



Original Article

The Influence of Excessive Chewing Gum Use on Headache Frequency and Severity Among Adolescents

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ABSTRACT

BACKGROUND: Excessive gum-chewing is underreported as a headache precipitant in children and adolescents. We evaluated the influence of daily excessive gum-chewing in older children and teenagers with chronic headache, emphasizing the impact of habit discontinuation and its reintroduction. **METHODS:** Patients with chronic headache and excessive gum-chewing were consecutively recruited and asked to fill questionnaire pertaining headache characteristics, potential triggers, family history of headaches, and gum-chewing habits. These individuals were classified into four groups depending on the number of daily hours of gum-chewing. All children discontinued chewing for 1 month, reintroduced the habit, and were reinterviewed after 2 to 4 weeks. **RESULTS:** Thirty patients (25 girls) were recruited. Median age was 16 years. Most had migraine-like headaches. Following gum-chewing discontinuation, 26 reported significant improvement, including headache resolution in 19. All 20 patients reintroducing the habit reported symptom relapse within days. Duration of headache before discontinuation and the number of daily hours of chewing had no influence on the response to habit discontinuation. **CONCLUSION:** Excessive daily gum-chewing may be associated with chronic headache and should get more attention in the medical literature. Physician and patient awareness of this association could have a meaningful impact on the quality of life of children and adolescents with chronic headache who chew gum excessively.

Keywords: chewing gum, headache, trigger, children, adolescents, temporomandibular joint

Pediatr Neurol 2014; 50: 69–72

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Introduction

Chronic or recurrent headache is common in children. Its prevalence before the age of 12 years is about 2.5% for both sexes, rising thereafter to up to 10%, with female preponderance.¹ However, up to 40% of school-age children complain of sporadic headaches, and about 75% will have experienced a significant headache by 15 years of age.² Recently, a survey among 60 high-school students revealed that 84% had recurrent headache and that females were most affected.³

Migraine and tension type headache are the most common type of headache in childhood and adolescence.^{3,4} Many triggers that precipitate headache attacks have been recognized, affecting individual patients differently. Most reports refer to migraine headaches rather than to tension type headaches.⁵ The most common precipitating factors in children and teenagers with migraine are: stress, tiredness, lack of sleep, high environmental temperature, video games, noise, sunlight, smoking, missing meals, and menstruation.^{3,6,7}

Clinical experience of the corresponding author (N.W.) suggested that daily, excessive chewing gum use, particularly among adolescents, may represent an important yet underrecognized trigger for headache. Very little has been reported in the literature on gum-chewing as a potential trigger: one report pertains a single case attributed to excessive gum-chewing,⁸ whereas another study described three adults whose headaches were considered to be

Article History:

Received May 27, 2013; Accepted in final form August 15, 2013

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associated with the sweetener aspartame present in the gum.⁹

The aim of this study was to assess the impact of excessive gum-chewing on headache occurrence among children and adolescents, especially the effect of discontinuing the habit on the prevalence of the symptom.

Methods

This study was approved by Meir Medical Center's Internal Review Board. Patients referred for neurological evaluation between September 2010 and July 2011 complaining of recurrent/chronic headache were consecutively recruited from Meir Medical Center's headache clinic and from community clinics where the authors served as consultants (N.W., M.H., M.M.). On routine interview, all referred children were asked about chewing gum habits and patients with a positive history were given a questionnaire on the habit. Patients/caregivers reporting excessive daily gum-chewing were asked to fill a questionnaire on their habit and the characteristics of their headache.

Besides demographic data, the questionnaire included information on previous medical and neurological history, baseline headache characteristics, family history of headaches, previous diagnostic workup, and potential (known) triggers. Regarding gum-chewing, the children were divided into four groups, based on the Gavish et al. study on the influence of oral habits on temporomandibular disorders in teenagers.¹⁰ This study suggested that regarding daily gum chewing the daily duration of the habit was significant, with more temporomandibular symptoms and findings detected in teenagers with more than 3 hours of gum-chewing a day. By classifying our patients into four subgroups according to gum-chewing duration, we attempted to determine whether a minimum habit duration was necessary to provoke the headaches.

- Group 1: Up to 1 hour of gum-chewing a day.
- Group 2: 1-3 hours of gum-chewing/day.
- Group 3: 3-6 hours of gum-chewing/day.
- Group 4: More than 6 hours/day.

After filling the questionnaire, patients were asked to stop gum-chewing for 1 month. No other therapeutic intervention for their headaches was offered at this time. At the end of the month, children and their parents were interviewed personally or by phone by the second author (M.M.). At this stage, patients were asked to renew their gum-chewing habit exactly as it was before discontinuation. A second interview was carried 2-4 weeks later.

Headaches were classified according to the 2004 classification established by the International Headache Society.¹¹

Patients were asked to evaluate the impact of discontinuing gum-chewing on their headache as: no change in headache frequency/intensity, partial improvement, and total disappearance of symptoms. Following reintroduction of gum-chewing, they were asked whether symptoms recurred, and, if so, the time interval in days between reintroduction of the trigger and reappearance of headache. The intensity of the recurrent headache was also compared by patients to the prediscontinuation headache.

Fisher's exact test was used to analyze the data.

Results

During the 12 months of the study, 183 children and adolescents were seen in our clinic for headache complaints. Of these, 30 children and adolescents (25 girls) who described recurrent episodes or chronic headache and reported daily gum chewing were consecutively recruited. All 30 patients agreed to participate in the study. Their ages ranged from 6 to 19 years (mean 12.8 years, median 16 years). Headache characteristics were migrainous in 60% and tension-type in 40%. Patients had been symptomatic for

4 months to 4 years. The main characteristics of the 30 children are depicted in Table.

All patients reported gum-chewing for a minimum of 1 hour per day. They were included in the four groups as follows.

- Group 1: six children; all (100%) reported partial or total improvement
- Group 2: 11 children; 10 (91%) reported partial or total improvement
- Group 3: eight children; six (75%) reported partial or total improvement
- Group 4: five children; four (80%) reported partial or total improvement

There was no significant difference among the four groups. Family history of migraine was present in 16 patients (53%). Six patients underwent either head computed tomography or brain magnetic resonance imaging. All studies were normal. All patients underwent fundoscopic examination. None of the patients exhibited optic disc edema.

Following the discontinuation of gum-chewing, 19 of the 30 patients reported complete resolution of headaches and seven described some improvement in headache frequency and intensity. No improvement occurred in four patients. The duration of symptoms (headache) before stopping gum-chewing did not play a role in the clinical response because some children who reported full or significant improvement had suffered from chronic headache for up to 6 years. An analysis of the four patients that did not improve and of the five male patients revealed no common features that would make these patients stand out from the other patients.

Twenty of the 26 patients who reported either complete or partial headache relief reintroduced gum-chewing in the same manner as before the discontinuation (ie, each patient according to the group he/she belonged). All 20 children

TABLE.
Characteristics of the 30 patients

| | |
|--|--|
| Gender | 25 girls 5 boys |
| Age | 6-19 yr Mean 12.8 Median 16 |
| Headache type | Migraine 18 (60%) Tension-type 12 (40%) |
| Family history of migraine | Present in 16 (53%) |
| Gum-chewing habits (n) | Up to 1 hr/day: 6 1-3 hr/day: 11 3-6 hr/day: 8 >6 hr/day: 5 |
| Response to gum-chewing discontinuation | Complete resolution: 19 Partial improvement: 7 No effect: 4 |
| Symptoms upon reintroduction of habit (n = 20) | Reappearance of headache: 20 |
| Associated symptoms | Temporomandibular joint-related: 10 |

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