Prevalence of application of tobacco products as dentifrice: results from the global youth tobacco survey in 14 states, in India, 2000-2. Values are percentages (95% confidence intervals)

| State (sample size) | Toothpaste | *Gul* | Tooth powder | Others |
|---|---|---|---|---|
| Arunachal Pradesh (n=2314) | 23 (18 to 27) | 2 (1 to 3) | 4 (2 to 5) | — |
| Assam (n=2177) | 11 (9 to 14) | 3 (1 to 5) | 4 (3 to 6) | — |
| Bihar (n=2636) | 10 (7 to 12) | 6 (4 to 7) | 49 (43 to 54) | 4 (3 to 6) |
| Goa (n=2256) | 2 (1 to 2) | — | 2 (1 to 2) | 3 (2 to 4) |
| Maharashtra (n=2356) | 2 (1 to 3) | — | 2 (1 to 3) | 9 (7 to 12) |
| Manipur (n=1734 | 25 (22 to 28) | — | 2 (0 to 3) | 5 (1 to 9) |
| Meghalaya (n=2080) | 18 (12 to 25) | 1 (0 to 1) | 4 (2 to 5) | — |
| Mizoram (n=2295) | 12 (9 to 15) | — | 9 (6 to 12) | 4 (2 to 7) |
| Nagaland (n=2221) | 32 (23 to 40) | 3 (2 to 4) | 5 (4 to 7) | — |
| Orissa (n=2913) | 10 (8 to 12) | 1 (1 to 2) | 25 (23 to 28) | 4 (2 to 6) |
| Sikkim (n=2236) | 8 (5 to 11) | — | 2 (1 to 3) | 1 (1 to 1) |
| Tripura (n=1866) | 25 (19 to 31) | — | 3 (1 to 4) | 1 (1 to 2) |
| Uttar Pradesh (n=4542) | 10 (8 to 12) | 2 (1 to 3) | 29 (24 to 33) | 16 (9 to 22) |
| Uttaranchal (n=2642) | 18 (14 to 21) | 2 (1 to 3) | 29 (26 to 32) | 11 (5 to 16) |

tobacco users and 28% (2159) of 7575 male users specified tooth related problems as the reason for starting to use tobacco.[3] Many companies take advantage of this misconception by packaging and positioning their products as dental care products. A laboratory test of five samples of red tooth powder that did not declare tobacco as an ingredient found a tobacco content of 9.3-248 mg per gram of tooth powder.

The 1992 amendment to India's Drugs and Cosmetics Act 1940 barred manufacturers from using tobacco as an ingredient in any toothpaste or toothpowder. One manufacturer challenged this amendment, but ultimately the Supreme Court passed judgment in favour of the government of India.[1]

We carried out our study 10 years after the law had been amended. Surprisingly, 6-68% students still reported that they currently used products containing tobacco for oral care, which shows clearly that the regulations have not been implemented adequately.

This study was carried out in technical collaboration with the US Centers for Disease Control. The global youth tobacco survey in Maharashtra was done by Surendra Shastri and in Goa by the late S G Vaidya, and we are grateful for their permission to use their data. We wish to acknowledge the contribution and help from Samira Asma and Charles Warren.

Contributors: DNS conducted fieldwork in 12 of the 14 states included in this study and wrote the first draft. PCG coordinated the fieldwork in all these states, interpreted the results, and wrote the final version of the report. MSP handled the datasets and conducted data analysis. PCG is the guarantor.

Funding: Tobacco Free Initiative, World Health Organization.

Competing interests: None declared.

Ethical approval: The study design was evolved and approved by the World Health Organization in Geneva, Switzerland, and the Centers for Disease Control and Prevention in Atlanta, USA. The surveys were conducted with their collaboration. The study satisfied ethical criteria specified by the Indian Council of Medical research. Appropriate permission from the state education authority and the principal of each school was obtained. The study design did not fall within the scope of studies that require clearance by the internal review board of the Tata Memorial Hospital. The other institutions do not have their own internal review boards.

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*(Accepted 3 October 2003)*

# Blood pressure, haemorrhagic stroke, and ischaemic stroke: the Korean national prospective occupational cohort study

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*BMJ* 2004;328:324–5

Deaths from haemorrhagic stroke declined consistently through the 20th century, but deaths from ischaemic stroke showed a rise and fall, mirroring the coronary heart disease epidemic.[1] Blood pressure has also declined,[2] and if blood pressure is more strongly associated with haemorrhagic stroke than with ischaemic stroke, this might contribute to the divergent trends. Previous meta-analyses have shown contradictory findings; one showed similar associations for both stroke subtypes,[3] and another, of Asian studies, showed a stronger association with haemorrhagic stroke than with ischaemic stroke.[4] To resolve this uncertainty, we examined the association of blood pressure with subtype of stroke in a large cohort of Korean civil servants.

## Participants, methods, and results

The Korean National Health System for public servants and teachers provides medical expenses and biennial multiphasic health examinations at which blood pressure is measured in the seated position by trained staff using a standard mercury sphygmomanometer (fifth Korotkoff sound used for diastolic pressure) or an electronic manometer.[5] We grouped mean blood pressures for individuals between 1986 and 1996 according to the joint national committee on prevention, detection, and treatment of high blood pressure categories of normal, stages 1, 2, and 3 (table). We included deaths attributed to ICD-10 (international classification of diseases, 10th revision) codes of I60-I69 for all strokes, I61 for haemorrhagic stroke,

Mean blood pressure and stroke subtype from the Korean National Health System Study, 1986-2000. Data are adjusted relative risks (95% confidence intervals) unless otherwise indicated*

| | All strokes (ICD† codes I60-I69) | | Ischaemic stroke (ICD† codes I63 and I67.8) | Haemorrhagic stroke (ICD† code I61) |
|---|---|---|---|---|
| | Fatal | Non-fatal | | |
| Number of strokes | 2073 | 8643 | 5326 | 2695 |
| Blood pressure categories systolic/diastolic (mm Hg): | | | | |
| Normal <140/<90 | 1 | 1 | 1 | 1 |
| Stage 1 140-159/90-99 | 3.61 (3.25 to 4.02) | 3.04 (2.89 to 3.20) | 2.76 (2.59 to 2.94) | 4.90 (4.46 to 5.40) |
| Stage 2 160-179/100-109 | 8.44 (7.41 to 9.62) | 5.29 (4.94 to 5.68) | 4.83 (4.43 to 5.26) | 11.55 (10.27 to 12.98) |
| Stage 3 ≥180/≥110 | 19.39 (16.41 to 22.90) | 11.21 (10.17 to 12.36) | 9.56 (8.46 to 10.80) | 28.83 (24.89 to 33.40) |
| Systolic blood pressure (20 mm Hg increase) | 2.78 (2.66 to 2.90) | 2.36 (2.30 to 2.42) | 2.23 (2.17 to 2.30) | 3.18 (3.06 to 3.30) |

*Adjusted for age, sex, body mass index, height, blood glucose, blood cholesterol, haemoglobin concentration, ethanol consumption, smoking, monthly pay level, and area of residency.
†International classification of diseases, 10th revision.

and I63 and I67.8 for ischaemic strokes between 1991 and 2000 in these analyses. We categorised non-fatal strokes using data on the use of medical care and found an accuracy of 83.4% and 85.7% for ischaemic stroke and haemorrhagic stroke.

In 9.5 million person years of observation of 955 271 people; they had 14 057 strokes, giving crude and age standardised incidences of 1.48 and 2.24 for every 1000 person years. Of these, 10 716 (76%) strokes had complete information on major exposure variables and we included these in our analyses; we classified 2695 strokes as haemorrhagic, 5326 as ischaemic, 1731 as undetermined, and 964 as subarachnoid haemorrhage.

We calculated fully adjusted relative risks and 95% confidence intervals using logistic regression. The gradient of risk with blood pressure was steeper for fatal than non-fatal stroke, reflecting a relative excess of haemorrhagic strokes among fatal events. Both ischaemic stroke and haemorrhagic stroke had strong gradients with blood pressure, but these were much steeper for haemorrhagic stroke with a stage 3 category relative risks of 9.56 (95% confidence interval 8.46 to 10.80) and 28.83 (24.89 to 33.40) for ischaemic and haemorrhagic strokes. For each higher 20 mm Hg of systolic blood pressure, the relative risk of ischaemic and haemorrhagic stroke increased by 2.23 (2.17 to 2.30) and 3.18 (3.06 to 3.30), z test for difference between odds ratios 11.40, $P<0.00001$. Those excluded because of incomplete data had similar distributions of stroke subtypes, and including them in analyses resulted in similar age-sex adjusted blood pressure gradients.

## Comment

The gradient of the relationship between blood pressure and haemorrhagic stroke is steeper than that for ischaemic stroke. Falls in blood pressure observed over the 20th century may lead to bigger reductions in the incidence of haemorrhagic stroke compared with ischaemic stroke and thereby provide a partial explanation for the differential trends in stroke subtypes.[1] Falls in blood pressure cannot be ascribed solely to antihypertensive drugs as they have been seen at young ages and during times when treatment was not widely used. Factors in early life, rather than treatment of hypertension, may have contributed to population declines in both blood pressure and risk of stroke, particularly haemorrhagic. Our findings also emphasise the importance of controlling blood pressure, particularly in countries with a high risk of haemorrhagic stroke.

Contributors: Y-MS contributed to design, analysis, interpretation and revision of the manuscript JS contributed to design, interpretation and revision of the manuscript YS contributed to interpretation and revision of the manuscript. DAL contributed to the design, interpretation, and revision of the manuscript. GDS contributed to the design, interpretation, and revision of the manuscript. SE wrote the first draft of the paper and contributed to design, interpretaton, and revision of the manuscript. Y-MS and SE are guarantors.

Funding: Korean Ministry of Health and Welfare (01-PJ1-PG1-01CH10-0007).

Competing interests: None declared.

Ethical approval: Korean Health iNsurance Corporation, who are legally able to use health insurance data for public health purposes.

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*(Accepted 16 September 2003)*

*Endpiece*

### Clamming up

It's been troubling me. Now, why is it that most of us can talk openly about the illnesses of our bodies, but when it comes to our brain and illnesses of the mind we clam up and because we clam up, people with emotional disorders feel ashamed, stigmatised, and don't seek the help that can make the difference.

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