The Unit team is here to help!
Just telephone 01392 ...

Unit Director
John Baldock, 264722
Orders for publications, and general enquiries
Sally Forster, 264722
Health Related Behaviour Questionnaire surveys
Beryl reports that the data-prep team are now well
practised in the latest version of the Health Related Be-
aviour Questionnaire, having recently completed
surveys in Cornwall and the Wirral. Attention is now
turning to the cost, to see what pupils are getting up to
in Barking & Havering and Essex.

Elkridge is delighted with the enthusiastic response
to the 17-18 year olds in Yorkshire to the third phase of
a longitudinal questionnaire study. Even though some
of them have left school, their comments show
how willing they are to provide data that will satisfy
the Health Authority in planning health care for
young people in the region.

Anne is preparing a new lifestyle database, contain-
ing the responses of 2000 Year 10 pupils. The first
of these was extremely popular, and this one should be,
as the theme is Money: Ring her if you want to know
more. She is also working on a collaborative project
with Alan Tam, Advisory Teacher for Health Edu-
cation, following a Health Related Behaviour survey
of 1867 Year 8, 10 and 12 pupils organized by the
North Cambridgeshire Health Development Unit.

David has been working with John, DI, Sally and
Anne on a series of reports on cross-sectional
alcohol and environmental education. He is also
writing papers with Cornwall Health Authority on
the outcomes of their continuing smoking education
project.

He also reports that while working with new models
of the Flymaster, Torbay Health Authority, even the
powerful Unit machines clocked the volume of
numbers involved, and a newer scientific
“super” computer had to be used instead.

J.M.

Some Unit publications...

Young People and Illegal Drugs, 1994-1995
Drug use is increasing, and this study looks the Unit’s
survey data to examine future trends.

Toothbrushing in Adolescence …..£10.00
A study of the toothbrushing habits and motivation of
7000 15-16 year olds, revealing unexpected links
between dental care and use of the their home
background and daily life.

Video pack: ‘The Extra Guest’ ……..£14.68
This well-received video ‘alcohol’ depicts a teenage
date, and the materials include background infor-
mation, suggestions for its use, worksheet masters, and
overhead transparencies. (Priced includes VAT.)

Very Young People in 1993-2…..£9.50
Results from 7856 very young people between the
ages of 8 and 12, who completed Version 4 of our
Primary Health Related Behaviour Questionnaire.

Young People in 1994 ……£30.00
The latest of our annual reports, with results from
48,297 young people between the ages of 12 and 16,
who completed Version 16 of the Health Related
Behaviour Questionnaire.

Cross-Curricular Sex Education ………£50.00
Plans and materials for sex education modules within Art &
Design, Drama, English, Geography, History, Math-
ematics, Modern Languages, Music, PE, RE, Science, and
Technology. In two volumes, containing 428 pages
altogether. Extracts sent free on request.

These prices include postage
and packing

The greater availability of fruit-based drinks and carbonated beverages in
shops, and particularly now in vending machines in schools, is raising
serious dental problems.

June Nunn & Ian Macgregor

‘Soft’ drinks are hard
on children’s teeth

Toothwear is something we normally
associate with age. We expect a certain
degree of wearing away of tooth enamel
and even the underlying dentine as a person gets
older. The process of wearing away of the hard
dental tissues occurs in three principal ways:
attrition, due to tooth grinding; abrasion, due
to the action of abrasive materials; and erosion,
where the tooth tissue is dissolved by acids.

All three types of tooth wear can occur in
children, but by far the most important in young
people is the loss of tooth tissue resulting from
dental erosion.

Tooth attrition

Nowadays much of the food we eat is heavily
refined, but some elements of foodstuff contrib-
ute to tooth wear by virtue of their abrasiveness,
and principle, especially in an acid form. This
process is known as attrition.

As well as abrasive foodstuffs, habits like
grinding the teeth, which are much more
common than is generally realized, and often
occurred unconsciously, also produce this pattern
of wear. Figure 1 shows tooth wear from attri-
tion in a 15-year-old who habitually ground his
tooth at night. The teeth of prehistoric man char-
aracteristically show marked attrition. Their diet
was so abrasive that their teeth were soon worn
flat.

Tooth abrasion

Another way in which teeth become worn is
through vigorous toothbrushing, charac-
teristically a forceful horizontal scrubbing ac-
 tion, which abrades the side surfaces of the

Toothbrushing in combination with the more
abrasive toothpastes can produce wedge-
shaped notching at the necks of the teeth. Figure 2
shows this characteristic notching in an ex-
tracted upper canine, where the individual has
cut more than halfway into the tooth.

‘Toothbrush abrasion’, as it is known, is seen
more particularly in the older person, and is
more prevalent in people with good oral hygiene
than in those who take less trouble cleaning their

The gums recede, exposing the more easi-
ly worn cementum, a thin layer of hard tissue
covering the root surface in this region of the

Acid attack by the drinks
manufacturers

The post-16s feel short-
changed on HIV/AIDS
education

Dudley takes its survey data
back into schools

Lifestyles 2: Does money
help to make friends?
Fig. 1. Tooth wear from attrition in a 15-year-old who habitually ground his teeth at night. Note that the teeth are considerably shortened.

Fig. 2. Toothbrush abrasion in an extracted upper canine, showing characteristic notching at the neck of the tooth where the individual has cut more than halfway through the root.

Fig. 3. Acid erosion of the two upper central incisors in a child resulting from the consumption of fizzy drinks.

Tooth erosion

This third type of tooth wear is the most important in children, and is therefore the principal subject of this article. Tooth erosion occurs as a result of direct action by acid in the mouth, in which the tooth substance is simply dissolved. The bacteria that accumulate around the neck of the teeth do produce minute quantities of acid by breaking down carbohydrates, but this action results in dental decay (caries) rather than tooth erosion. Bacteria are not responsible for erosion. Rather, erosion is caused by relatively large quantities of acid at high concentrations.

It is sometimes possible to detect whether the offending acid is from an extrinsic source, for example from foods and drinks, or is intrinsic, that is, acid eroding from the stomach. The pattern of wear and the particular surfaces that are affected help determine the origin of the acid. Figure 3 shows the effects of acid erosion on the two upper central incisors in a child. In many cases there may be a combination of types of tooth wear, for example, erosion exacerbated by abrasion.

A UK ‘erosion survey’

Because of concern from many dental teaching centres in the United Kingdom and elsewhere that the prevalence of tooth surface loss and specifically dentine erosion (O'Brien, 1994) is severe in some young people, tooth wear was assessed in the most recent survey of the dental health of school children undertaken in the United Kingdom (O'Brien, 1994). Additionally, tooth wear was examined in the National Diet and Nutrition Survey conducted in pre-school children in 1992/1993, the results of which were published recently (Hinds & Gregory, 1995).

In the former study, assessment of dental erosion was made on two surfaces, the front (labial) and back (palatal) of upper incisor teeth, in both the primary (first) and permanent (second) dentitions. These are the first to wear. They are most likely to show evidence of wear if causative factors are present because they have been the longest in the mouth. The examining dentists were asked to score the surface accordng to the severity of wear (that is, whether eroded, dentine or the dental pulp at the centre of the tooth were involved), as well as the extent of tooth surface affected. In the latter study, wear was assessed on primary incisor teeth.

Toddlers and fizzy drinks

The results from the pre-school (‘toddlers’) sample of 1,300 1.5-4.5-year-olds, indicated that 29% of the 1.5-4.5-year-olds had some erosion and that 10% had severe erosion involving the pulp (Hinds & Gregory). Accompanying the dental survey was an extensive enquiry into the child’s diet together with anthropometric measurements. From these data the child’s nutritional status was determined.

Despite a number of pertinent questions in the dietary questionnaire about factors thought to be related to dental erosion, such as the type of drinks consumed and their pattern of consumption, no significant relationship could be demonstrated between these variables and the presence of dental erosion. A weak trend emerged of a positive association between the consumption of carbonated beverages and erosion, especially of palatal surfaces (43% of children consuming such drinks daily had evidence of erosion compared with 28% in children who consumed these drinks less frequently).

Erosion in 50% of 5-year-olds

In older children, results from the 1993 national survey of children’s dental health, which examined over 17,000 5-15-year-olds, indicated that in the older children too, tooth wear was a serious problem (Hinds & Gregory, 1994).

In 15-year-olds there was evidence of some erosion of the incisor teeth in 27% of children, and for 2% the loss of tooth tissue was severe, affecting at least dentine in some cases pulp tissue as well.

Extrinsic

The extrinsic source is from acids consumed as food, drink, or medicines, and includes acid from industrial sources. The latter is seen particularly in adults working in an acidic environment without adequate protection, for example battery workers exposed to sulphuric acid flames, and welders. Occasionally there have been case reports in the literature of people suffering dental erosion as a consequence of frequent swimming in gas-chlorinated pools with poorly controlled pH levels. pH is a measurement of acid/alkaline activity; the lower the value below 7 (neutral), the higher the acid potential.

Not enough H2O, too much CO2?

The most significant source of acid challenge to the teeth in children and adolescents is probably from high consumption. In pre-school children, frequent consumption of insufficiently diluted fruit-based squash drinks and carbonated beverages, including ‘diet’ versions, is the prime cause of dental erosion. The dissolution of carbon dioxide in carbonated drinks results in a lowering of the pH and an increase in many instances of titratable acidity. Evidence from dietary studies conducted on children indicate that a significant number of infants under one year of age consume bottled cola-type drinks. Unfortunately, we have no data yet to be able to set a threshold of acid challenge to the teeth, below which we can say erosion definitely does not occur.

Intrinsic

The intrinsic source is acid from the stomach which is regurgitated either voluntarily or, more usually, involuntarily. This type of reflux can occur asymptomatically, so that the individual is unaware that it is happening.

In these circumstances, dental erosion may be the first indicator of disease elsewhere in the body. Asymptomatic reflux of gastric juices may not only impact against the teeth but some may be aspirated into the lungs. There is good evidence from the literature that children suffering from asthma and chest infections may do so as a result of aspiration of refluxed gastric contents.

Persistent reflux can also lead to scarring and atrophy of the oesophagus. This form of tooth surface loss is evident in young people suffering from anoaexia or bulimia.
Beware extra Vitamin C!
The evidence from studies in older children suggests that frequent consumption of soft drinks is the main culprit, especially carbonated beverages, many of which contain ‘acidity regulators’ to maintain their acidity and therefore their taste. ‘Sports’ drinks, heavily marketed towards those wishing to maintain an image of a healthy lifestyle, are just as damaging. This damage may be increased where drinks contain ‘extra vitamin C’, as this provides another source of acid, ascorbic acid. These drinks are commonly consumed after intensive exercise when the mouth is dry and thus devoid of the protective action of saliva, which helps to neutralise acids in the mouth. The greater availability of fruit-based drinks and carbonated beverages in shops, and particularly now in vending machines in schools, is likely to exacerbate this problem.

Is erosion on the increase?
We do not know whether the prevalence of dental erosion is increasing in the UK or indeed in other countries, because as yet there are no data. We must await the results of the forthcoming National Diet and Nutrition Survey of 5-16-year-old children, which will indicate whether the prevalence has increased in this country by comparison with the 1993 Child Dental Health Survey.

What we do know is that patients who experience dental hypersensitivity require treatment, which is often unpredictable. Coating the exposed dentine surfaces with varnishes or desensitising agents is often ineffective, and if there is some improvement it is frequently short-term. More elaborate conservative treatment may be required, such as fillings or even root treatment. The options can be expensive and commit the patient to a lifetime of costly maintenance and care.

Messages for teachers and parents
From a nutritional standpoint, it has recently been observed that children can consume so much in the way of fruit-based squashes, sugar-free or otherwise, that they lose much of their appetite and become malnourished as a result. This condition has been given the name ‘squash syndrome’. Another consequence of squash syndrome is likely to be an increase in dental caries. However, with respect to young people and tooth tissue loss we need to redouble our efforts in the field of health promotion to ensure that the public is properly informed of the dental hazards of acidic intake, and that potential risk factors are minimised. This means...
- Reducing the availability of damaging drinks to children, who may be less discerning than adults as well as feeling pressurised by peer groups to conform.
- Providing ready access to safe alternatives such as water, milk, or well-diluted sugar-free squashes; and, for older children, having unsweetened beverages such as tea and coffee available.
- And also, more specifically, making young people aware of the dangers of...
- Frequent consumption of acidic foodstuffs, and in particular fizzy and fruit-based drinks.
- Using, or misusing, their teeth as ‘tools’!
- Grinding their teeth away.
- Brushing their teeth away.

References

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**What do senior pupils think about HIV/AIDS education in school?**

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Described below are the findings from a survey of schools in one region of Scotland. These findings are set against background evidence that senior-school pupils are being short-changed in terms of health education in general and HIV/AIDS education in particular.

**Provision within school curricula**

In 1993, a national survey of health education provision in Scottish schools (Devine et al., 1991) showed widespread agreement among LEAs on the broad areas which should be covered, including HIV/AIDS. It also found that schools seemed to be satisfied that they were meeting the needs of their pupils, at least to some extent (Devine, 1993). Despite this, the data collected from individual schools highlighted some points of concern. There is no doubt that schools are catering for the needs of their pupils in terms of HIV/AIDS education.

**Pupils’ perceptions**

These perceptions reinforce the above arguments. Although not nationally representative, a subsample of S4 (Year 11) pupils surveyed as part of the 1990 Scottish Health Behaviour in Schoolchildren Survey (Currie & Todd, 1993) showed that:
- 75% believed they needed to know a lot more about AIDS.
- 59% felt they had not been taught enough about it at school.

**Launching an initiative**

Against this background, Lothian Region Education Department developed an HIV/AIDS initiative which goes some way towards addressing the problems identified. Lothian Region is one of Scotland’s nine politically defined regions and constitutes approximately 15% of the country’s total population. It includes the cities of Edinburgh, which has been widely recognised as having a disproportionately high percentage of people that have tested positive for HIV.

The initiative involves a four-hour (half-day) teaching block, and is offered to all schools in...