

Caries experience and caries risk of pre-school children

Experiencia de caries y riesgo de caries de los niños en edad preescolar

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Abstract

Introduction: Oral health is an important aspect of a child's overall health. Children who have high levels of caries experience in their primary teeth are more prone to developing caries in their permanent teeth. Many surveys around the world show moderate to high caries experience among preschool children. One main factor in caries development is sugar consumption. Although some previous studies have shown low correlation between caries experience and consumption of sweets, most studies have shown that there is a significant correlation between these variables.

Objectives: This study aimed to determine the level of caries experience and level of caries risk from sugar consumption among preschool children. The relationship between caries experience and caries risk was also determined.

Methods: The "dmf" index and the 24 hour diet recall for scoring sweets were used in gathering data.

Results: A very high percentage of the children examined (96.77%) had dental caries. Only two children (3.23 %) were caries free. The overall mean dmf score of the children is 8.98 which means that on the average, 45% of each child's primary teeth had caries experience. This is further interpreted as moderate caries experience among the preschool children examined. The mean sweet score of the children is 6.43 which is interpreted as moderate caries risk. Based on the responses in the 24 hour recall, most parents give or allow their children to eat snack foods with refined sugar.

Conclusions: There is a moderate positive correlation between caries experience and caries risk from sugar intake. At an early age, these children already experienced dental caries. If their teeth with dental caries are left untreated, this could lead to the early loss of their primary teeth. The children frequently consume sweets within a day. This practice contributes to the risk of caries development among the children. Children with a higher risk from sugar or sweet intake have higher occurrence of dental caries.

Keywords: Dental caries, dental caries susceptibility, caries check.

Resumen

Introducción: La salud bucodental es un aspecto importante de la salud general del niño. Los niños que tienen altos niveles de experiencia de caries en sus dientes primarios son más propensos a desarrollar caries en sus dientes permanentes. Muchos estudios realizados en todo el mundo muestran una experiencia de caries de moderada a alta entre los niños en edad preescolar. Un factor principal en el desarrollo de la caries es el consumo de azúcar. Aunque algunos estudios anteriores han mostrado una baja correlación entre la experiencia de caries y el consumo de dulces, la mayoría de los estudios han demostrado que existe una correlación significativa entre estas variables.

Objetivos: Este estudio tenía como objetivo determinar el nivel de experiencia de caries y el nivel de riesgo de caries por el consumo de azúcar entre los niños preescolares. También se determinó la relación entre la experiencia de caries y el riesgo de caries.

Metodología: Para la recogida de datos se utilizó el índice "dmf" y el recuerdo de la dieta de 24 horas para puntuar los dulces.

Resultados: Un porcentaje muy elevado de los niños examinados (96,77%) tenía caries dental. Sólo dos niños (3,23%) no tenían caries. La puntuación media global del dmf de los niños es de 8,98, lo que significa que, por término medio, el 45% de los dientes primarios de cada niño tenía experiencia de caries. Esto se interpreta como una experiencia de caries moderada entre los niños preescolares examinados. La puntuación media de dulzura de los niños es de 6,43, lo que se interpreta como un riesgo moderado de caries. En base a las respuestas en el recuerdo de 24 horas, la mayoría de los padres dan o permiten a sus hijos comer bocadillos con azúcar refinado.

Conclusiones: Existe una correlación positiva moderada entre la experiencia de caries y el riesgo de caries por la ingesta de azúcar. A una edad temprana, estos niños ya han experimentado la caries dental. Si sus dientes con caries no se tratan, esto podría conducir a la pérdida temprana de sus dientes primarios. Los niños consumen frecuentemente dulces en el día. Esta práctica contribuye al riesgo de desarrollo de caries entre los niños. Los niños con mayor riesgo por la ingesta de azúcar o dulces tienen mayor incidencia de caries dental.

Palabras clave: Caries dental, susceptibilidad caries dental, revision de caries.

Introduction

Based on previous surveys, dental caries is still the most prevalent dental disease. In a global study, it was found that among the oral diseases that affected at least 3.58 billion people around the world, caries of the permanent teeth is the most prevalent. Also, 486 million children have carious primary teeth¹. In the 2015 national dental epidemiology survey in England, 25% of 5 year old children had experienced tooth decay, having an average of 3 to 4 teeth affected². In a study among preschool children of Western Maharashtra, a high prevalence of caries was noted³. Another study also found high caries experience among preschool children⁴. In a province in the Philippines, the children in the selected day care centers manifest severe early childhood caries⁵. Children who have toothache or who need treatment may have to be absent from school and parents may also have to take time off work to take their children to a dentist or to hospital. Oral health is therefore an important aspect of a child's overall health status and of their school readiness. Children who have high levels of disease in primary teeth have an increased risk of disease in their permanent teeth. If treated, these teeth will require long term maintenance throughout life².

Oral health is an important part of overall health. Early childhood caries is a health problem throughout the population that poses a significant health burden in specific at-risk communities⁶. Dental caries is a multifactorial disease. One factor that plays a big role in caries development is sugar intake. Sugars in food and drinks play a major role in the development of dental caries. Bacteria within the plaque use the sugar as energy and release acid as a waste product, which gradually dissolves the enamel in the teeth⁷. In a previous study, a significant finding showed that children who had sugar at least three times a day had higher Decayed, Missing, and Filled Teeth (DMFT) scores than those did not⁸. Dietary free sugars are the most important risk factor for dental caries⁹. The impact of fruit, vegetables, and grains on mechanical stimulation of salivary flow helps mitigate the potential risk of the sugars. Sugars other than these intrinsic natural sugars are classified by WHO as free sugars which include all monosaccharides and disaccharides added to foods by manufacturer, cook, or consumer plus those sugars naturally present in honey, syrups, and fruit juices and concentrates. It is the intake of free sugars that should be restricted for health reasons¹⁰.

This study aimed to determine the relationship between caries experience and caries risk from sugar consumption of preschool children. The results of this study can be utilized as basis for planning caries control and oral health education programs for preschool children.

Methodology

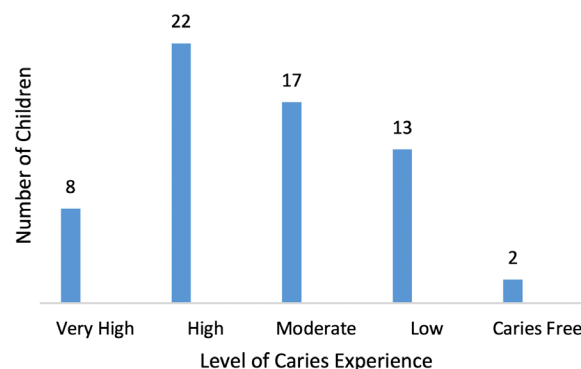
A total of 62 preschool children were included in the study.

The study was conducted in two daycare centers in two communities in the Philippines during the first quarter of 2018. The authorities in the community approved the conduct of the study. Informed consent was obtained from the parents of the children. Coding was used to protect the identity of the children and their parents. Only the parents who volunteered and the children who willingly underwent examination of their teeth were included. The decayed, missing and filled teeth (dmf) index for primary teeth was used to determine the level of caries experience. The 24-hour recall questionnaire which was answered by the parent was used to determine the level of caries risk from sugar consumption. Mean and percentage was used to describe the caries experience and caries risk while the Pearson product moment correlation was used to determine the strength of the relationship between the two variables in the study.

Results and discussion

The level of caries experience of the preschool children is presented in **figure 1**

Figure 1: Caries Experience of the Preschool Children.

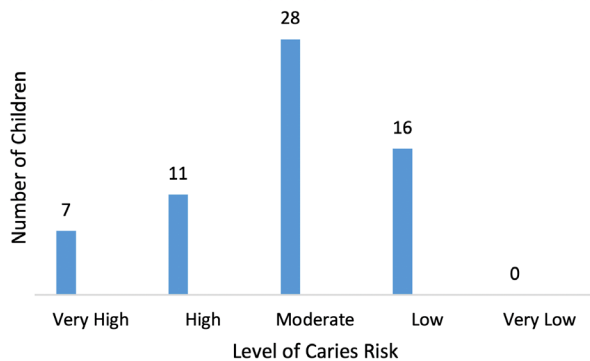


A very high percentage of the children examined (96.77%) had dental caries. Only two children (3.23 %) were caries free. The ranking of the levels is as follows: 35.48% of the children had high caries experience; 27.42% had moderate caries experience; 20.97% had low caries experience; 12.90% had very high caries experience; and 3.23% had no caries experience. The overall mean dmft score of the children is 8.98 which means that on the average, 45% or each child's primary teeth had caries experience. This is further interpreted as moderate overall caries experience among the preschool children examined. This implies that at an early age, these children already experienced dental caries. If their teeth with dental caries are left untreated, this could lead to the early loss of their primary teeth. The caries experience of the children in this study is higher compared to previous studies: 59.3% in Kerala¹¹; 47.29% in Eastern India¹²; and 25% of 5-year olds in England². On the other hand, the result of this study is not far from the 87.5% in Western Maharashtra³. In a previous study in the Philippines, 94.13% of the children had dental caries⁵,

which is very close to the finding of this study which is 96.77%. This proves that there is really a high prevalence of dental caries among preschool children in the country. The mean dmf score of 8.98 in this study is just a little higher than the mean dmf of 8.86 in the study of Atienza, Austria, and Navarro⁵.

The level of caries risk of the preschool children is presented in **figure 2**.

Figure 2: Caries Risk of the Preschool Children.



The mean sweet score of the children is 6.43 which is interpreted as moderate caries risk. This means that the children frequently consume sweets within a day. This practice contributes to the risk of caries development among the children. Based on the responses in the 24 hour recall, most parents give or allow their children to eat snack foods with refined sugar. In relation to the findings of this study, Iftikhar, Zafar, and Kalar also found

that chocolates as snacks were consumed by 60% of children in their study¹³. In another study, about 85% of children consumed some type of sweetened beverage, dessert, sweet, or salty snack in a day¹⁴.

The Pearson r of 0.44 indicates moderate positive correlation between caries experience and caries risk from sugar intake. Children with a higher risk from sugar or sweet intake have higher occurrence of dental caries. The result of this study is similar with the finding that there was a strong and consistent relation of the snacking habits with the prevalence of dental caries among the preschool children of Karad city³. In the study of Viswanath and Sabu, there was a direct association between the frequency of sugar consumption and dental caries¹⁵. The finding of this study can be further supported by the finding in a previous study that children who had sugar at least three times a day had higher DMFT scores than those did not and was found to be significant⁸.

Conclusions

At an early age, these children already experienced dental caries. If their teeth with dental caries are left untreated, this could lead to the early loss of their primary teeth. The children frequently consume sweets within a day. This practice contributes to the risk of caries development among the children. Children with a higher risk from sugar or sweet intake have higher occurrence of dental caries.

Interests conflict

The authors declare no conflict of interest.

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