Dental Pain Among Children and Adolescents

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ABSTRACT
Dental pain is one of the major public health problems among children and adolescents. It is mostly caused by dental caries and has negative impacts on children’s and adolescents’ quality of life (e.g., difficulty in sleeping, eating, school absenteeism) and their families (e.g., work loss, waking up at night). Several determinants have been found to association with dental pain, including socio-economic factors at the individual and city levels. There have been some instruments developed to assess dental pain among children.

Keywords: dental pain, children, adolescents.

INTRODUCTION
One of the main goals of Global Goals for Oral Health 2020 is to reduce the impact of oral and craniofacial diseases [1]. Oral diseases, such as caries, usually lead to toothache, which negatively influences quality of life [2][3]. Besides the objective clinical measurement of oral health, dental pain has also been recommended as a practical assessment of treatment needs [4]. Pain is a subjective experience that is usually measured by self-report [5]. Dental pain is common among children, with the prevalence estimated to range from 5% to 33% in different countries [6]. There have been many literatures concerning oral diseases, but article reviewing dental pain is still few. This article aimed to review some important aspects of dental pain, including determinants, impacts, and assessment tools that may be used on children and adolescents [1].

Definition
Orofacial pain refers to pain within the trigeminal system, related to pathological conditions of somatic and neurological structures. Acute pain is one of the prevalent type of oral pain, lasting for short time, such as dental pulps, pericoronitis, periodontalitis, denis sensitivity, dry socket, trauma or infection occurred on orofacial tissues. Odontogenic pain comes from teeth or adjacent structures [2].

Toothache is most often caused by dental caries that affected 60-90% of school children globally. Dental caries and chemical or thermal insult following dental treatment can cause inflammation of the pulp (pulpitis), which may be classified into reversible and irreversible [2]. Pulpitis irreversible usually causes the tooth to be sensitive to cold and sweet taste, short and sharp pain [7-8]. If infection or irritation continues, it will become irreversible [9-10]. Enhanced pulpal vasculosity leads to intra-pulpal pressure, resulting in ischemia, sensitivity, continuous pain in response to heat [3]. After pulp necrosis, the infection continues to apical, surrounding bone, periodontal membrane. This will lead to a dental abscess, characterized by spontaneous aching that lasts for hours or days and pain when biting the tooth [2].

Prevalence of dental pain
Most of the studies assessed children’s dental pain from their parents. Dental pain affected between 5% and 33% of children in different countries [4]. Lifetime prevalence was higher in older children and those from lower socio-economic status [6]. In developed countries, the lifetime prevalence was between 11.8% and 47.5% [11][12]. This prevalence was only 7.6% in England for dental pain suffered in the previous month [11]. In contrast, the occurrence of dental pain in the previous two months was around 25% among children in Sri Lanka [13]. It was also estimated that 51.5% of school children in Brazil suffered from dental pain in the previous month [14]. The prevalence in Tanzanian school students was 36.4% and 24.4% in an urban and rural areas, respectively [15].

Social determinants of dental pain
Determinants of dental pain in children include sex, caries, PUFa/pufa index (to measure the clinical impacts of caries on primary and permanent dentition), and ulceration [14]. Other study demonstrated that sociodemographic (e.g., ethnic, income, household size) and oral health status of individual play important roles [16]. It was argued that children with larger family size had less attention from parents, less assistance in maintaining proper oral health behaviour, leading to dental pain [17]. Socio-economic factors in the city level, such as lower human development index (HDI) and higher percentage of population with incomplete primary education, were also found to report more dental pain [16]. Those with poor health-related behaviours, psychosocial characteristics, public school attenders, residents of cities with high level of caries prevalence at age 12, tended to have more dental pain [18-20]. A sense of coherence was found to be a protective factor for dental pain [21].

Impacts of dental pain
Dental pain has been consistently demonstrated to have negative impacts on children’s daily performances, including difficulty in sleeping, eating, brushing teeth, concentrating in
the class, doing homework, playing, avoiding recreation activities, and school absenteeism [3,14,22]. [14][3] Dental pain experienced by children also negatively affected their families, such as disruption in physical activities (e.g., performing household activities), social activities (e.g., visiting friends and relatives), psychological activities (e.g., waking up at night, emotional stability, family relationship), and economic impacts (e.g., work loss, effect on family budget due to expenditure on pain relief). These impacts were more observed on families with lower than higher socio-economic status [23].

Acute Pediatric Dental Pain Management
The American Academy of Pediatric Dentistry (AAPD) recommends health care professionals to conduct detailed pain assessment and document the pain symptoms in the patient’s record [24]. One of the tool to measure the severity of the pain is by using the Visual Analogue Scale of Faces [25]. Healthcare professionals should also consider non-pharmacologic and pharmacologic strategies to lessen the pain. Non-pharmacologic strategies include keeping the calm environment, deep breathing, distraction, play therapy, employing the tell-show-do technique, while pharmacologic therapies include administration of anesthesia, analgesic medications, or sedation regimens [24][26][27].

Assessment Tools for Dental Pain
Preschool children and children with learning disability
The Dental Discomfort Questionnaire (DDQ) is an instrument used for recognizing behaviours of preschool children that indicate dental pain [5, 6]. The underlying concept behind its development was that toothache usually led to difficulty in sleeping, eating, negative behaviour, and the fact that children at this age were usually unable to verbalize pain, as their understanding of pain depended on their development of cognitive abilities [7]. The first version consisted of 12 items concerning pain-related behaviour that had to be completed by parents. The final version had 8 items with good psychometric properties. It was first validated in the Netherlands and later in Brazil [26][29]. There is also a DDQ version developed for children with a learning disabilities [30].

School children
The child dental pain questionnaire (child-DPQ) was a tool used for measuring self-reported dental pain and its impact on children. This questionnaire consisted of three different parts, which are prevalence, severity, and consequences of dental pain on life quality. Each part has two items, corresponding to six questions in total. The final score will be either 0 or between 6 and 15. Lower score refers to better oral health status. This questionnaire has been validated in children aged 8-9 years old in Brazil. It was suggested to have the benefits of being short, easy to interpret, and be integrated into clinical settings [31-38].

REFERENCES
16. Ferreira-Júnior, O. M., Freire, M. D. C. M., Moreira, R.


