

Traditional belief in “tooth worms” could be useful for health education, suggests team led by HKU Faculty of Dentistry

In some cultures, people still believe that “tooth worms” make holes in teeth, rather than acids that plaque bacteria produce from sugars. However, this belief may actually have benefits that could be indirectly exploited in public health education, according to a team led by an HKU Faculty of Dentistry researcher.

In their cross-sectional study published in the peer-reviewed journal *Community Dental Health*, [Dr Xiao-li Gao](#) (Research Assistant Professor in Dental Public Health) and her co-workers at the National University of Singapore found that preschool children whose parents believed in “tooth worms” had a reduced likelihood of extensive tooth decay. In addition, these children were more likely than others to brush their teeth at least twice a day, indicating that parental belief in “tooth worms” may be linked to establishing good toothbrushing habits at a young age.

The researchers examined the teeth, oral hygiene, and levels of two types of bacteria (mutans streptococci and lactobacilli) in the saliva of 1782 children aged 3 to 6 years attending 13 randomly selected kindergartens in Singapore. They also gave questionnaires to parents, of whom 1716 answered a question on the main cause of tooth decay. Sixty-five (3.8%) of these parents chose the option “tooth worms”.

Of the 1716 children, about two-fifths (39.8%) showed any signs of tooth decay—that is, one or more of their teeth were decayed, missing, or filled. About one-fifth (22.5%) of the children had a “high” decay rate—that is, three or more teeth were decayed, missing, or filled.

When the children were grouped according to whether parents did or did not believe in “tooth worms”, the proportions showing any signs of decay were similar (38.5% and 39.9%, respectively). However, a significantly smaller proportion of children whose parents held the belief showed a high decay rate: only 12.3% had three or more affected teeth, compared with 22.9% of the other children.

Statistical tests that excluded effects of possible contributing factors (child’s age and ethnicity, parent’s education, and housing type) showed that the belief about “tooth worms” was associated with a 60% reduction in the odds of having a high decay rate (odds ratio, 0.41).

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In addition, toothbrushing frequency was significantly different between the two groups: children whose parents believed in “tooth worms” were more likely than the others to brush their teeth twice a day or more (80.0% versus 68.1%), and less likely than the others to brush only once a day or not at all (20.0% versus 31.9%).

On the other hand, oral hygiene status (amount of dental plaque), levels of two mouth bacteria, diet, infant feeding routine, parental monitoring and guidance of toothbrushing, and brushing duration were all similar, regardless of parental belief in “tooth worms”. From these findings, the researchers conclude that the difference in tooth decay rates between the two groups is related to fluoride use rather than physical effects of brushing.

Noting that future long-term studies of larger groups are needed, the researchers suggest that children whose parents believe in “tooth worms” have a reduced risk of extensive tooth decay because they are frequently encouraged and motivated to use fluoride toothpaste to remove the imaginary creatures.

The team acknowledges that the incorrect “tooth worm” idea should not be spread, but proposes that the concept could be transferred indirectly to materials in public health campaigns aimed at preventing tooth decay. One example is to represent harmful bacteria in dental plaque as living creatures in pictures and cartoons, especially within cultures in which the “tooth worm” belief still persists.

“The ‘tooth worm’ belief is part of the culture of many populations in and beyond the Asia-Pacific region,” says team leader Dr Gao. “Our research findings will help dental professionals better understand the oral health behaviours of the public and design effective health education programmes in the future.”

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Source: Gao XL, Hsu CY, Xu YC, Loh T, Koh D, Hwang HB. Promoting positive health behaviours: “tooth worm” phenomenon and its implications. Community Dent Health 2012;29:55-61.

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