

**A REVIEW OF OPINION POLLS
CONCERNING WATER FLUORIDATION
CARRIED OUT IN THE UNITED KINGDOM
BETWEEN 1977 AND 2007**

A report prepared for the North West Fluoridation Evaluation Group by

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EXECUTIVE SUMMARY

1. This review has been commissioned to gather, quality assess and summarise those relevant opinion polls which may inform discussions to be held in the North West PCTs.
2. The objective was to review and critically quality assess opinion polls relating to water fluoridation, of relevance to potential fluoridation schemes which may be implemented in the North West of England.
3. Opinion polls were identified through a computerised search of MEDLINE, EMBASE, Google and the UK Data Archive. In addition hand searching and professional contacts were used.
4. All polls meeting the following criteria were considered: opinion polls consistent with the Oxford Dictionary definition of opinion poll; carried out between 1st June 1977 and 1st June 2007 in any population in the United Kingdom; reported in any language.
5. All searching efforts yielded reports, summaries, or knowledge, of 35 opinion polls, carried out in the UK between the chosen dates.
6. All opinion polls were described using a tool, based on a critical appraisal tool for use with surveys developed for use in this review. Where possible polls were quality assessed using agreed criteria based on sampling methodology, sample size and respondent selection methods.
7. Of the 35 opinion polls identified, 11 were considered to be relatively methodologically robust. These were either carried out using quota or random samples. The majority of the polls represented a wide variety of respondents, based on standard socio-demographic variables.
8. In general terms respondents appeared to think that fluoride reduced tooth decay; there was a limited knowledge of the fluoridation status of the water received by respondents; the majority of better quality polls found respondents to be generally in favour of water fluoridation; of the four polls that posed a question relating to decision making, the majority felt that the decision should be made by a health body.

9. The reviewers identified a number of issues which question the validity of past opinion polls conducted in the UK, relating to water fluoridation, between 1977 and 2007.

10. Whilst some of the higher quality polls identified in this review suggest that there has been public support for water fluoridation, it is not necessarily safe to conclude from these results they would corroborate contemporary public opinion. The authors recommend that an informed consultation, based on the real possibility that fluoridation may be introduced would be a more accurate measure of public opinion.

BACKGROUND

Changes to the Water Act, enacted in 2003, have given Primary Care Trusts (PCTs) in the North West the opportunity to consider the possibility of water fluoridation as a method of reducing levels of dental caries in the population.

The North West Water Fluoridation Evaluation Group has been established to undertake enabling work, in order to provide PCTs in the North West with the information they require to make a decision whether to request the North West Strategic Health Authority to explore the possibility of water fluoridation.

The North West Fluoridation Evaluation Group understands that debates relating to the possibility of implementing water fluoridation in the North West have been ongoing for many years. It also recognises that public opinion has been sought relating to water fluoridation, both locally and nationally, using both formal and less formal approaches. Therefore, as part of its enabling work, this review has been commissioned to gather, quality assess, and summarise those relevant opinion polls which may inform discussions to be held in the North West PCTs.

OBJECTIVE

To review and critically quality assess opinion polls relating to water fluoridation, of relevance to potential fluoridation schemes, which may be implemented in the North West of England.

CRITERIA FOR CONSIDERING OPINION POLLS FOR THIS REVIEW

Opinion polls meeting the following criteria were reviewed and critically quality assessed:

DESIGN

Opinion polls which were consistent with the following definition:

*An opinion poll is an assessment of public opinion by questioning a representative sample, especially to forecast the results of voting.*¹

TIME PERIOD

Opinion polls carried out from 1st June 1977 to 1st June 2007.

GEOGRAPHICAL LOCATION

Opinion polls carried out in all parts of the United Kingdom.

LANGUAGE

Opinion polls reported in any language, carried out in all populations.

SEARCH METHODS FOR OPINION POLL IDENTIFICATION

Opinion polls of relevance to this review were identified using the following methods.

ELECTRONIC SEARCHING

An independent researcher was commissioned to develop appropriate electronic search strategies and run each electronic search. Each strategy is detailed below.

SEARCH STRATEGY FOR MEDLINE VIA OVID (LIMITING SEARCH TO 1977 TO 2007)

1. Public Opinion/
2. public opinion\$.mp. [mp=title, original title, abstract, name of substance word, subject heading word]
3. ("poll" or "polling" or "polled" or "polls") and (public or population).mp. [mp=title, original title, abstract, name of substance word, subject heading word]
4. (vote\$ and (public or population)).mp. [mp=title, original title, abstract, name of substance word, subject heading word]
5. (survey\$ adj6 (resident\$ or public or community or communities)).mp. [mp=title, original title, abstract, name of substance word, subject heading word]
6. (referenda or referendum).mp. [mp=title, original title, abstract, name of substance word, subject heading word]
7. or/1-6
8. Fluoridation/
9. (fluoridation or fluoridate\$ or (fluorid\$ and water)).mp. [mp=title, original title, abstract, name of substance word, subject heading word]
10. or/8-9
11. 7 and 10

SEARCH STRATEGY FOR EMBASE VIA OVID (LIMITING SEARCH TO 1977 TO 2007)

1. Public Opinion/
2. public opinion\$.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]
3. ("poll" or "polling" or "polled" or "polls") and (public or population).mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]
4. (vote\$ and (public or population)).mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]
5. (survey\$ adj6 (resident\$ or public or community or communities)).mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]
6. (referenda or referendum).mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]
7. or/1-6
8. Fluoridation/
9. (fluoridation or fluoridate\$ or (fluorid\$ and water)).mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer name]
10. or/8-9
11. 7 and 10

GOOGLE

A Google Web search was carried out using the following search string: fluoridation opinion OR poll OR vote OR polling 1977-2007.

UK DATA ARCHIVE

A search of the UK Data Archive using was also carried out using the following search words: fluoridation; dental caries; dental health; dentists; water pollution.

HAND SEARCHING

Two reviewers (GH and AD) contacted known sources of expert advice to identify reports of opinion polls which were not referenced in medical and dental journals or on the UK Data Archive or the internet. Contacts were also made with the National Fluoride Information Centre and the British Fluoridation Society.

Archived documents from two former Consultants in Dental Public Health were obtained and hand searched by one reviewer (GH). All cuttings, newsletters and items of correspondence which specifically made reference to opinion polls were gathered.

OPINION POLL IDENTIFICATION AND DATA COLLECTION

All documents obtained through hand searching and professional contacts, which included opinion poll reports, summaries and documents where polls were referenced, were catalogued.

The electronic searching activity identified one hundred and four unduplicated records which required further consideration. Two reviewers (GH and MC), together, screened the abstracts and titles of references identified in electronic searches for subject matter and place. References obviously relating to publications in which the subject matter did not concern water fluoridation, or which were reporting studies conducted outside the UK were excluded. If there was any doubt, full papers were obtained.

Twenty-four full papers obtained through the electronic search were read. Cited opinion polls were cross referenced with those obtained through hand searching and professional contacts.

All searching efforts yielded reports, summaries, or knowledge, of 35 opinion polls, carried out in the UK between the chosen dates. The electronic search identified only two polls which had not been identified through professional contacts.

OBTAINING OPINION POLL REPORTS

Attempts were made by two reviewers (GH and AD) to obtain the full reports of each of the 35 identified opinion polls. These included contacting both known experts, and companies that had been commissioned to carry out polls. It was found that some opinion polls had not been published, some companies no longer existed, and one poll had not been released. In circumstances when all reasonable efforts had been made to obtain full poll reports, and failed, the pragmatic decision was made to conduct the next stage of the review solely with the information that had been gathered.

QUALITY ASSESSMENT

METHOD

A tool was developed for use in this review by all four reviewers. This allowed each poll to be described in a standard way and also informed the assessment of the methodological quality. The tool, which is based on a critical appraisal tool for surveys, is shown in Appendix One.² The developmental process was overseen by the members of the North West Fluoridation Evaluation Group.

All collected, catalogued, documents were identically copied and sent to three Quality Assessment Reviewers (PB, AD, and MC), who individually described and assessed each poll using the afore-mentioned tool. These reviewers then met, and jointly categorised the information relating to each poll.

Criteria for determining whether an opinion poll was conducted in a relatively methodologically robust manner, or was fundamentally flawed were determined by three Quality Assessment Reviewers (PB, AD and MC). These are shown in Table One. The rationale for choosing a minimum sample size of 1,000 to help to define a relatively robust methodology was based on a power calculation, which assumed a significance level of 0.01. The calculation was independently verified. This meant that, with a sample size of 1,000, when a response to a question was 67% we can be 99% confident that the true value relating to the population represented lies between 63.15% and 70.85%.

TABLE ONE - METHODOLOGICAL QUALITY ASSESSMENT CRITERIA

Assessment	Sampling		Sample size		Respondent selection method
Fundamentally methodologically flawed group	No obvious method of sampling stated	or	Up to 999	or	Obvious bias in selection
Relatively methodologically robust	Quota+/- Stratified or Systematic Probability Sample	and	More than 1000	and	No obvious bias in selection. Convenience samples accepted in the case of quota samples

Any poll not meeting each of the criteria for the 'relatively methodologically robust' group were grouped with the fundamentally methodologically flawed group. Polls for which insufficient data were available to assess the methodological quality were assigned to a separate group.

DESCRIPTION OF POLLS

THE NATURE OF IDENTIFIED POLLS

The documents gathered relating to each opinion poll varied in both quantity and quality.

The table in Appendix Two displays the date, location and fluoridation status of the water received by residents in the localities where people were questioned in each distinct opinion poll. This table also shows where data were available, the organisations that commissioned and conducted each poll and the quality category into which each opinion poll was placed, agreed by each of the three Quality Assessment Reviewers (PB, AD, and MC).

From the 35 opinion polls identified, 11 were considered by the Quality Assessment Reviewers to have been carried out using a relatively robust methodology. For the purposes of this report, these polls will be referred to as the '11 Selected Polls'.

The 11 Selected Polls were carried out in populations which were either partially fluoridated (4) or non-fluoridated (7).

Quota samples were used in eight of the 11 Selected Polls. Seven of these had been conducted through the face-to-face questioning of respondents by chance meetings in the street. The eighth poll had used telephone interviewing as a method of data collection. The remaining three polls (Nos 21, 27 and 28) were carried out using random samples, the size of which was systematically calculated. These three polls achieved response rates of 41.4%, 49% and 49% respectively. It was not possible to ascertain the method of respondent invitation in two of these polls (27 and 28); however it is known that data were collected through face-to-face interviews. Poll No 21 had used a letter to invite respondents to participate. Data were collected by written questionnaire.

All of the 11 Selected Polls sought the opinions of a wide age range of respondents. Information gathered relating to ten of the 11 Selected Polls presented an analysis of the responses by a combination of two or more of the following socio-demographic variables; respondent's gender; age; social class; marital status; and their home ownership status. Only three of the 11 Selected Polls sought the opinions of children less than 15 years of age. Six of the 11 Selected Polls presented an analysis of respondents' views by geographical area.

The questions posed in each opinion poll broadly fell into four groups. These being questions relating to:

1. Knowledge or opinions of the caries-preventive effectiveness of fluoride.
2. Knowledge of a water fluoridation status.
3. Support for water fluoridation.
4. Views on decision making relating to water fluoridation.

From the 11 Selected Polls, five polls sought yes/no/don't know type responses, exclusively, five polls used a combination of response styles and one used a Likert style response format. It is known that at least one of the polls posed questions that were unrelated to water fluoridation in addition to the questions of interest in this project.

There were a number of instances in which leading questions were asked. For example:

Given that your local health authority wants fluoride to be added to water to prevent tooth decay, do you think the North West Water Company should now go ahead and do it?

In addition, potentially confusing questions were also posed such as:

Would you support the fluoridation of your water supply if it reduced tooth decay?

Do you think it is possible to reduce tooth decay by adding a substance called fluoride to the water supply, or not?

FINDINGS OF SELECTED POLLS

Details of each question posed and general results of each of the 11 Selected Polls are summarised in Appendix Three.

CARIES PREVENTIVE EFFECTIVENESS

Eight polls posed at least five different questions relating to the caries-preventive effectiveness of fluoride in general, or water fluoridation. Poll No 23 posed a question relating to the benefits of fluoride, which was in addition to a question relating to the caries-preventive effects of water fluoridation. At least half of each sample appeared to think that fluoride reduced tooth decay.

WATER FLUORIDATION STATUS

Eight of the 11 Selected Polls posed a question which appeared to ascertain whether a respondent thought that their water had fluoride added to it. Three of these were carried out in localities which had varying levels of fluoridation. Of the remaining five polls, in one poll (No 23) carried out in a non-fluoridated locality, more than half of respondents thought their water at home had fluoride added to it. In three other polls (Nos 17, 20 and 24), carried out in non-fluoridated areas, the majority of those whose response was yes or no thought that their water was fluoridated. In the remaining poll (No21) carried out in a non-fluoridated locality half of respondents correctly identified that their water was not fluoridated.

Seven of the 11 Selected Polls posed one of four questions relating to the natural presence of fluoride in water. Only one of these polls identified a majority of respondents who thought that fluoride occurred naturally in water.

SUPPORT FOR WATER FLUORIDATION

Only one of the 11 Selected Polls did not pose a question relating to support for fluoridation. Of those polls that did pose a fluoridation support question, eight identified that the majority of respondents were in favour of water fluoridation. The positive response ranged from 56% to 79%. Two polls (Nos 5 and 29) reported that a minority of respondents supported water fluoridation. Poll no 5, carried out in Leicester in 1985 and poll No 29 was carried out in Scotland in 1999.

DECISION MAKING

From the 11 Selected polls, four (Nos 5, 27, 28, and 31) posed questions essentially asking which decision making body should decide whether or not to implement water fluoridation. In each poll, the majority, or the largest group of respondents, felt that a health body should be responsible for making the decision.

Three polls posed questions relating to a health authority decision to request a water company to fluoridate. Due to legislative changes, these results are not relevant to this project.

A 76% majority responded positively to the following question posed in Poll No 5:

Whoever takes the decision (to add fluoride to the public water supply), do you think that this should be based on the result of a public referendum?

OTHERS

Poll No 5 posed two additional atypical questions. One related to health ill effects, to which 72% of respondents gave a definite answer. Four out of 10 respondents felt that fluoride could adversely affect health. This result contrasts with Poll No 23, which asked an open-ended question about the disadvantages of fluoride. Only one in 20 identified unknown side or future effects, one in 20 stated that too much fluoride is bad for health.

The second additional question posed in Poll No 5 related to alternative methods of fluoride delivery. A large 82% majority were in favour of fluoride being available for individual application.

Poll No 21 posed a question relating to value for money. More than four out of ten respondents thought that fluoridation of water supplies was good value for money.

DISCUSSION

There has been an interest in the UK for several decades in fluoridating water supplies, which has been accompanied by attempts to test public support for this practice by means of polls of opinion. The review reported here focuses on opinion polls on this subject that have been conducted in the UK over the last 30 years, and the validity and reliability of their results. It highlights a number of issues which raise doubt about the accuracy of the assessment of public opinion relating to water fluoridation through opinion polls conducted using past methods. These are discussed below.

This review has shown that, by today's standards, when sufficient information was available to assess the quality of the methods used in past opinion polls, they were often conducted without sufficient methodological rigour to make the results generalizable. Considering even in the most methodologically robust polls identified, the majority relied on the collection of opinions from chance meetings, often in the street, using quota sampling, with the aim of representing the wider population on socio-demographic variables, which diverges from the current standards for social survey methodology. In the majority of these polls questions were asked with an expectation of fixed choice answers i.e. yes or no or don't know. It is likely that interviewers pressed interviewees to answer, without qualification, and record the answer nearest to a pre-coded item. Furthermore, for those polls conducted using quota samples, it is not possible to assign a statistical measure of accuracy in the form of confidence limits to estimate values in the wider population. For those conducted using random samples the response rates were so low that validity must be questioned.

There were also some drawbacks in the way questions were asked in the polls considered. Firstly, some polls asked complex or leading questions. For example, a number of polls posed more than one question in pursuit of a single answer, such as:

'Would you support the fluoridation of your water supply if it reduced tooth decay?

Here in one question, one could argue that there are two:

1. *Do you think fluoride can reduce tooth decay?*
2. *Do you think fluoride should be added to drinking water?*

Whilst one might expect that the answer might be, *'If fluoridation did reduce tooth decay, then I would support it'*, often the response options were yes, no or don't know. Therefore, assent may conceal uncertainty about whether fluoridation is indeed effective in reducing tooth decay.

Few polls gave a respondent the opportunity to express an opinion or to think of their own answer. It is possible that this could have affected the general results. For example, Poll No 5 posed a question relating to health ill effects, to which 72% of respondents gave a definite answer. Four out of ten respondents felt that fluoride could adversely affect health. This result contrasts with Poll No 23, which asked an open-ended question about the disadvantages of fluoride. Only five percent identified unknown side or future effects, five percent stated that too much fluoride is bad for health.

Another striking issue relates to the response to 'fluoridation support questions' and the relationship to answers to accompanying questions. In most polls, but not all, the afore-mentioned compound question or a similar question, was posed along with a question relating to the effectiveness. However, had a prior question about any risk in fluoridating water been added, this might have prompted a degree of uncertainty that the two-in-one question tends to minimise, and so the response to a simple acceptance question might have been different. It was interesting to note that in poll No 5 (Leicestershire) respondents were asked first about topical application of fluoride then about adding it to water supply, and in both cases the answer was to be given on the assumption that the application would reduce tooth decay. On topical application, 82% said they were in support, but only 27% supported the addition of fluoride to water and 63% rejected it.

There was an interesting relationship between the level of knowledge relating to fluoridation and the responses to fluoridation support questions. In answer to questions such as, *'Do you think your water at home has fluoride added to it?'* as many as 35% answered neither yes nor no, and in most cases the majority of those that did respond definitely were incorrect. Similar results were obtained for a question about whether fluoride occurred naturally in water. Notwithstanding this ignorance, the majority of polls suggested that the respondents, when asked, were in support of fluoridation.

Finally, the investigative process undertaken as part of this review has highlighted the informal nature with which poll reports have been archived. If full reports of polls are inaccessible, it is impossible to fully judge the validity of the results, or begin to estimate their relevance to contemporary views. Despite this issue, it noted that lobby groups often quote selected findings of past polls. This is potentially imprudent.

AUTHORS' CONCLUSIONS

In conclusion, this report has highlighted that reliance on past opinion polls is of limited value for a number of reasons which include those discussed above. Whilst some of the higher quality polls identified in this document suggest that there has been public support for water fluoridation, it is not necessarily safe to conclude from these results that they would corroborate contemporary public opinion. The authors recommend that an informed consultation, based on the real possibility that fluoridation may be introduced, would be a more accurate measure of public opinion.

EXTERNAL VERIFICATION

This report has been sent to an external verifier for comment.

REFERENCES

1. The Concise Oxford Dictionary. Oxford: Oxford University Press, 2001.
2. Crombie I. The Pocket Guide to Critical Appraisal. BMJ PublishingGroup,1996.

North West Fluoridation Evaluation Group Opinion Poll Review Data Collection Tool

Question	Answer	Potential for bias identified and cause
Were the aims of the poll stated?		
Was the design appropriate to the stated aim?		
How was the sample obtained?		
Was a non systematic approach taken to the sampling method?		
Was the sample size justified?		
Was an inadequate sample size used?		

Question	Answer	Potential for bias identified and cause
Can a systematic error in respondent selection be identified?		
Can a systematic error in respondent invitation be identified?		
What was the response rate?		
Was the response rate lower than 70%		
Where the questions piloted or pre-tested?		
Were leading questions asked?		
Were compound or confusing questions asked?		

Question	Answer	Potential for bias identified and cause
What were the response options?		
If the questions were open ended, could the questions bias the answers? For example were they solely asked from a positive or negative stance?		
Was there a question order bias? For example was the key question first or second in the order of asking.		
Were statistical methods described?		
Were all basic data adequately reported in the evidence available?		
Were there obvious omissions in report available?		

Question	Answer	Potential for bias identified and cause
Were there any obvious data analysis errors?		
Can the results be generalised?		
Other remarks		

ID	Date of poll	Location	Fluoridation status at time of poll	Commissioned by:	Conducted by:	Methodology quality assessment
1	1980-1984	West Midlands	Fluoridated	West Midlands Health Authority	Health Authority staff	Insufficient information
2	1985	England, Scotland and Wales	Mixed	National Association of Health Authorities	Gallup	Insufficient information
3	1985	East Sussex	Non fluoridated			Insufficient information
4	1985	Blackpool Wyre and The Fylde	Non fluoridated	Blackpool Wyre and Fylde Health Authority		Insufficient information
5	1985	Leicester	Non fluoridated	Leicester Community Health Council		Relatively robust
6	1985	Blackburn, Hyndburn and Ribble Valley	Non fluoridated			Insufficient information

	Date of poll	Location	Fluoridation status at time of poll	Commissioned by:	Conducted by:	Methodology quality assessment
7	1985	England, Scotland, Wales,	Mixed	National Association of Health Authorities	Social Surveys (Gallup Poll) Ltd	Insufficient information
8	1986	Mersey	Non fluoridated	Mersey region Health Authority	Health Authority staff	Insufficient information
9	1987	Bolton	Non fluoridated			Insufficient information
10	1987	England, Scotland, Wales,	Mixed	National Association of Health Authorities	Social Surveys Gallup Poll	Fundamentally flawed
11	1987	Slough and Milton Keynes	Non fluoridated	Oxford Regional Health Authority	Neilsen Consumer Research	Fundamentally flawed
12	1987	Belfast area		Eastern Health and Social Services Board NI		Insufficient information
13	1988	Rochdale, Blackburn, Hyndburn and Ribble Valley	Non fluoridated	Rochdale, Blackburn, Hyndburn and Ribble Valley HA	Experienced/trained self-employed persons	Insufficient information

ID	Date of poll	Location	Fluoridation status at time of poll	Commissioned by:	Conducted by:	Methodology quality assessment
14	1988	Bolton	Non fluoridated	North West Regional Health Authority	Consultation	Insufficient information
15	1990	Manchester, Salford, Trafford, Wigan, Stockport, Bury, Oldham, Blackpool, Blackburn, Lancaster, Chorley, Preston, Bolton, Rochdale, Burnley, Tameside	Non fluoridated	North Western Regional HA	Scantel Market Research, Manchester	Insufficient information
16	1990	Blackburn	Non fluoridated	Lancs Evening Telegraph	Blackburn College Students	Fundamentally flawed
17	1991	Manchester, Salford, Bolton, Oldham, Rochdale, Blackpool Wyre and Fylde, Lancaster, Trafford, Wigan, Tameside, Stockport, Bury, Burnley Pendle and Rossendale, Chorley and S Ribble, Blackburn and Ribble Valley, Preston	Non fluoridated	North Western Regional HA	NOP Social and Political	Relatively robust

ID	Date of poll	Location	Fluoridation status at time of poll	Commissioned by:	Conducted by:	Methodology quality assessment
18	1992	Southampton	Non fluoridated		NOP Social and Political	Insufficient information
19	1992	England, Scotland, Wales,	Mixed	British Fluoridation Society	NOP Social and Political	Relatively robust
20	1992	4 regions in Northern Ireland	Non fluoridated	British Fluoridation Society	Ulster Marketing Surveys Ltd	Relatively robust
21	1992	Dumfries and Galloway	Non fluoridated	Dumfries and Galloway		Relatively robust
22	1992	16 Yorkshire towns and districts	Non fluoridated	Yorkshire Regional Health Authority	Research Analysis Marketing, Leeds	Insufficient information
23	1993	Mersey region	Non fluoridated	Mersey Region Health Authority	Scantel Ltd	Relatively robust
24	1994	Wales	Non fluoridated	Health Promotion Wales	Beaufort Research Ltd	Relatively robust

ID	Date of poll	Location	Fluoridation status at time of poll	Commissioned by:	Conducted by:	Methodology quality assessment
25	1995	Anglesey	Non fluoridated, withdrawn in 1992	Gwynedd Health Authority	Beaufort Research Ltd	Fundamentally flawed
26	1997	Derbyshire-wide		North Derbyshire Health	North Derbyshire Health	Insufficient information
27	1997	England, Scotland, Wales	Mixed	British Fluoridation Society	NOP Solutions	Relatively robust
28	1998	England, Scotland, Wales	Mixed	University of Liverpool	NOP Solutions	Relatively robust
29	1999	Scotland	Non fluoridated	Lothian Health Board	MORI Scotland	Relatively robust
30	2000	Birmingham, Solihull, Coventry, the Black Country, Herefordshire, Shropshire, Staffordshire, Warwickshire, Worcestershire	Mixed	Birmingham Health Authority	MORI	Insufficient information

ID	Date of poll	Location	Fluoridation status at time of poll	Commissioned by:	Conducted by:	Methodology quality assessment
31	2003	England, Scotland, Wales	Mixed	British Fluoridation Society	NOP Research Group	Relatively robust
32	2003	London	Non fluoridated	London Assembly Health Committee	TNS	Fundamentally flawed
33	2003	Lancashire	Non fluoridated	Overview and Scrutiny Lancashire County Council	Lancashire County Council Overview and Scrutiny Committee Water Fluoridation Task Group	Fundamentally flawed
34	2006	Manchester	Non fluoridated	Manchester Health Watchdog	Manchester Patient and Public Involvement Forums	Fundamentally flawed
35		Barnsley, Doncaster, Rotherham, Sheffield	Non fluoridated	Sheffield Health (formerly Trent and Yorkshire RHA)	NOP	Insufficient information

Question with response options: <ul style="list-style-type: none"> • Yes • No 	Poll number and % response (rounded to whole numbers)																					
	5		17		19		20		21		23		24		27		28		29		31	
	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N
Knowledge of effectiveness																						
From what you have heard do you think that fluoride can help reduce tooth decay?	79	9																				
Do you think it is possible to reduce tooth decay by adding a substance called fluoride to the water supply, or not?			56	14	62	14														50	23	
Do you think it is possible to reduce tooth decay by adding fluoride to drinking water?													51	16								
Do you think that adding fluoride to the water supply can reduce tooth decay?									65	15												
Is it possible to reduce tooth decay by adding fluoride to water supply?											61	18										

Question with response options: <ul style="list-style-type: none"> • Yes • No 	Poll number and % response(rounded to whole numbers)																						
	5		17		19		20		21		23		24		27		28		29		31		
	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	
Knowledge of fluoridation status																							
Do you think your water at home has fluoride added to it?			36	29	44	26																	
Do you think your water at home has fluoride added to it at present?									18	50													
Do you think your water at home has fluoride added to it, or not?																					42	22	
Do you think your drinking water has fluoride added to it?													39	26									
Do you think your drinking water at home has fluoride added to it in order to reduce tooth decay or not?																	46	20					
Does water at home have fluoride added to it?												51	25										

Question with response options: <ul style="list-style-type: none"> • Yes • No 	Poll number and % response (rounded to whole numbers)																					
	5		17		19		20		21		23		24		27		28		29		31	
	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N
Knowledge of fluoridation status (natural)																						
Is fluoride naturally present in water?											38	32										
Do you think there is any fluoride present naturally in water?			30	35	30	37							21	30								
Do you think that any fluoride occurs naturally in water?									57	18												
Do you think there is any fluoride present naturally in water, or not?																					28	35

Question with response options: <ul style="list-style-type: none"> • Yes • No 	Poll number and % response(rounded to whole numbers)																						
	5		17		19		20		21		23		24		27		28		29		31		
	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	
Support for fluoridation																							
Do you think fluoride should be added to water if it can reduce tooth decay?			79	15	79	15								66	15	69	18	66	18				
Do you think fluoride should be added to water if it can reduce tooth decay, or not?																					67	22	
Should fluoride be added to water if it reduces tooth decay?											56	33											
If fluoride can reduce tooth decay, do you think it should be added to the public water supply?	27	63																					

Question with response options: <ul style="list-style-type: none"> • Yes • No 	Poll number and % response(rounded to whole numbers)																					
	5		17		19		20		21		23		24		27		28		29		31	
	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N
Views on decision making																						
Whoever takes the decision, do you think that this should be based on the result of a public referendum?	76	17																				
Given the fact that your local health authority wants fluoride to be added to water to prevent tooth decay; do you think the North West Water Company should now go ahead and do it?			74	19																		
If your health authority /board ask the water company/supplier to add fluoride to water to prevent tooth decay, do you think the water company/supplier should do it?					78	17																
If health authority asks for fluoridation should water company agree to it?												58	30									

Question with response options: <ul style="list-style-type: none"> • Yes • No 	Poll number and % response (rounded to whole numbers)																					
	5		17		19		20		21		23		24		27		28		29		31	
	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N	% Y	% N
Others																						
From what you have heard do you think that fluoride can adversely affect health?	41	31																				
If fluoride can reduce tooth decay, are you in favour of it being available for individual application in toothpaste, school milk, in tablet form etc?	82	12																				
Do you think that fluoridation of water supplies is good value for money?									45	38												

QUESTIONS WITH A RANGE OF RESPONSE OPTIONS

1. *Who do you think should decide whether or not to add fluoride to water to reduce tooth decay? (Poll No 5)*

RESPONSES

National government	18%
Local Government	13%
Water Authority	18%
Local Health Authority	41%
Other	10%

2. *What are the advantages or benefits of fluoride? (Poll No 23)*

RESPONSES

Good for teeth	29%
Prevents tooth decay	18%
Don't know	17%
None	11%
Good for children's teeth	8%
Don't know what it is	7%
Strengthens teeth	6%
Purifies/ cleans water	5%
Protects teeth	5%
Kills germs/bacteria	2%

3. *What are the disadvantages or drawbacks of fluoride? (Poll No 23)*

RESPONSES

Don't know	36%
None	15%
Bad taste	12%
Don't know what it is	9%
Too much is bad for health	5%
Unknown side/future affects	5%
Chemicals shouldn't be in water	3%
Others	3%
Causes cancer	3%
Too much is bad for teeth	3%

4. *Which of the following describes why you think that fluoride should not be added to water? (Poll No27)*

RESPONSES

Fluoride is harmful to health	24%
Nothing should be added to water	40%
Decisions about whether to take fluoride should be left to the individual	45%
Fluoride is already available in toothpaste	33%
Other	9%
Don't know	1%

5. *Do you think it should be your local health service or the water company which decides whether or not to add fluoride to water to reduce tooth decay?(Polls 27and28)*

RESPONSES	27	28
Local Health Service	71%	68%
Water company	18%	18%
Don't know	11%	14%

6. *There has been some discussion about the water authorities in Scotland adding fluoride to the water supplies. How much, if anything, would you say you know about this? (Poll No 29)*

RESPONSES	
Know a great deal	3%
Know a fair amount	11%
Know just a little	38%
Heard of it but know nothing about it	32%
Never heard of it	16%

7. *And from what you know, or have heard, to what extent do you support or oppose the addition of fluoride to the water supplies in Scotland? (Poll No 29)*

RESPONSES	
Strongly support	8%
Tend to support	32%
Neither support not oppose	13%
Tend to oppose	19%
Strongly oppose	13%
Don't know/ no opinion	15%

8. *From what you have heard, what is the addition of fluoride to the water supplies intended to achieve? (Poll No 29)*

RESPONSES

Is good for teeth	53%
Reduces tooth decay	37%
Fewer fillings for children	27%
Clarifies the water	9%
Kills bacteria	5%
Softens the water/reduces liming of pipes	1%

9. *Who do you think should decide whether or not to add fluoride to water supply to reduce tooth decay? (Poll no 31)*

RESPONSES

Local Health Service	63%
Water company	10%
Neither	19%
Don't know	8%

POLL REPORT PRESENTING ONLY RESULTS (POLL NO 20)

Result	Yes (%)	No (%)	Don't know (%)
Belief in fluoride in water supply reducing decay	63	13	25
Incidence of believing water supply at home having fluoride added	49	25	26
Incidence of believing fluoride naturally present in water	29	39	32
Attitude to fluoride being added to water if it reduces tooth decay	75	13	11
Attitude water supplier should take if Health and Social Services Board asked for fluoride to be added to the water to prevent tooth decay	75	14	12