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Abstract *Background*: National suicide statistics show remarkable differences in the frequencies of various methods used for completed suicide. The WHO/EURO Multicentre Study on Parasuicide makes possible for the first time an international comparison of the frequencies of methods used in attempted suicide, because the data are based on geographical catchment areas of medical institutions. *Method*: Ongoing standardized monitoring of attempted suicide in all medical institutions serving the catchment areas was performed in 14 centres in 12 European countries. The data analysis is based on 20,649 events involving 15,530 persons, recorded between 1989 and 1993. *Results*: The comparison of rates per 100,000 shows striking differences between the centres. The highest rates for drug overdoses were found for female attempters in Oxford (347/100,000), Helsinki (238/100,000) and Stockholm (221/100,000). Guipuzcoa had the lowest rates (61/100,000). The differences were most prominent in the age group 15–24, with outstanding rates for women in Oxford (653/100,000), which was mainly due to the frequent use of analgesics. Szeged had outstandingly high rates for pesticides and solvents. In some centres the use of multiple methods was frequent. *Conclusions*: There is a need, especially for areas with high frequencies for certain methods, to understand the factors involved and to develop new and specific prevention projects and to monitor their effects. The WHO/EURO Multicentre Study on Parasuicide has proved to be a useful and reliable instrument for continuous monitoring of trends in parasuicide.

Key words Attempted suicide · Suicide methods · Deliberate overdose · Europe

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Introduction

On the basis of national death statistics, it is well known that there are considerable international differences in the frequencies of various methods associated with completed suicide. For attempted suicide, however, no such internationally comparable statistics have been available so far, because these data have usually been based on patient populations of medical institutions, and are therefore not representative for a country or a catchment area.

From studies on completed suicide we know that the use of methods changes over time. In Denmark, for instance, suicide by poisoning increased up to the 1940s, then fell again, while the use of violent methods increased considerably (Bille-Brahe and Jessen 1994). It is generally accepted that the availability of a method is one of the factors influencing the frequencies of its use in suicide. Thus, in Finland, rates for suicide by parathion, a highly lethal pesticide, decreased after its availability was restricted (Ohberg et al. 1995). This study, as well as several others, suggests that if one suicide method is restricted, people may turn to other methods. However, there are several examples, such as the detoxification of domestic gas in the UK in the 1960s (Kreitman 1976), and the restrictions in the availability of barbiturates in Japan (Lester and Kazuhiko 1989) and in Australia (Oliver and Hetzel 1972), where the reduced availability of one method was associated with an overall decrease of the suicide rate.

In parasuicide, changes in the use of drugs in overdoses have been reported by Platt et al. (1988). Hawton and Fagg (1992) observed a steady decrease in the use of tranquillizers and sedatives from the late 1970s, probably reflecting changing prescribing habits and a marked increase in the use of non-opiate analgesics. Social and cultural factors as well as gender and age are likely to influence the choice of methods. Grootenhuis et al. (1994), describing differences between Utrecht and Oxford, reported that the Utrecht parasuicide patients were older and took fewer analgesics but more benzodiazepines than patients in Oxford, and that in self-injury they used more dangerous methods.

The WHO/EURO Multicentre Study on Parasuicide involves 15 centres from 13 European countries. Bordeaux was not included, because the centre dropped out after 1 year. A list of the participating centres can be found in the Appendix. The background to the study has been described by Platt et al. (1992), Kerkhof et al. (1994) and Schmidtke et al. (1996). An important aspect of this study is that the data are based on geographically defined catchment areas, which allows the frequencies of parasuicide to be related to the population data of these areas. They represent a total of nearly 5 million people. In a first analysis of data of the WHO/EURO Multicentre Study on Parasuicide, Schmidtke et al. (1996) reported differences between centres particularly in the use of pesticides, herbicides and other agricultural chemicals, cutting and alcohol. The aim of our study was to determine in more detail the frequencies of the different methods used within the catchment areas of the WHO/EURO Multicentre Study on Parasuicide, and to compare frequencies between the participating centres. We were especially interested to see whether outstanding frequencies of certain methods could be identified, which then could become possible targets for specific intervention strategies.

Subjects and methods

For the collection of information on cases of parasuicide, the cooperation of all the institutions offering medical treatment to patients living or temporarily residing in the geographically defined catchment areas (general hospitals, psychiatric hospitals, private hospitals, general practices, prisons, relevant medical institutions outside the catchment areas) was secured. Where ongoing reporting was not possible, an estimate was made based on a sample. The information on each case was recorded and coded on a standardized monitoring form developed for this multicentre study. Patients admitted to more than one institution after a suicide attempt were identified, and one event recorded only. For the definition of parasuicide the ICD-10 version was used (see Kerkhof et al. 1994). The data were recorded either by a member of the local research team or by the physician responsible for the patient. Where this was not possible, the information was collected from the hospital case notes. Missing data were mainly due to organizational problems, such as patients admitted and discharged over the weekend or at night.

The reliability of data collection was ensured by thorough training of the research staff of each centre and continuous supervision by the steering group of the multicentre study. Continuous quality control of the data was carried out by the Würzburg team (head: Dr. A. Schmidtke). Close cooperation with all medical services in the catchment area was sought, to ensure the validity of the data. It must be emphasized that the recorded events included medically treated cases of parasuicide only; deliberate self-harm that was not brought to the attention of medical staff is not included.

Centres that could not ensure full coverage of medical services in the catchment area were asked to make a detailed investigation into the proportion of missed cases (e.g. cases missed because not all general practitioners were included in the monitoring) and to provide the appropriate factor for the estimated 100% of cases, separate for each year, sex and age group. The data were then multiplied by this factor. It must be noted that the data used here relate to cases of parasuicide (events), not persons. That is, the same person can appear several times if he or she was involved in more than one parasuicidal act during the period of data collection.

Between 1989 and 1993 a total of 20,649 cases of parasuicide ("events") were recorded. These were carried out by 15,530 persons in 14 centres. Not all centres covered all the 5 years of the study period. In 525 events no method was recorded. After calculation with the estimation factors, the total number of events increased to 25,816, and the number of persons to 19,898 (male 43%, female 57%), with a mean age of 37.3 (male 36.9, female 37.6) years.

Data on age, sex, sociodemographic characteristics, place, date and time of parasuicide, as well as the methods used for the parasuicide, using the ICD-10 X-codes, were recorded. The monitoring form had space for recording up to four different methods in each case of parasuicide.

Statistical procedures

Yearly rates per 100,000 population were calculated using the population data of each catchment area. Because of differing age distributions, the data were age adjusted, using the Standard European Population (see Platt et al. 1992). Frequencies were

calculated by univariate frequency tables and multivariate cross-tabulations for multiple response items, using SPSS-b.1 (1988). Confidence intervals were based on 95% limits. Chi-square statistics were used to test for the statistical significance of gender differences in the use of methods.

Results

Distribution of methods, pooled data

For a first analysis, the 25 X-codes were condensed into 13 categories. All drugs (X60–64) were grouped together as one category; X66, 68 and 69 as "pesticides and other toxic substances"; X72–75 as "shooting and explosives"; X76 and 77 as "fire and steam, etc.", X78 and 79 as "sharp and blunt objects", and X83 and 84 as "other and unknown".

The percentage distribution of methods is shown in Table 1. The percentages add up to more than 100, because often more than one method was used in a single episode. Men took drugs in 73% and women in 84% of all events (8044 vs 12,299 events, chi-square = 445.7, $P = 0.0000$), cutting and alcohol being the next most frequently used methods, both being used in less than 17% of episodes. The frequencies of other methods were below 3%.

Table 2 shows the breakdown into the different categories of drugs (X60–64). Multiple drug use from the same ICD 10-X code category was recorded as one drug. The drugs of ICD-10 category X60 ("Non-narcotic analgesics") can in most countries be bought "over the counter", although in some countries in small quantities only. X61 comprises all psychotropic drugs, including antidepressants, but also anticonvulsants. All these drugs are generally available on prescription only. The category X63 ("Other drugs acting on the central and autonomous nervous system") includes beta-blocking agents and anti-Parkinsonian drugs. X64 ("Other drugs") includes antihistaminic drugs, antibiotics, insulin, etc.

Distribution of methods, separately for each centre

Table 3 shows the percentages of methods used in each centre, separate for males and females. The percentages of events in which drugs were taken are consistently higher for women. Differences are highly significant (chi-square test) for all the centres. The highest percentage of drug overdoses for men was in Oxford (85%). For women, the highest percentage was in Oxford and Helsinki (91%), the lowest in Umeå (72%). In Würzburg and Innsbruck, cutting was used relatively often by men

Table 1 Distribution of methods[a] used in parasuicide, by gender (30,106 total methods recorded, 25,816 events): pooled data, all centres, 1989–1993, after calculation with estimation factors

	Men (11,079 events)		Women (14,737 events)	
	No. of times used	In % of events	No. of times used	In % of events
Drugs (X60–64)	8044	(72.6)	12299	(83.5)
Alcohol (X65)	1825	(16.5)	1780	(12.1)
Gas, vapours (X67)	64	(0.6)	48	(0.3)
Solvents (X66), Pesticides & other agricultural chemicals (X68, 69)	421	(3.8)	319	(2.2)
Hanging (X70)	274	(2.5)	181	(1.2)
Drowning (X71)	83	(0.7)	164	(1.1)
Guns and explosives (X72–75)	100	(0.9)	21	(0.1)
Fire, steam, etc. (X76, 77)	38	(0.3)	31	(0.2)
Sharp & blunt object (X78, 79)	1877	(16.9)	1668	(11.3)
Jumping from high place (X80)	218	(2.0)	203	(1.4)
Lying in front of a moving object (X81)	103	(0.9)	60	(0.4)
Crashing motor vehicle (X82)	46	(0.4)	16	(0.1)
Other (X83, 84)	127	(1.1)	97	(0.7)

[a] Up to four methods per event recorded

Table 2 Distribution of drug categories used in parasuicide, by gender (23,321 total methods recorded, 20,343 events): pooled data, all centres, 1989–1993, after calculation with estimation factors

	Men (8044 events)		Women (12,299 events)	
	No. of times used	(In % of overdoses)	No. of times used	(In % of overdoses)
Non-narcotic analgesics, etc. (X60)	1498	(18.6)	2703	(22.0)
Psychotropic drugs, anticonvulsants, etc. (X61)	5622	(69.9)	8874	(72.2)
Opiates and narcotics (X62)	452	(5.6)	319	(2.6)
Other drugs acting on central and autonom. nerv. syst. (X63)	404	(5.0)	570	(4.6)
Other drugs/medicaments[a] (X64)	1245	(15.5)	1634	(13.3)

[a] Including unspecified drugs

Table 3 Selected methods used for parasuicide, presented as number of times used (*N*) and as a percentage of all suicide attempts (25,816 attempts, 30,106 methods recorded)

Centre	No. of attempts	Drugs (X60–64) *N* (%)	Cutting, etc. (X78–79) *N* (%)	Pesticides, etc. (X68–69) *N* (%)	Hanging (X70) *N* (%)	Jumping (X80) *N* (%)	Other *N* (%)
Odense							
M	2045	1394 (68)	449 (22)	82 (4)	51 (2)	16 (1)	664 (32)
F	2366	1915 (81)	370 (16)	27 (1)	31 (1)	23 (1)	589 (25)
Emilia Romagna							
M	311	192 (61)	57 (18)	13 (4)	13 (4)	13 (4)	52 (17)
F	713	569 (80)	65 (9)	36 (5)	7 (1)	28 (4)	62 (9)
Padova							
M	235	155 (66)	36 (15)	26 (11)	9 (4)	10 (4)	38 (17)
F	500	414 (83)	35 (7)	35 (7)	4 (1)	16 (3)	44 (9)
Helsinki							
M	3400	2706 (80)	478 (14)	65 (2)	16 (1)	51 (1)	526 (15)
F	3200	2907 (91)	234 (7)	21 (1)	3 (1)	28 (1)	345 (11)
Würzburg							
M	389	215 (55)	116 (30)	12 (3)	15 (4)	9 (2)	115 (30)
F	691	501 (73)	139 (20)	13 (2)	14 (2)	19 (3)	146 (21)
Umeå							
M	493	315 (64)	101 (20)	30 (6)	21 (4)	9 (2)	48 (10)
F	996	719 (72)	213 (21)	11 (1)	38 (4)	6 (1)	68 (7)
Leiden							
M	538	398 (74)	65 (12)	15 (3)	16 (3)	23 (4)	172 (32)
F	990	806 (82)	135 (14)	18 (2)	17 (2)	8 (1)	178 (18)
Stockholm							
M	863	623 (72)	144 (17)	13 (2)	26 (3)	17 (2)	135 (16)
F	1413	1157 (82)	155 (11)	16 (1)	26 (2)	23 (2)	152 (11)
Sør-Trøndelag							
M	647	509 (79)	73 (11)	24 (4)	11 (2)	8 (1)	325 (50[a])
F	922	797 (86)	66 (7)	4 (1)	4 (1)	6 (1)	353 (38[a])
Innsbruck							
M	323	180 (56)	96 (30)	5 (2)	14 (5)	9 (3)	113 (35)
F	474	404 (85)	43 (9)	6 (1)	6 (1)	3 (1)	112 (24)
Szeged							
M	498	357 (72)	39 (8)	98 (20)	52 (10)	0	0
F	646	556 (86)	18 (3)	99 (15)	17 (3)	0	2 (0)
Guipuzcoa							
M	88	45 (51)	24 (27)	3 (3)	2 (2)	7 (8)	18 (20)
F	140	109 (78)	13 (9)	6 (4)	0	10 (7)	16 (11)
Oxford							
M	846	724 (85)	119 (14)	21 (3)	5 (1)	7 (1)	20 (2)
F	1131	1031 (91)	108 (10)	13 (1)	0	4 (1)	8 (1)
Bern							
M	403	232 (58)	79 (20)	12 (3)	22 (5)	29 (7)	150 (37)
F	556	414 (75)	75 (14)	13 (2)	14 (3)	29 (5)	140 (25)

[a] Includes high frequencies for Alcohol (M: 303, 47%; F: 335, 36%)

(30%). Szeged in Hungary had a high proportion of cases in which pesticides were ingested (20% male, 15% female). In this table some centres have a relatively high percentage of "other methods" (Odense, Würzburg, Leiden, Sør-Trøndelag, Innsbruck, Bern). This category includes, above all, alcohol (47% in Sør-Trøndelag, between 20 and 30% in Odense, Würzburg, Leiden, Innsbruck and Bern). Proportions for other methods such as poisoning by gas, submersion, firearms, jumping in front of a moving object are all below 5%.

Rates per 100,000 inhabitants

The rates of overdoses with drugs for each centre by gender, per year and per 100,000 inhabitants, are shown in Table 4. The fluctuations over time were considerable. When the rates were averaged for all years, the highest rates for men were found in Helsinki (274/100,000) and Oxford (265/100,000), while the highest rates for women were found in Oxford (347/100,000), Helsinki (238/100,000) and Stockholm (221/100,000). Guipuzcoa had the lowest rates (26 and 61/100,000, respectively). It is noteworthy that the two Italian centres, Emilia Romagna and Padova, had very similar rates, while the two Swedish centres, Stockholm and Umeå, differed considerably.

The age span with the highest rates of drug overdose (X60–64) in most centres is 15–24. The average rates were outstandingly high for women in Oxford (653/100,000), and high for men in Oxford (310/100,000). Helsinki had the next highest rates for men (286/

Table 4 Rates for parasuicide by overdose of drugs (X60–64) per 100,000 inhabitants, age-standardized, with 95% confidence limits

	1989	1990	1991	1992	1993	Mean
Odense						
M	176 ± 22	157 ± 18	127 ± 16	148 ± 17	149 ± 17	151
F	240 ± 25	209 ± 20	158 ± 17	182 ± 19	197 ± 19	197
Emilia Romagna						
M	41 ± 12	33 ± 11	33 ± 10	34 ± 11		35
F	95 ± 17	106 ± 18	91 ± 17	92 ± 17		96
Padova						
M	39 ± 13	37 ± 13	22 ± 10	42 ± 14	30 ± 12	34
F	93 ± 19	80 ± 17	74 ± 17	87 ± 18	82 ± 17	83
Helsinki						
M	323 ± 27	298 ± 33	240 ± 53	278 ± 56	234 ± 52	274
F	258 ± 20	257 ± 26	235 ± 43	229 ± 42	213 ± 42	238
Würzburg						
M	39 ± 17	23 ± 11	51 ± 14	32 ± 12	59 ± 18	41
F	77 ± 22	58 ± 17	77 ± 17	80 ± 17	123 ± 26	83
Umeå						
M	73 ± 16	80 ± 17	61 ± 15	64 ± 15	44 ± 13	64
F	146 ± 23	149 ± 23	136 ± 22	151 ± 23	141 ± 22	145
Leiden						
M	50 ± 16	74 ± 21	78 ± 19	62 ± 18		66
F	134 ± 26	129 ± 27	113 ± 23	124 ± 25		125
Stockholm						
M	140 ± 24	141 ± 24	96 ± 20	133 ± 24	123 ± 23	127
F	285 ± 33	215 ± 29	194 ± 28	176 ± 27	235 ± 30	221
Sør-Trøndelag						
M	115 ± 21	117 ± 22	82 ± 18	102 ± 20	91 ± 19	101
F	182 ± 26	179 ± 26	129 ± 22	122 ± 21	151 ± 24	153
Innsbruck						
M	38 ± 12	49 ± 16	44 ± 15	47 ± 15		45
F	102 ± 19	88 ± 20	86 ± 20	84 ± 20		90
Szeged						
M	127 ± 23	141 ± 24	121 ± 22			130
F	215 ± 27	187 ± 25	167 ± 24			190
Guipuzcoa						
M	38 ± 17	25 ± 13	14 ± 10			26
F	80 ± 24	47 ± 18	55 ± 19			61
Oxford						
M	292 ± 47	265 ± 48	248 ± 44	242 ± 44	276 ± 45	265
F	380 ± 59	338 ± 54	337 ± 52	376 ± 55	305 ± 48	347
Bern						
M	81 ± 17	63 ± 14			45 ± 12	63
F	137 ± 20	97 ± 17			75 ± 15	103

100,000), and was the only centre with a male predominance. The lowest rates for men were found in Emilia Romagna and Padova (33 and 38/100,000), for women in Guipuzcoa (83/100,000) and, again, the Italian centres (135/100,000). There were marked differences between male and female rates in most centres. Large fluctuations over the years were found in some centres.

Drugs used were mainly psychotropic drugs (X61, Fig. 1). Rates for this category were especially high for men in Helsinki (211/100,000) and for women in Helsinki (188/100,000) and Stockholm (172/100,000). Rates for analgesics (X60, Fig. 2) were strikingly high in Oxford (males 135/100,000, females 188/100,000).

For alcohol the male rates were highest in Odense (62.4/100,000) and Helsinki (43.2/100,000), while the female rates were highest in Sør-Trøndelag (64/100,000) and Odense (53/100,000). Stockholm, Umeå, Padova and Emilia Romagna all had low frequencies in the use of alcohol in parasuicide. In Oxford alcohol was only recorded when alcohol alone was used, and in Huddinge it was only recorded when patients said they had deliberately taken alcohol to commit suicide. The highest rates (between 30 and 50/100,000) for the use of sharp and blunt objects (X78, 79, Fig. 3) were found in Odense, Helsinki, Umeå and Oxford. In Szeged, the rates for pesticides, solvents, and other toxic substances (X66, 68–69) were more than four times higher than those in any of the other centres.

Combinations of methods

In one-quarter of the events, more than one method (multiple drug use counted once only) was used (males 26%, females 24%). In this respect, the centres differed considerably. While in some centres more than one method was recorded in less than 10% of all events (Emilia Romagna, Umeå, Stockholm, Szeged, Oxford), other centres reported over 30% of the events involved more than one method (Odense, Sør-Trøndelag). The most frequent combination was drugs with alcohol: 15% of all drug overdoses were combined with alcohol in excess of the usual consumption, with no gender difference. The most frequent combination of three methods was drugs, alcohol and cutting.

Discussion

The data-pool of the WHO/EURO Multicentre Study on Parasuicide allows for the first time a comparison of the methods used for parasuicide in 14 catchment areas throughout Europe. It should be noted that the results are based on events. Person-based results might have a slightly different distribution of methods, because repeaters tend to use the same method of parasuicide such as overdosing and cutting.

In the total of 25,816 events between 1989 and 1993, drug overdoses were by far the most common method for parasuicide, used by men in 73% and by women in 84% of events. These percentages are higher than the ones first reported by Schmidtke et al. (1996). The difference can be explained by the fact that Schmidtke et al.'s data are based on one method per event (the method considered most important), while we used up to four methods recorded. For instance, Schmidtke et al. disregarded overdosing in patients who took drugs and tried to drown themselves. Overdoses mainly consisted of psychotropic drugs (71%), while non-narcotic analgesics were taken in about one-third of the events. Gender differences were found for most of the methods. Females took drug overdoses significantly more often than did males. Relatively more men used alcohol, cutting, solvents and pesticides, hanging, jumping and throwing oneself in front of a moving object. Drowning was used more often by women.

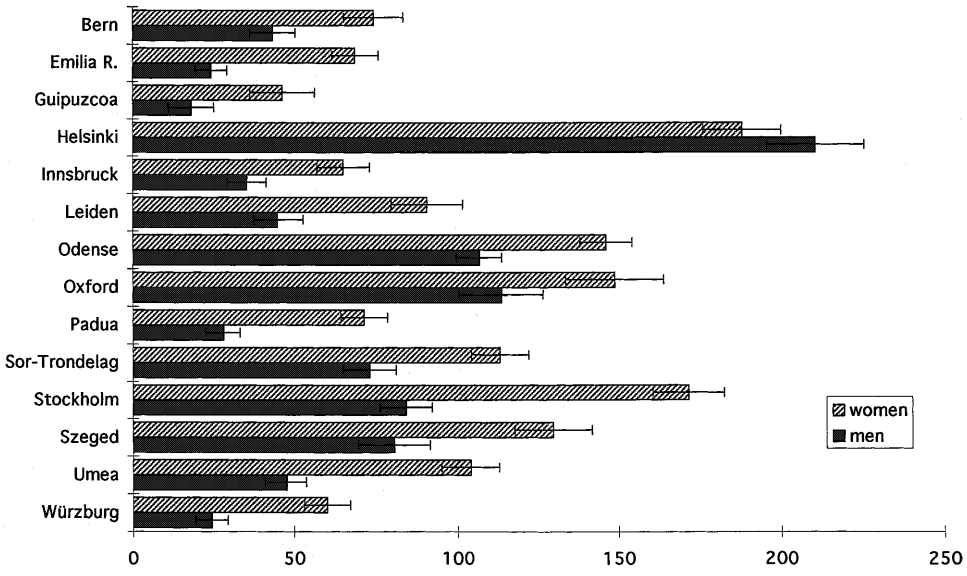

Fig. 1 Use of psychotropic drugs (X61) in parasuicide: rates per 100,000, age 15+, 95% confidence intervals

A combination of methods was used in 25% of the cases, excluding multiple drug use of the same X-category. It is well known that multiple drug use is common. In Bern, multiple drugs were used in 41% of overdoses (Michel et al. 1994). In a similar analysis, Neeleman and Wessely (1997) reported that drug cocktails in overdoses were frequent, and that minor tranquillizers taken in combination were a possible factor responsible for a fatal outcome. Mendelson and Rich (1993) found multiple drug ingestion and frequent use of alcohol in about half of the completed suicides due to overdoses.

The breakdown of methods into percentages gives a picture of the distribution of the various methods in each centre. However, because the overall rates of parasuicide in the various centres of the WHO/EURO study differ by more than tenfold (Schmidtke et al. 1994), percentages allow no comparison of the actual frequencies. We therefore decided to compare rates per 100,000 inhabitants. This was possible because the WHO/EURO multicentre study is based on catchment areas, for which detailed population data are available. The rates were ageadjusted, using the Standard European Population as reference population. The comparison of rates per 100,000 gives a picture that is somewhat different from the comparison of percentages. For instance, Würzburg has a high percentage of X78–79 (sharp and blunt objects), but the rates per 100,000 for this method are no higher than the average for all centres.

The rates for drug overdoses per 100,000 inhabitants were especially high in Oxford and Helsinki. These differences were most prominent in the age group 15–24. Rates of overdoses with analgesics for women aged 15–24 were by far highest in Oxford. Szeged stood out because it had strikingly high rates for pesticides and solvents. The rates for alcohol were highest in Sør-Trøndelag, Odense and Helsinki, while they were

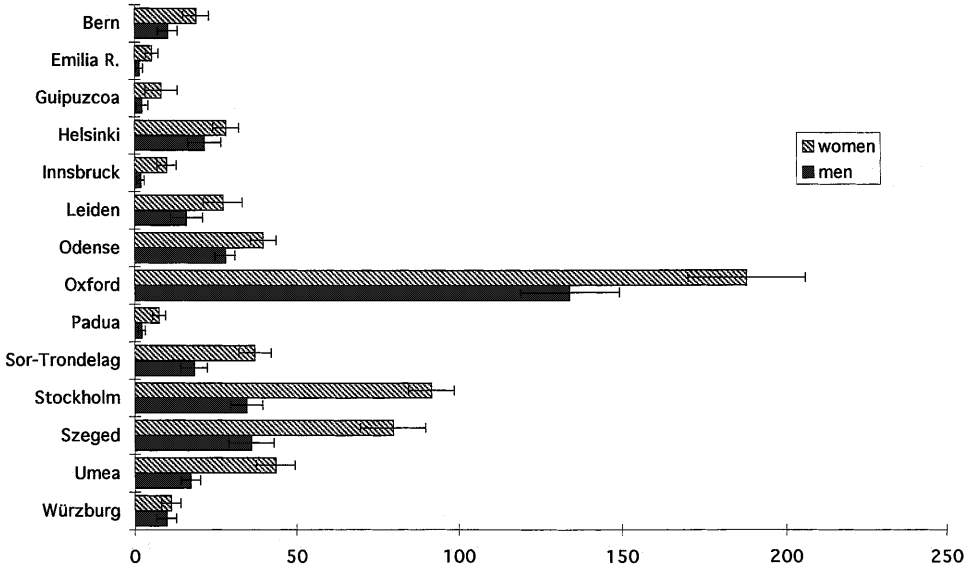

Fig. 2 Use of analgesics (X60) in parasuicide: rates per 100,000, age 15+, 95% confidence intervals

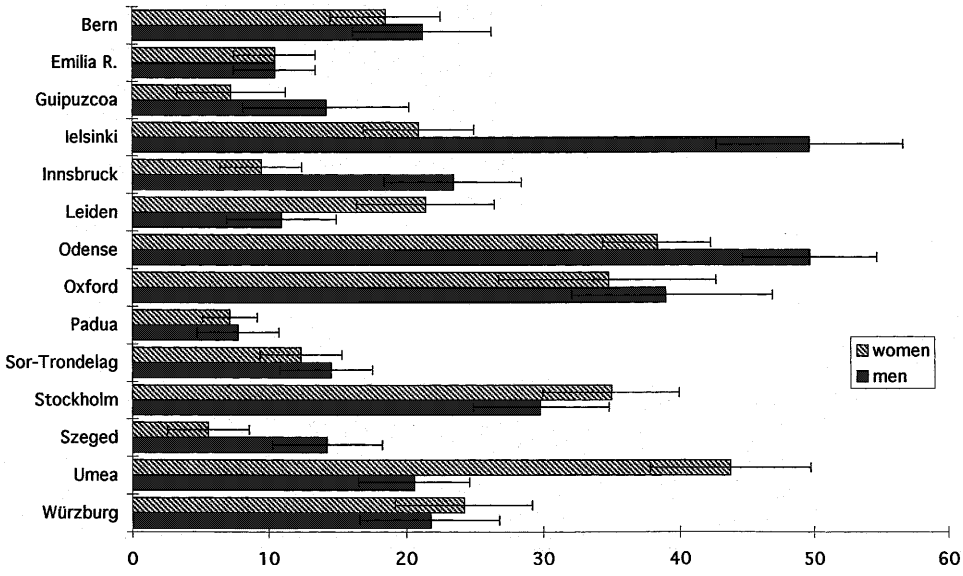

Fig. 3 Use of sharp or blunt objects (X78,79) in parasuicide: rates per 100,000, age 15+, 95% confidence intervals

extremely low in the centres Szeged, Padova and Emilia Romagna.

Obviously, the reliability of our data largely depends on the accurate recording of the methods used. In most cases the information was gained directly from the patients, in a small proportion from case notes. The fluctuation of the rates over the years in some of the X-categories may indeed raise the question of how reliable the data collection was. However, in this study much emphasis was put on the training of research personnel and on accurate data collection, so that we believe it to be unlikely that inaccurate recording is a major factor for the differences. Alcohol as a method appears be an exception, as it was difficult to ensure consistent recording of alcohol as a method for parasuicide. The recording of alcohol very much depends on the interviewing style. Many patients may not report the use of alcohol spontaneously, because they do not consider this as relevant, or feel ashamed to admit it. Some centres did not ask for concomitant use of alcohol when other methods were used. On the other hand, in some centres, e.g. Helsinki, alcohol breath tests were used to determine whether the patient had consumed alcohol or not. This methodological problem in the data collection does not apply to other methods, as the coding criteria for these were unambiguous. For instance, drugs were recorded only when the amount taken was clearly above the usual prescribed dose.

The centres with outstanding frequencies of certain methods are of special interest, because they could become targets for future specific intervention strategies. It is a limitation of this study that, with the exception of some centres, drug names were not recorded. In Bern, subgroups of X61 were coded, and it emerged that in the events of parasuicide included in the WHO/EURO Multicentre Study, benzodiazepines had been used most frequently (46%), followed by antidepressants (11%), analgesics, neuroleptics, and opiates (Michel et al. 1994). A more detailed analysis of the specific compounds used would have to take into account national availability and prescription habits in each country. For instance, the high rates for analgesics in the UK are most likely associated with the easy availability of paracetamol. In the UK, analgesic tablets can be purchased in large numbers over the counter in a wide range of shops, while in other countries (e.g. Switzerland) the largest amount is 20 tablets of analgesics in blisters, available from pharmacies only. In the UK nearly 50% of overdoses involve paracetamol (Hawton et al. 1996), while in Switzerland non-opiate analgesics are taken in 4% only (Michel et al. 1994). Hawton et al. therefore rightly suggested a low maximum number of tablets in individual preparations. Another example is the high rate of overdoses with pesticides in Hungary, which may be related to the frequent use of these chemicals in households. We believe such factors contributing to relatively high percentages of methods used must, in a further step, be determined locally by each centre. Only then can specific preventive interventions be planned and evaluated. This includes aspects such as accessibility of methods, education of the public and of professionals, etc. If in Szeged, for instance, the rates of male parasuicides using pesticides were reduced to the average in the multicentre study, the overall male parasuicide rate would be reduced by 15% (assuming that there is no shift from one method to another).

The continuous monitoring of the methods used in parasuicide is important, as the proportions of the various methods are not stable over time (e.g. Platt et al. 1988; Hawton and Fagg 1992), due, for instance, to changes in the availability, for several reasons. Theoretically, restricting the availability of one method might increase the use of more lethal methods. The findings of Kreitman (1976) regarding the positive effect on the suicide rates of the change from coal gas to North Sea gas in the UK, and those of Lester and Kazuhiko (1989)

in Japan as well as those of Oliver and Hetzel (1972) in Australia reporting similar effects of the restriction of the availability of barbiturates suggest that a switch to more lethal methods is unlikely, provided dangerous methods do not become more easily available.

To summarize, we found considerable differences in the use of methods for parasuicide. In our view there is a need, especially with regard to the outstanding frequencies, to understand the factors involved. To have a preventive effect, new and specific projects are needed and their effects must be monitored. The WHO/EURO Multicentre Study on Parasuicide has proved to be a useful and reliable instrument for monitoring trends in parasuicide. As the monitoring will continue in most centres, this will be an invitation to centres participating in the WHO Multicentre Study to devise and implement specific preventive strategies.

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Appendix

List of the centres participating in the WHO/EURO Multicentre Study on Parasuicide between 1989 and 1993

Austria: Innsbruck
Denmark: Odense
Finland: Helsinki
Germany: Würzburg
Hungary: Szeged
Italy: Emilia Romagna and Padova
Norway: Sør-Trøndelag
Spain: Guipuscoa
Sweden: Stockholm and Umeå
Switzerland: Bern
The Netherlands: Leiden
UK: Oxford

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