Knowledge and experience of young people regarding drug misuse, 1969-94

J Denham Wright, Laurence Pearl

Abstract

Objective—To monitor young people's knowledge and experience of illicit drugs between 1969 and 1994 at intervals of five years.

Design—The same anonymously completed questionnaire was used throughout.

Setting—Three Wolverhampton secondary schools representing three different socioeconomic groups.

Subjects—392 pupils aged 14 to 15 completed the questionnaire in 1994. Previous sample sizes were 471 in 1969, 523 in 1974, 648 in 1979, 540 in 1984, and 380 in 1989.

Main outcome measures—Self reported levels of knowledge and experience of illicit drugs.

Results—Over 25 years the proportion of pupils who knew someone taking drugs more than quadrupled from 15% (71/471) to 65% (254/392), and the proportion who had been offered drugs increased ninefold from 5% (24) to 45% (175). Both of these proportions more than doubled over the past five years. In 1994 the proportions of pupils mentioning "ecstasy" (methylenedioxymethamphetamine), amphetamines, and crack cocaine increased significantly ($P < 0.01$) and the proportion mentioning opiates decreased significantly ($P < 0.01$). "Poppers" (amyl nitrite) were mentioned for the first time. "To feel big, to show off, look grown up" has continued to be the main perceived reason for taking drugs. Television has continued to be the main source of information.

Conclusions—In the past five years in particular young people's exposure to illicit drugs has increased dramatically. Despite more education about drugs, pupils' knowledge remains limited. Social pressures remain the first perceived reason for taking drugs. The media have a responsibility not to glamorise drugs.

Introduction

The use of illicit drugs in Britain has relentlessly increased over the 25 years between 1969 and 1994 in spite of action by the government and professionals. The number of drug misusers notified to the Home Office was just under 3000 in 1969 and 28 000 in 1993.¹ In Wolverhampton there were three known misusers of opiates in 1969 and 58 by 1994. Young people's knowledge and experience of illicit drugs in Wolverhampton have been surveyed at intervals of five years between 1969 and 1994. The appreciable changes between 1969 and 1989 have been published previously.²⁻⁵ This paper reports the 1994 survey.

Subjects and methods

The present survey was carried out among 392 pupils aged 14 and 15 of mixed ability, who were in their fourth year at three Wolverhampton secondary schools: one in a socially deprived area, one in an affluent area, and the third between these two socio-economically. These schools have taken part in the surveys since 1969. The samples have consisted of all

fourth year pupils present on the survey days. The numbers have varied as a result of local demographic changes and rates of absenteeism. The sample sizes of 380 and 392 in 1989 and 1994 respectively are sufficient to give a power of approximately 87% to detect a difference in proportions of 10 percentage points, assuming proportions of 30% and a significance of 0.05.⁶ In the three schools combined slightly more boys than girls were on the register. The questionnaire included open ended and ticked replies (see appendix). The pupils had no prior knowledge of the survey, and the staff of the schools did not take part directly.

Whereas many recent surveys have asked respondents directly if they have ever taken drugs, in 1969 the indirect questions, "Do you personally know anyone taking drugs?" and "Have you ever been offered drugs?" were thought more likely to produce reliable answers. To ensure consistency and permit valid comparisons, the same questionnaire has been used

FIG 2—Changes over 25 years in "yes" responses to two questions about taking drugs

Wolverhampton WV3 9DY
J Denham Wright, consultant
in public health medicine
(retired)

**University of
Wolverhampton,
Wolverhampton WV1 1SB**
Laurence Pearl, principal
lecturer in statistics

Correspondence to:
Dr Wright, 21 Waterdale,
Compton, Wolverhampton,
WV3 9DY.

BMJ 1995;310:20-4

since then. The χ^2 test was used to determine the changes in responses between 1989 and 1994.

Results

Although all pupils who were present (n=392) answered at least part of the questionnaire, clearly the effect of absenteeism can lead to an underestimation of numbers of pupils exposed to drugs. In the 1994 survey the rate of absence was 12%.

Figure 1 shows how the responses to the question "What drugs taken by addicts do you know?" changed over the 25 years of the study. The proportions of pupils mentioning opiates, amphetamines, crack cocaine, and "ecstasy" (methylenedioxymethamphetamine) changed significantly ($P < 0.01$) between 1989 and 1994. Crack cocaine was named by 8% (29) of the respondents in 1989 and by 20% (78) in 1994. Ecstasy was mentioned for the first time in 1989, by 4% (15), and by 43% (167) in 1994. "Poppers" (amyl nitrite) were named for the first time in 1994, by 15% (57) of the respondents.

Eighty six per cent (336) of the respondents in 1994 answered the question, "What dangers do you know of each of these drugs?" Table I shows the significant changes in the answers to this question over the past five years and the proportion of pupils who correctly specified how the drugs that they had mentioned were taken.

Figure 2 shows the changes between 1969 and 1994 in the responses to the two questions, "Do you personally know anyone taking drugs?" and, "Have you ever been offered drugs?" The changes in the proportion of pupils who replied "yes" to the first of

FIG 2—Changes over 25 years in "yes" responses to two questions about taking drugs

these questions, from 31% (117) in 1989 to 65% (254), was significant, as was the change from 19% (72) to 45% (175) in the proportion of pupils who replied "yes" to the second question ($P < 0.01$). Table II shows the responses to the supplementary questions relating to these two questions.

Tables III and IV show a continued high response rate to the questions, "Why do you think people take drugs?" and, "Where did you first hear about drugs?"

Discussion

KNOWLEDGE OF ILLICIT DRUGS

Cannabis was the most commonly mentioned drug in 1994 and cocaine the second most commonly mentioned drug. The misuse of cocaine has increased rapidly in recent years. The significant decrease

TABLE I—Knowledge of dangers and methods of taking drugs cited in response to questions 2 and 3 by pupils who had mentioned drug in response to question 1. * Figures are percentages (numbers) of respondents unless stated otherwise

	Cannabis	Opiates	Lysergide	Cocaine	Solvents	Amphetamines
Dangers:						
Can kill:						
1969	14 (60/425)	23 (90/391)	12 (42/351)	0 (0/61)	NA	13 (25/196)
1974	17 (64/380)	25 (80/314)	12 (27/219)	6 (5/86)	NA	8 (5/65)
1979	18 (81/448)	35 (171/495)	28 (54/190)	22 (67/299)	26 (13/50)	13 (6/46)
1984	20 (80/399)	32 (124/393)	9 (4/47)	25 (77/303)	19 (20/104)	10 (1/10)
1989	30 (90/299)	52 (171/331)	24 (34/139)	48 (143/300)	35 (22/63)	21 (8/39)
1994	24 (78/326)	26 (56/216)†	27 (34/124)	44 (128/292)	26 (12/46)	23 (20/87)
95% Confidence interval†		-34 to -18				
Can cause mental illness and hallucinations:						
1969	10 (42/425)	8 (31/391)	21 (73/351)	0 (0/61)	NA	3 (5/196)
1974	16 (59/380)	15 (48/314)	23 (50/219)	7 (6/86)	NA	12 (8/65)
1979	10 (44/448)	7 (36/495)	19 (36/190)	5 (15/299)	12 (6/50)	17 (8/46)
1984	6 (24/399)	5 (20/393)	21 (10/49)	7 (20/303)	6 (6/104)	20 (2/10)
1989	3 (10/299)	2 (7/331)	22 (30/139)	3 (9/300)	14 (9/63)	15 (6/39)
1994	6 (18/326)	7 (16/216)‡	27 (34/124)	6 (17/292)	4 (2/46)	5 (4/87)
95% Confidence interval†		1 to 9				
Can cause addiction and dependence:						
1969	0 (0/425)	6 (25/391)	2 (7/351)	0 (0/61)	NA	2 (4/196)
1974	12 (47/380)	17 (53/314)	9 (19/219)	8 (7/86)	NA	8 (5/65)
1979	7 (31/448)	12 (57/495)	3 (5/190)	5 (14/299)	0 (0/50)	0 (0/46)
1984	11 (44/399)	16 (62/393)	19 (9/47)	12 (36/303)	6 (6/104)	0 (0/10)
1989	17 (52/299)	24 (79/331)	13 (18/139)	24 (73/300)	8 (5/63)	10 (4/39)
1994	10 (33/326)‡	15 (32/216)‡	4 (5/124)‡	14 (41/292)‡	4 (2/46)	10 (9/87)
95% Confidence interval†	-13 to -2	-16 to -2	-15 to -2	-17 to -4		
Can cause drowsiness, coma, and dreaminess:						
1969	4 (17/425)	3 (12/391)	3 (10/351)	0 (0/61)	NA	2 (4/196)
1974	14 (52/380)	9 (28/314)	7 (16/219)	12 (10/86)	NA	11 (7/65)
1979	12 (56/448)	10 (49/495)	6 (12/190)	8 (25/299)	10 (5/50)	9 (4/46)
1984	17 (67/399)	12 (46/393)	6 (3/47)	10 (31/303)	14 (15/104)	40 (4/10)
1989	12 (35/299)	5 (17/331)	6 (9/139)	7 (20/300)	13 (6/63)	5 (2/39)
1994	21 (68/326)‡	11 (24/216)§	15 (19/124)§	8 (23/292)	0 (0/46)	16 (14/87)
95% Confidence interval†	3 to 15	1 to 11	1 to 16			
Can give you AIDS:						
1989	3 (8/299)	14 (46/331)	3 (4/139)	7 (21/300)	0 (0/63)	
1994	0 (0/326)	5 (11/216)§	0 (0/124)	0 (0/292)	0 (0/46)	
Knowledge of correct method of taking drug:						
1969	76 (325/425)	48 (188/391)	44 (154/351)	0 (0/61)	NA	89 (175/196)
1974	81 (309/380)	66 (207/314)	38 (83/219)	55 (47/86)	NA	80 (52/65)
1979	82 (368/448)	79 (392/495)	32 (61/190)	57 (169/299)	18 (9/50)	80 (37/46)
1984	82 (329/399)	78 (305/393)	55 (26/47)	49 (149/303)	79 (82/104)	90 (9/10)
1989	83 (249/299)	84 (277/331)	60 (83/139)	51 (152/300)	75 (47/63)	46 (18/39)
1994	88 (288/326)	69 (150/216)‡	73 (90/124)‡	49 (144/292)	87 (40/46)	68 (59/87)§
95% Confidence interval†		-21 to -7	2 to 24			3 to 40

Denominators represent numbers of pupils who cited drug in question 1.

*Number of pupils who answered question 2: 1969, 238; 1974, 331; 1979, 519; 1984, 387; 1989, 362; 1994, 366. Number who answered question 3: 1969, 439; 1974, 437; 1979, 597; 1984, 509; 1989, 362; 1994, 367.

†For change in percentages between 1989 and 1994.

‡Change between 1989 and 1994 significant at $P < 0.01$.

§Change between 1989 and 1994 significant at $P < 0.05$.

between 1989 and 1994 in the proportion of pupils mentioning opiates is probably associated with the fact that in 1994 there was less publicity than in the late 1980s, the time of the government's campaign against heroin. The dramatic 10-fold increase between 1989

and 1994 in the mentioning of ecstasy was probably influenced by media coverage of this drug.

The proportion of pupils mentioning amphetamines in 1989 and 1994 also increased significantly. In Wolverhampton concern exists not only about the increased availability of illicitly produced amphetamines but also about the fact that a large proportion of users are injecting. The proportion of pupils mentioning solvents, however, has not increased over the past five years, which is surprising, considering not only the number of deaths from misuse of volatile substances nationally (122 in 1991)⁷ but also the extent of national media coverage. The reason could be that in recent years the local press has, to its credit, given more responsible coverage to misuse of solvents. The proportion of pupils who replied to the question, "What dangers do you know of these drugs?" has increased over the 25 years of the study, but the level of knowledge of some of the dangers has decreased over the past five years. The replies in 1994 continued to be limited and often inaccurate. The 1994 results seem to be closer to the 1984 results than to those of 1989.

Between 1989 and 1994 the proportion of correct responses to the question, "How are these drugs taken?" increased significantly for lysergide and amphetamines, but decreased significantly for opiates. Other research also indicates limited knowledge of the dangers of illicit drugs.⁸

EXPOSURE TO DRUGS

Between 1969 and 1994 the proportion of pupils who knew someone taking drugs more than quadrupled, and the proportion who were offered drugs increased ninefold (figure 2). It is of concern that these proportions more than doubled between 1989 and 1994. Although many of the pupils may know the same person, this increase still indicates a greater exposure to drugs. In their 1986 survey of teenagers aged 14 and 15 in Portsmouth, Brown and Lawton found that 41% knew someone taking drugs.⁹ Bean *et al* reported the same figure in their 1987 survey in Nottingham.¹⁰ Balding's 1993 survey of the United Kingdom showed that 64% of boys and 69% of girls knew a drug user.⁸ In a 1992 survey of eight schools in the north west of England, Measham *et al* found that 59% had been offered drugs.¹¹

A much greater proportion of pupils in 1994 stated which drugs had been offered to them than in previous years. The drugs mentioned by those who knew someone taking drugs and by those who had been offered drugs were cannabis, lysergide, ecstasy, cocaine, and amphetamines (table II). Surprisingly, the proportion of pupils mentioning solvents, which were first mentioned in 1979, reached a peak in 1984 and has been decreasing since then. These findings were similar to those of a study in 1990 by Smith and Nutbeam in Wales of teenagers aged 15 and 16 who were offered cannabis, solvents, and psilocybin.¹²

It is interesting that in Balding's study and in the present one opiates were rarely mentioned, which is consistent with a current view that people who inject heroin are out of favour on the drug scene. A greater proportion of pupils replied to the supplementary question, "Where were these drugs offered?" in 1994 than in previous years (table II). Up to 1979 the most commonly mentioned place was "party" but since then has been "street." Between 1989 and 1994 the proportion of pupils mentioning "discos" increased significantly, which is probably linked to the rave and music scene. It is of concern that among those who had been offered drugs "school" has also become a significantly more common source of drugs in the past five years.

TABLE II—Responses of pupils to supplementary parts of questions 4 and 5

	1969 (n=471)	1974 (n=523)	1979 (n=648)	1984 (n=540)	1989 (n=380)	1994 (n=392)	95% Confidence interval†
<i>What drugs did people take?</i>							
Cannabis	6 (24)	29 (81)	71 (76)	85 (60)	78 (74)	168 (74)	
Lysergide	2 (8)	6 (17)	3 (3)	3 (2)	3 (3)	36 (16)‡	7 to 19
Ecstasy					2 (2)	29 (13)‡	6 to 16
Cocaine			1 (1)	5 (4)	7 (7)	22 (10)	
Amphetamines	16 (64)	11 (31)	12 (13)	2 (1)	2 (2)	19 (8)§	2 to 11
Opiates	7 (28)	4 (11)	12 (13)	12 (9)	5 (5)	12 (5)	
Solvents			1 (1)	29 (21)	8 (8)	7 (3)	
No (%) of respondents	25 (5)	36 (7)	94 (15)	141 (26)	105 (28)	228 (58)	
<i>Where did they get them?</i>							
Street		10 (12)	27 (26)	35 (30)	40 (40)	111 (50)	
Party	17 (34)	21 (25)	32 (31)	31 (27)	24 (24)	84 (38)§	3 to 25
Disco		4 (5)	29 (28)	9 (8)	15 (15)	61 (28)§	3 to 21
School	6 (12)	10 (12)	14 (13)	12 (10)	13 (13)	43 (20)	
Public house	7 (14)	10 (12)	19 (18)	20 (17)	33 (33)	29 (13)‡	-30 to -10
Coffee bar	16 (32)	5 (6)	5 (5)	2 (2)	1 (1)		
No (%) of respondents	50 (11)	83 (16)	104 (16)	115 (21)	99 (26)	220 (56)	
<i>What drugs have you been offered?</i>							
Cannabis	6 (55)	13 (56)	36 (82)	34 (48)	60 (92)	125 (78)‡	-24 to -5
Lysergide		1 (4)		2 (3)	2 (3)	25 (16)‡	5 to 20
Ecstasy						25 (16)	
Cocaine		1 (2)	3 (4)			10 (6)	
Amphetamines	6 (55)	5 (22)	6 (14)	3 (4)		9 (6)	
Opiates		4 (17)	3 (7)	4 (6)	1 (1)	3 (2)	
Solvents			2 (5)	15 (21)	1 (1)		
No (%) of respondents	11 (2)	23 (4)	44 (7)	71 (13)	65 (17)	161 (41)	
<i>Where were they offered?</i>							
Street	3 (14)	11 (32)	21 (43)	35 (50)	38 (56)	97 (57)	
Party	9 (4)	16 (47)	12 (24)	17 (24)	19 (28)	56 (33)	
Disco		3 (9)	23 (47)	11 (16)	10 (15)	53 (31)‡	6 to 28
School	6 (27)	6 (18)	8 (16)	10 (14)	8 (12)	45 (27)§	5 to 25
Public house		3 (9)	4 (8)	2 (3)	15 (22)	19 (11)§	-22 to 0
Coffee bar		2 (6)	1 (2)				
No (%) of respondents	22 (5)	34 (7)	49 (8)	70 (13)	68 (18)	169 (43)	

*Some pupils knew people who took drugs and where they got them but not which specific drugs they took. Similarly, some pupils who had been offered drugs knew where they had been offered them but not which specific drugs they had been offered.

†For change in percentages between 1989 and 1994.

‡Change between 1989 and 1994 significant at $P < 0.01$.

§Change between 1989 and 1994 significant at $P < 0.05$.

TABLE III—Reasons given by pupils for why young people take drugs (question 7). Figures are numbers (percentages) of respondents unless stated otherwise

	1969 (n=471)	1974 (n=523)	1979 (n=648)	1984 (n=540)	1989 (n=380)	1994 (n=392)	95% Confidence interval*
To feel big, show off, look grown up	123 (29)	145 (30)	214 (34)	235 (47)	180 (49)	174 (48)	
For kicks, for fun, to feel good	90 (21)	106 (22)	136 (22)	52 (10)	102 (28)	152 (42)†	7 to 21
Because friends do, trendy	163 (39)	122 (25)	116 (19)	127 (25)	126 (34)	122 (34)	
To relieve boredom, depression	24 (6)	85 (18)	111 (18)	30 (6)	76 (21)	64 (18)	
For the experience, out of curiosity	134 (32)	61 (13)	78 (13)	36 (7)	58 (16)	39 (11)‡	-10 to 0
To escape problems	81 (19)	98 (20)	86 (14)	41 (8)	71 (19)	26 (7)†	-17 to -7
To calm nerves	0 (0)	53 (11)	133 (21)	47 (9)	14 (4)	9 (3)	
No (%) of respondents	425 (90)	480 (92)	621 (96)	505 (94)	366 (96)	360 (92)	

*For change in percentages between 1989 and 1994.

†Change between 1989 and 1994 significant at $P < 0.01$.

‡Change between 1989 and 1994 significant at $P < 0.05$.

TABLE IV—Replies to the question, "Where did you first hear about drugs?" Figures are numbers (percentages) of respondents

	1969 (n=471)	1974 (n=523)	1979 (n=648)	1984 (n=540)	1989 (n=380)	1994 (n=392)	95% Confidence interval*
Television	347 (75)	381 (73)	458 (71)	418 (82)	268 (72)	235 (61)†	-18 to -4
Friends	56 (12)	53 (10)	95 (15)	63 (12)	79 (21)	146 (38)†	10 to 23
Talk in school		89 (17)	73 (11)	43 (8)	61 (16)	138 (36)†	13 to 26
Newspapers	200 (45)	144 (28)	145 (23)	140 (28)	73 (20)	96 (25)	
Parents	33 (7)	79 (15)	88 (14)	63 (12)	58 (16)	73 (19)	
Books		47 (9)	29 (5)	25 (5)	17 (5)	37 (10)†	1 to 9
Radio	51 (11)	29 (6)	44 (7)	30 (6)	22 (6)	29 (8)	
Number (%) of respondents	460 (98)	519 (99)	644 (99)	508 (94)	372 (98)	384 (98)	

*For change in percentages between 1989 and 1994.

†Change between 1989 and 1994 significant at $P < 0.01$.

Consistently over the years, "to feel big, show off, feel grown up" has been the most commonly mentioned reason for taking drugs (table III). In 1994 the second most commonly mentioned reason was "for kicks, for fun, to feel good," which replaced "because friends do, trendy." Pupils continue to see social and peer group pressures as the main influences on a decision to start taking drugs, a view endorsed by Swadi.¹³ The perception that drugs are taken "for kicks, for fun" shows that these young people are aware that drugs do have pleasurable effects, a point often ignored by educationalists.

During the 25 years of our study television has continued to be the main source of information about drugs, though it was less often mentioned in 1994 (table IV). Friends have replaced newspapers as the second most commonly mentioned source. "Talk in school" has become a significantly more common source since 1989. The role of parents as a source of information has increased over the years, although parents were only the fifth most commonly mentioned source in 1994. It is of concern that over the 25 years the approaches to and methods of effective education about drugs for young people remain largely illusory. Ignorance, however, does not help, and doing nothing is not an option. Education about drugs is needed for young people, professionals who are in contact with young people, parents, and, through the media, the general public. Moreover, while television continues as the main source of information about drugs, producers must give responsible coverage and avoid glamorising the subject.

In his review of a range of primary prevention strategies Cohen concludes that none of these strategies has reduced drug use among young people.¹⁴ Assuming that many "normal" young people will inevitably experiment with drugs and that they expect to do

Questionnaire used in all six surveys.

1 What drugs taken by addicts do you know?						
2 What dangers do you know of each of these drugs?						
3 How are these drugs taken? (Please tick)	Mouth Injection Smoked	Mouth Injection Smoked	Mouth Injection Smoked	Mouth Injection Smoked	Mouth Injection Smoked	Mouth Injection Smoked
4 Do you personally know anyone taking drugs?	Yes No	5 Have you ever been offered drugs?				
If yes, what drugs did they take?		If yes, what drugs were you offered?				
Where did they get them? (Please tick)		If yes where? (Please tick)				
Coffee bar		Coffee bar				
Party		Party				
Pub		Pub				
School		School				
Street		Street				
Disco		Disco				
Other		Other				
(Please name)		(Please name)				
6 Where did you first hear about drugs? (Please tick)	Television Radio Newspapers Talk in school Books Friends Parents Other	7 Why do you think young people take these drugs?				

- This survey shows a dramatic increase between 1969 and 1994 in young people's experience of and contact with illicit drugs
- Despite increased education about drugs in schools young people's knowledge of the effects and methods of taking illicit drugs remains limited
- With television continuing to be the main source of information about drugs, producers must give responsible coverage and avoid glamorising the subject
- Education must take into account both the perceived importance of peer group pressure and young people's desire for the pleasurable effects of drugs
- A pragmatic approach to education about drugs that combines primary and secondary prevention strategies should be part of the programme of personal, health, and social education in all secondary schools. An appropriate programme should also be part of the curriculum of primary schools

so with minimal risk, Cohen and others argue for a secondary prevention approach, through "harm reduction drug education," the goal of which is "to reduce the number and severity of casualties."^{14 15} A shift of approach to include harm reduction drug education, however, could have dangers, and the approach might give the wrong message to young people. Careful planning and thorough evaluation are essential.

It is also vital that education about drugs does

not take place in isolation. Within the framework of the national curriculum substance misuse should be taught in both primary and secondary schools through a wider programme of personal health and social education. The danger is that other demands of the curriculum may mean that personal health and social education is not given the importance that it deserves. If this approach is to be successful then teachers must be well trained and kept up to date. This point is endorsed by the Advisory Council on the Misuse of Drugs.¹⁶

In relation to the need to educate parents any programme should not only give information but should also help them with parenting and communication skills. Family background and parenting styles have been found to predict later adolescent drug misuse.¹³ Some drug prevention teams funded by the Home Office have successfully worked with "parent empowerment" groups. A leaflet published recently by the Department of Health carries the message, "If you don't talk to your child someone else will" and emphasises the role of parents.¹⁷

For some people a religious faith can make a positive contribution to their not starting to take drugs.¹⁸ In addition, many users have found a new quality of life without drugs through their Christian faith.¹⁹

CONCLUSIONS

The results of this study should be interpreted in the light of national and local changes relating to drugs in medicine, law, society, and coverage by the media. From this and other studies, however, it is clear that an increasing proportion of young people are in contact with illicit drugs from their early teens; that a greater variety of drugs are more widely available both socially and geographically; and that young people expect to enjoy the pleasurable effects with minimal harm. If prevention of drug misuse through education is to have a sustained impact then adequate resources of both trained teachers and suitable materials must be available. The health education coordinators should again

be funded centrally if their vital coordinating and training role is to be implemented.

The authors thank D Dervos; D F Goda; K Grice; L Fisher; Dr K Hackett; I Handley; J Hatton, from the Institute for the Study of Drug Dependence; T M Page; A Parkes; E L Price; P Tilstone; and the three participating schools. We thank also the Royal National Institute for the Blind's express reading service for reading on to tape many of the articles referenced.

- 1 Government Statistical Service. *Home Office statistical bulletin*. London: HMSO, 1993. (Issue 15/93.)
- 2 Wright JD. Knowledge and experience of young people regarding drug abuse between 1969 and 1974. *Med Sci Law* 1976;16:252-63.
- 3 Wright JD, Pearl L. Knowledge and experience of young people regarding drug abuse between 1969 and 1979. *BMJ* 1981;282:793-6.
- 4 Wright JD, Pearl L. Knowledge and experience of young people regarding drug abuse between 1969 and 1984. *BMJ* 1986;292:179-82.
- 5 Wright JD, Pearl L. Knowledge and experience of young people regarding drug abuse, 1969-89. *BMJ* 1990;300:99-103.
- 6 Davies OL. *Design and analysis of industrial experiments*. London: Longman, 1978.
- 7 Department of Public Health Sciences. *Trends in deaths associated with the abuse of volatile substances 1971-1991. Report No 6*. London: St George's Hospital Medical School, 1993.
- 8 Balding J. *Young people in 1993*. Exeter: Schools Health Education Unit, University of Exeter, 1994.
- 9 Brown C, Lawton J. *Illicit drug use in Portsmouth and Havant*. London: Policy Studies Institute, 1988.
- 10 Bean PT, Wilkinson CK, Whynes DK, Giggs JA. Knowledge of drugs and consumption of alcohol among Nottingham 15-year-olds. *Health Education Journal* 1988;47:79-81.
- 11 Measham F, Newcombe R, Parker H. The post heroin generation. *Druglink* 1993;8(3):16-7.
- 12 Smith C, Nutbeam D. Adolescent drug use in Wales. *British Journal of Addiction* 1992;87:227-33.
- 13 Swadi H. A longitudinal perspective on adolescent substance abuse. *European Child and Adolescent Psychiatry* 1992;1:156-70.
- 14 Cohen J. Achieving a reduction in drug-related harm through education. In: Heather N, Wodak A, Nadelmann E, O'Hare P, eds. *Psychoactive drugs and harm reduction: from faith to science*. London: Whurr, 1992.
- 15 Fraser A, Gamble L. Reducing drug related harm in young recreational drug users. In: Bennett T, ed. *Drug misuse in local communities*. London: Police Foundation, 1991.
- 16 Advisory Council on the Misuse of Drugs. *Drug education in schools*. London: HMSO, 1993.
- 17 Department of Health. *Drugs and solvents—you and your child*. London: HMSO, 1993.
- 18 Francis LJ, Mullen K. Religiosity and attitudes towards drug use among 13-15 year olds in England. *Addiction* 1993;88:665-72.
- 19 Allen FA, Jekel FJ. *Crack and broken promise*. London: Macmillan, 1991.

(Accepted 4 November 1994)

Arterial versus capillary sampling for analysing blood gas pressures

Khavar Dar, Tim Williams,
Richard Aitken, Kent L Woods,
Susan Fletcher

Arterial puncture is carried out to obtain samples for analysis of blood gas pressures. Although painful¹ and not without hazard,² arterial puncture is done routinely despite reports that similar information about blood gas pressures can be obtained from capillary samples.³ We quantified patients' perception of the discomfort of sampling from radial arteries compared with that of capillary sampling and compared the biochemical data obtained with these two methods.

Methods and results

We recruited 55 patients requiring measurement of blood gas pressures from patients admitted urgently to Kettering General Hospital. The study's protocol was approved by the district's ethics committee, and informed written consent was obtained for the blood sampling. The clinical diagnoses were exacerbation of chronic obstructive airways disease (22 patients),

asthma (10), pneumonia (5), pulmonary oedema (4), pulmonary embolism (4), diabetic ketoacidosis (4), bronchiectasis (3), fibrosing alveolitis (2), hyper-ventilation (1).

We took a capillary and arterial sample in random order from each patient. For capillary samples we rubbed a proprietary rubefacient on the ear lobe and after about three minutes made a stab about 1-2 mm deep with the point of a size 11 scalpel in the fleshy part of the ear lobe. We collected the blood (which had become more like arterial blood because of the rubefacient) in a heparinised capillary tube held horizontally against the puncture site. A small metal rod was placed in each tube, and after both ends had been sealed with plastic plugs the sample was agitated with a magnet. We took arterial samples from the radial artery using a 22 gauge needle. For the first 29 patients no anaesthetic was used. For the next 26, 1% lignocaine was infiltrated over the radial artery before puncture.

As soon as a patient's second blood sample had been taken, the patient completed a simple questionnaire, rating the discomfort associated with each procedure on a scale from 0 ("no pain at all") to 10 ("worst pain imaginable") and stating which of the two techniques he or she preferred. The pain scores were analysed with non-parametric tests.

Blood gas pressures and acid-base state in the arterial samples were compared with those in the capillary samples with the paired *t* test.

Department of
Medicine and Clinical
Biochemistry, Kettering
General Hospital
NHS Trust, Kettering
NN16 8UZ

Khavar Dar, medical
registrar
Tim Williams,
consultant physician
Richard Aitken, top
grade biochemist

Department of
Medicine and
Therapeutics,
University of
Leicester, Leicester
Kent L Woods,
senior lecturer
Susan Fletcher,
research assistant

Correspondence to:
Dr Williams.

BMJ 1995;310:24-5