

Tooth decay and deprivation in young children

Dental caries, contact with dental services and deprivation in young children: their relationship at a small area level
by M. Tickle, G. Moulding, K. Milsom, and A. Blinkhorn *Br Dent J* 2000; 189: 376-379

Objective

To measure the relationship between tooth decay, contact with dental services and deprivation at electoral ward level.

Setting

The study was carried out in 1998 in Ellesmere Port in the North West of England.

Subjects and Materials

All children younger than six years resident in Ellesmere Port registered with GDS services and those using CDS services were matched against the HA population register to identify unregistered children. Rates for children aged 3-5 years 'in contact' with primary dental care services, whether CDS or GDS, were calculated at ward level. One calibrated examiner examined all 5-year-old children in Ellesmere Port and dmft scores were calculated at ward level. Ward deprivation was measured using the Jarman score. Bivariate linear regressions at ward level were performed in turn between: dmft and Jarman score; rates for 3-5-year-olds in contact with dental services and Jarman score; and dmft and rates for 3-5-year-olds in contact with dental services.

Results

A significant linear relationship was observed between dmft and Jarman score ($P=0.02$, $R^2 = 0.43$). Significant inverse relationships were found between rates for 3-5-year-olds in contact with dental services and Jarman score ($P=0.001$, $R^2 =$

0.67), and also between dmft and rates for 3-5-year-olds in contact with dental services ($P=0.002$, $R^2 = 0.65$).

Conclusions

A strong inverse relationship was found between dental caries and contact with primary dental care services at electoral ward level. This relationship needs to be explored over a wider geographical area to establish if it is consistent and independent of deprivation.

In Brief

- Ward level analyses demonstrated a strong relationship between deprivation and dmft of 5-year-old children, also a strong inverse relationship between deprivation and contact with services in 3-5-year-old children.
- At ward level dmft of 5-year-old children had a strong inverse relationship with contact with services for 3-5-year-olds.
- Further research is needed across the UK to establish if this relationship is specific to Ellesmere Port, and if this relationship is independent of deprivation.
- Further research is also needed to determine if the relationship between dental caries and contact with dental services is caused by the influence of primary dental care or is a marker for population oral health-related behaviour.

Comment

This paper brings together data from different sources to examine the relationship between caries, dental attendance and deprivation. The study took place in Ellesmere Port in Cheshire, a site for one of the first wave of Personal Dental Services (PDS) pilot projects.

All the 5-year-old children in the town were examined for caries by one calibrated examiner as part of the British Association for the Study of Community Dentistry national epidemiological survey.

A novel approach was used in that dental attendance data from the Community Dental Service (CDS) was gathered in addition to that from the General Dental Services (GDS). This gives a more accurate picture of the dental attendance pattern of all children in an area. The details of all the child patients registered with the 21 general dental practitioners in the town were provided by the Dental Practice Board together with information on all child patients who were in treatment or awaiting recall appointments with the CDS. These children were deemed to be 'in con-

tact with primary dental care'. These data were combined into a single file and merged with the Health Authority population register to identify which children had not seen a dentist or were not registered with a dentist.

A total of 2,807 3-5-year-old children were on the Health Authority register. Of these, 1,699 (61%) were in contact with dental services, either the GDS or CDS. The remaining 1,108 children were deemed to be unregistered.

Deprivation was measured by the Jarman index score in each of the 12 electoral wards in Ellesmere Port. The Jarman index is calculated using census data to measure social factors that doctors nationally have weighted according to the degree to which they increase their workload or pressure on their services. These factors include unemployment, poor housing, ethnic groups, lone parent families, overcrowding, lower social classes and mobility.

The results showed that there was a statistically significant relationship between

dental caries experience (dmft) and the level of deprivation (Jarman score). However, the relationship between dmft and contact with dental services (service contact) was more significant. Service contact explained 65% of the variability in dmft at ward level compared with 43% explained by the Jarman score. There was also a highly significant inverse relationship between service contact and the Jarman score. As ward levels of deprivation rose, the level of service contact dropped.

Multiple regression analysis would have identified the most important factors in this complex equation. Unfortunately, the low numbers of children at ward level made multiple regression analysis impractical. The authors discuss this and the consequent need for a national study to see if the results in Ellesmere Port are similar in other areas. I look forward to seeing the results of these endeavours.

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