

Summary of: An intriguing association between dental and mental pathology in addicted and control subjects: a cross-sectional survey

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FULL PAPER DETAILS

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Background Recent clinical studies suggest that substance use may be associated with an acceleration of the ageing process, possibly related to a deficit of stem cell number or function. As this clinic had access to both medical and drug dependent patients, we tested the hypothesis that there may be an association between previously identified deficits.

Methods A cross-sectional survey was performed looking at both dental and mental dysfunction. Both a dental index (DI) and a mental index (MI) were defined as previously described and utilised as summary measures of such pathology.

Findings From 249 substance use disorder (SUD) and 134 general medical controls (N-SUD), 248 and 91 patients were selected with ages less than 57 years as the primary focus of analysis. The mean (\pm S.D.) ages (32.59 ± 7.98 vs 35.65 ± 15.45 years) were similar. The DI was found to correlate with the MI in a significant manner in SUD ($R = 0.14$, $p = 0.03$), N-SUD ($R = 0.27$, $p = 0.009$) and in the whole group ($R = 0.17$, $p = 0.001$). The (univariate) association of MI with DI ($p = 0.019$) and DI with MI ($p = 0.0037$) remained highly significant at multivariate regression after adjustment for psychiatric diagnoses and measures of dose-duration exposure to common addictive drugs. The qualitative appearance of the surfaces of best fit for the relationship between age, DI and MI was different in the two groups. **Conclusions** These results suggest that the robust statistical association between dental and mental pathology may be related to common underlying pathophysiological mechanisms such as a progeroid or stem cell deficiency process in clinical addiction.

EDITOR'S SUMMARY

The *BDJ* will receive over 500 papers this year submitted for consideration for publication. They fall into several categories on assessment, one of which is curiosity. This paper is one such example, as when I first read it I couldn't just work out what the connections were that the author was attempting to make. I trust that the author will not be offended by this remark as, on further reading my curiosity turned to fascination.

The basic premise is that there may be a connection between dental (or oral) health and mental health due to underlying genetically mediated, physiological mechanisms associated with stem cells and with addiction. Experts are clearly divided on this and even our Commentator, Dr Payne, expresses concerns that this research is in too early a stage to warrant publication.

However, I agreed with our referees who on balance felt that this was an area of research that showed sufficient innovation and potential value to deserve inclusion in the journal. Many of us will have observed in daily practice the poorer oral health of those suffering from mental dysfunctions and addictions and to date have probably passed the connection off as being associated rather than directly causative; nurture rather than nature. Yet there have been recent studies confirming a correlation between periodontitis and anxiety as well as a study in Scandinavia in which tooth loss appears to be independently associated with onset of disability and mortality in old age.^{1,2}

In due course it may become apparent that no such link between dental and mental health actually exists, the only connection being that the two

conditions rhyme; but it would be a pity to dismiss it as a potentially valuable line of enquiry.

The full paper can be accessed from the *BDJ* website (www.bdj.co.uk), under 'Research' in the table of contents for Volume 205 issue 11.

Stephen Hancocks,
Editor-in-Chief

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2. Holm-Pedersen P, Schultz-Larsen K, Christiansen N *et al*. Tooth loss and subsequent disability and mortality in old age. *J Am Geriatr Soc* 2008; **56**: 429-35.

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IN BRIEF

- This paper demonstrates a statistical association between dental and mental illness in normal clinical patients.
- This finding shows that this relationship is strengthened in patients addicted to illicit drugs who form a high risk group for both dental and mental disease.
- This suggests that such disorders may share common aetiopathological pathways such as common risk factors between the two sets of pathologies.

COMMENT

The author attempts to show a correlation between substance use disorders (SUD) and dental and mental disorders using a group of non-substance use subjects (N-SUD) from the same family clinic population as a control population. Substance use included addictive drugs in general, both legal and illicit, ie tobacco, alcohol, cannabis, heroin, morphine, methadone and amphetamines.

Dental status was determined by medically trained practitioner using techniques that had been established in a previous study. Mental status was determined by methods also previously reported and included depression, anxiety, bipolar disorder, psychotic illness, schizophrenia, mental retardation, ADHD, aggression and epilepsy. The mental index was calculated as the product of the number of disorders multiplied by the severity score. The dental index was defined by the product of the number of rotten and missing teeth multiplied by a dental severity score. In general the N-SUD patients showed a weak association between age and the mental and dental indices while the SUD patients with the most severe dental and mental indices appear to be associated with younger ages, possibly the result of premature ageing.

The author speculates that the associations seen may be due to the stem cell depletion seen with the ageing process and presents a review of the current status of stem cell research as well as disorders of DNA repair with aging.

One problem with this research is lumping together neurologic and mental health problems as diverse as epilepsy, attention deficit and hyperactivity (ADHD), and mental retardation with affect disorders and psychoses. The observation that there is a statistical correlation of these two indices with substance use in the study populations, while interesting, does not, of itself, support the author's hypothesis and certainly cannot form a basis for conclusions. Publication of this material is premature and more work needs to be done on a molecular basis to better define the connection between the neurologic and psychiatric conditions with premature aging resulting from use of addictive substances.

F. J. Payne, Consultant Epidemiologist and Advisor to the Children's AIDS Fund and Drug Watch International Formerly Senior Research Epidemiologist, NIAID, NIH

AUTHOR QUESTIONS AND ANSWERS**1. Why did you undertake this research?**

This research was undertaken to ascertain if there was a link between the previously identified dental and mental illness noted in general and drug addicted patients. As a substantial literature describes the adverse effects of addictive drugs on cell regeneration and apoptotic rates, it was relevant to enquire if evidence of such an effect might be documented clinically. Having identified such rates the next issue was to study if they might be related.

2. What would you like to do next in this area to follow on from this work?

We are beginning to study stem cell lines in different addicted and medical control groups to determine if degenerative signs are present. This work is linked with our work on ageing in such patients. Cell population numbers, molecular signs of senescence such as telomere length, P14, P15, P16 and P21 expression, and replicative limits should be described. Amongst other sites, stem cell pools can be sampled from the circulating blood, the skin, and at dental extraction.