth. 5 **TOOTHBRUSH CONTAMINATION AND SYSTEMIC HEALTH:** Contaminated toothbrushes may play an important role in many oral and systemic

diseases including septicemia and gastrointestinal, cardiovascular, respiratory and renal problems. Some studies have suggested the need for disinfecting toothbrushes to prevent various diseases using different methods. This condition is specifically important for children, the elderly and high risk patients, including immune suppressed individuals or those undergoing organ transplantation or chemotherapy. 6 **PROBABLE REASONS FOR TOOTHBRUSH CONTAMINATION:** 1. Storage and environment: Toothbrushes can become contaminated through contact with the environment, and bacterial survival is affected by toothbrush storage containers. Dayoub et al. found that toothbrushes placed in closed containers and exposure to contaminated surfaces yielded higher bacterial counts than those left open to air. 7 Mehta et al. found that the use of a cap for toothbrush storage increased bacterial survival. 3 Glass found that increased humidity in the environment increased bacterial survival on toothbrushes. 2. Design : Different toothbrush design elements were examined by some of the studies. Bunetel et al. found that bacteria become trapped inside the bristles of the toothbrush and bacterial survival is dependent on the bacteria and toothbrush design. 8 In addition, the researchers found that solid handles had less bacteria retention and that as surface area increased, so did the microbial load.

Results

Millions of microorganisms thrive on infected tooth brush, being the root cause for many diseases which might have got undiscovered. Hence it is mandatory to educate about proper storage, replacement and disinfection of toothbrushes.

Discussion

PRACTICES TO BE FOLLOWED FOR THE PREVENTION OF TOOTHBRUSH CONTAMINATION:

1. Toothbrush should not be shared
2. Toothbrush should not be stored in a closed container or routinely covered, as a damp environment is conducive to growth of the microorganisms. Also, storing toothbrushes in an upright position and allowing them to dry until the next use is recommended.
3. The toothbrush should be replaced once after every 3-4 months or sooner if the bristles appear worn or damaged.
4. Several methods are available to preserve toothbrushes like usage of anti-microbial solutions, natural air drying and toothbrush sanitizer. Some of the commercially available antimicrobial solutions are 0.2% Chlorhexidine, 2% Triclosan, 1% Sodium

hypochlorite, 3% Hydrogen peroxide, Dettolin, etc.

Conclusion

In spite of millions of tooth brushes sold throughout the world each year, there is very little public awareness that tooth brush can be contaminated with use. Millions of microorganisms thrive on infected tooth brush, being the root cause for many diseases which might have got undiscovered. Hence it is mandatory to educate about proper storage, replacement and disinfection of toothbrushes.

Footnotes

Source of Support: Nil.

Conflict of Interest: None declared

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