

Cocaine and crack cocaine: the prevalence of dental caries among users



Laura Thomsit presents a summary of the literature review she carried out as part of the BSc Oral Health Sciences at the University of the Highlands and Islands (UHI).

Introduction

In the UK around 873,000 people aged between 16 and 59 years old reported using powder cocaine year ending 2019 (2.6% of the population).¹ According to GOV UK, the UK is reported to have the 'highest levels of crack cocaine problems in Europe'.² In the most recent statistics in England and Wales recorded at the end of 2020, it was reported that "The second most commonly used drug in the last year among adults aged 16 to 59 years was powder cocaine".¹ The most recent statistics for Scotland were recorded at the end of 2018 with 2.3% of the population using cocaine and or crack-cocaine (C/CC).³

Cocaine is a powerfully addictive stimulant drug. In its powder form it can be snorted through the nose, rubbed on the gums, or dissolved and injected into the blood stream. Crack-cocaine is a crystal that is heated, and its vapours are then inhaled into the lungs.⁴

C/CC use has been linked to several health risks including an increased risk of heart attacks, stroke, seizures, depression and more.⁴ It has also been associated with poor oral health which in turn leads to oral diseases such as dental caries and periodontal disease, and oral perforations.⁵

'Dental caries remains the most prevalent chronic disease in both children and adults'⁶ and worldwide it is estimated to affect 2.4 billion people.⁷ 'The appearance of a caries lesion is determined by the coexistence of three main factors: acidogenic and acidophilic microorganisms, carbohydrates derived from the diet, and host factors.'⁸ However,

contributing factors such as socio-economic status, level of education and health conditions have been recognised in contributing to an increased dental caries risk.⁹

A cross-sectional study carried out in Southern Brazil found that the prevalence of dental caries in crack-cocaine users was 15.1% higher than in non-users¹⁰ and Cury *et al.* found that 'Decayed teeth showed a positive association with crack/cocaine addiction'¹¹ when comparing 40 crack/cocaine addicted patients and 120 nonaddicted patients in a cross-sectional study.

Another cross-sectional study looked at salivary flow rates and buffer capacity among C/CC addicts and its relationship to dental caries and found that 'the mean buffer capacity of stimulated saliva was significantly lower in the addicted participants (pH 5.2 ± 1.7) than in the non-addicted group (pH 5.8 ± 1.3 , $p = 0.03$).'¹² 'Dissolved in saliva, cocaine powder results in a substantial decrease of the salivary pH. This increases the risk of dissolving the tooth mineral calciumhydroxyapatite. In some chronic users, loss of facial and occlusal tooth enamel was indeed observed, which gave the tooth surfaces a smooth and glassy appearance.'⁵

Untreated dental caries leads to tooth loss and reduced chewing function therefore impacting on the quality of life. Almost one in three adults living in the UK have dental caries¹³ and I wonder if C/CC use in this population is a contributing factor?

Within the role and remit of a dental therapist, screening, monitoring, and managing dental caries in every patient seen (which will

include patients currently or previously using C/CC) is vital in providing efficient and effective patient care.

With the prevalence of C/CC use in the UK, I believe the detrimental effects that its use can have on oral health is a concern for dental therapists. The use of C/CC by patients is not something we routinely screen for on our clinics, therefore I hope that by carrying out this review I can highlight the importance of recognising the oral signs and symptoms of C/CC and how best to manage our patients holistically and as part of a multidisciplinary healthcare team. On completion of my research, I am interested in providing oral health education for attendants of rehabilitation centres in Scotland, and I would be keen to think of ways to reach out to those who do not attend such settings or seek dental care.

Question

Does using cocaine and/or crack-cocaine increase the prevalence of dental caries in adults compared with non-users?

Methodology

A systematic search using several online databases was carried out.

Specific search terms, Boolean's and truncators were applied to narrow down the results.

One hundred and eighty-nine results were screened using inclusion and exclusion criteria, of which, six met the criteria and were critically appraised.

Results

Three of the papers compared the oral health outcomes in a group of C/CC addicted adults with a group of never-users. One analytical cross-sectional study compared dental caries experience in a group of crack cocaine addicted adults with a group of never-users, another compared salivary flow rates and buffer capacity in a group of cocaine addicted adults with a group of never-users, and one reviewed literature on illicit drug use and its impacts on oral manifestations. All studies used nationally recognised indices 'Decayed missing filled teeth index' (DMFT) for recording of decayed teeth.¹⁴

All papers concluded an association with C/CC use and an increase of dental caries prevalence among this population group, however many found that DMFT index was in fact lower in the addicted group than in the never-users group. This was consistent throughout the literature.

'With the prevalence of cocaine/crack-cocaine use in the UK, I believe the detrimental effects that its use can have on oral health is a concern for dental therapists.'

Discussion

There were clear themes throughout the literature.

Cocaine/crack-cocaine use was positively associated with a higher dental caries prevalence.

Users were found to have a lower DMFT index score; this was thought to be due to this population group not seeking dental care.

Another common theme was the presence of confounding factors: cocaine/crack-cocaine users were found to have lower levels of education, lower socio-economic status and poorer oral hygiene and diets.

Therefore, is emphasis on oral health education and easier access to dental care among this group required and are extra screening and management guidelines for this group needed in practice?

Conclusion

The evidence on dental caries prevalence among cocaine/crack-cocaine users is limited. Although positive associations have been made between

cocaine/crack-cocaine use and an increase in dental caries prevalence among users, the current studies have not been able to measure incidence of disease or make a definitive link between exposure (cocaine/crack-cocaine) and outcome (dental caries prevalence).

Recommendation

I would encourage researchers to conduct well designed advanced longitudinal studies and experiments of higher quality to further understand the oral health needs of this population group.

I would also urge that access to dental care for this population group is improved including emphasis on oral health education and cessation/rehabilitation services.

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