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Attempted suicide in Gent: results from the Who/Euro Multicentre Study on Parasuicide in 1996

by

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Abstract

During 1996, 476 suicide attempts involving 420 persons were monitored in the Gent catchment area by twelve health facilities as part of the Who/Euro Multicentre Study on Parasuicide. The overall annual rate of attempted suicide was estimated at 356 per 100.000 inhabitants, with no significant difference between males and females. When compared to other European centres participating in the Multicentre Study, these rates are among the highest. The distribution of the occurence of attempted suicide appears to be strongly influenced by socio-demographic factors (age, marital status, employment status, and area of living). These socio-demographic characteristics differed substantially between suicide attempters admitted to general hospitals and those admitted to other health facilities. Half of the attempters reported a history of suicide attempts. Limitations of the study and implications for treatment and prevention of suicidal behaviour are discussed.

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Key-words

Attempted suicide, epidemiology, risk factors.

Introduction

Comparative studies on the occurrence of suicide show a relatively high rate of suicide in Belgium (1, 2). For instance, the 1996 suicide rates for Flanders (the Dutch-speaking part of Belgium) were 25.8 per 100.000 males and 9.5 per 100.000 females (3) as opposed to respectively 16.2 and 8.0 in the Netherlands in 1995 (4). Although nonfatal suicidal behaviour is one of the most powerfull predictors of completed suicide, no nationwide data on its occurrence are available. Annual rates of attempted suicide have only been estimated using data from selected populations. Based on the Belgian Sentinel Network of General Practitioners Study the annual rate of atttempted suicide was estimated at 130 per 100.000 inhabitants (5). A monitoring study in five general hospitals in Flanders suggested the annual rate at 262 per 100.000 (6).

Thus, depending on the source of the data the annual rates differ widely. In order to determine the actual occurrence of attempted suicide in a number of countries across Europe the WHO/EURO Study on Parasuicide was started in 1992 (7). This study aims at monitoring all cases of attempted suicide within a circumscribed catchment area with at least 200.000 inhabitants that come to medical attention, and thus includes monitoring of non-fatal suicidal behaviour by general practitioners, and in general hospitals, psychiatric hospitals, crisis intervention centres and prisons.

In Gent this study started in 1996, which actually meant an extension of the ongoing monitoring of suicide attempts at the Emergency Department of the University Hospital since 1986 (8). In this paper the results from the first year of monitoring are presented.

Methods

The method of data collection in the WHO/EURO Study has been described elsewhere (9). Within the Gent catchment area which consists of Gent City (112.831 inhabitants) and 14 suburbs (112.562 inhabitants) data were collected in the six general and three psychiatric hospitals, in a crisis intervention centre, in the prison, and by 51 general practitioners.

The participating health facilities were asked to fill in a monitoring form each time they were confronted with a suicide attempt. This form included questions on characteristics of the suicide attempters and their attempts, including age, gender, educational level (categorised to primary school, secondary school, or higher), employment status (including employed, unemployed or economically inactive), situation of living (alone or living together with partner), the method used to attempt suicide, the presence of a previous suicide attempt during the monitoring period, and referral following emergency treatment. Every three months the participating health facilities were visited for a control of the quality of monitoring by checking the admission files.

Suicide attempts were monitored in all attempted suicide patients aged 15 years or older.

A suicide attempt was defined as "an act with nonfatal outcome, in which an individual deliberately initiates a non-habitual behaviour that, without intervention from others, will cause self-harm, or deliberately ingests a substance in excess of the prescribed or generally recognised therapeutic dosage, and which is aimed at realising changes which the subject desired via the actual or expected physical consequences" (9).

Rates of attempted suicide were calculated for the total group of attempters, and following stratification for age group (5 year groups), gender, and marital status, based on the number of inhabitants at 31 December 1996. The rates were calculated by means of estimation factors which were computed with regard to the general practitioners by dividing the total number of GP's by the number of participating GP's. With regard to other health facilities, estimation factors were calculated by dividing the number of suicide attempts determined by means of a control of the quality of monitoring by the number of suicide attempts for which a monitoring form was obtained.

Data on the occurrence of suicide in the catchment area were obtained from the administration of the Flemish community.

Results

Occurrence of attempted suicide

During 1996, 476 suicide attempts (events) were monitored involving 420 persons, thus indicating a 1.13 event/person ratio. Among the sui-

cide attempts reported in the catchment area during 1996, 426 (89,5%) were monitored by general hospitals, 27 (5,7%) by general practitioners, 11 (2,3%) by psychiatric hospitals, and 12 (2,5%) by the prison. The overall annual (person-based) rate of attempted suicide was estimated at 356 per 100.000 inhabitants.

Gender and age

Among the suicide attempters 233 (48.9%) were male, and 243 (51.1%) were female. The event/person ratio was 1.16 for males, and 1.11 for females. The annual gender-specific rates per 100.000 were 355 for males and 356 for females. The mean age of the suicide attempters was 34,5 (SD = 13,7), being 34,4 (SD = 12,9) for males and 34,6 for females (SD = 14; t = –0,16, p = 0,87). As shown in Figure 1 and Table 1, the highest rates of attempted suicide were found among young people, i.e. 714 per 100.000 for males in the 25-29 age group, and 771 per 100.000 for females in the 20-24 age group. Rates among females were consistently higher than those among males, except for the 25-29 and 35-39 age groups.

Marital status and situation of living

As shown in Table 2, the majority of attempted suicide patients were never married. There was no significant difference between males and

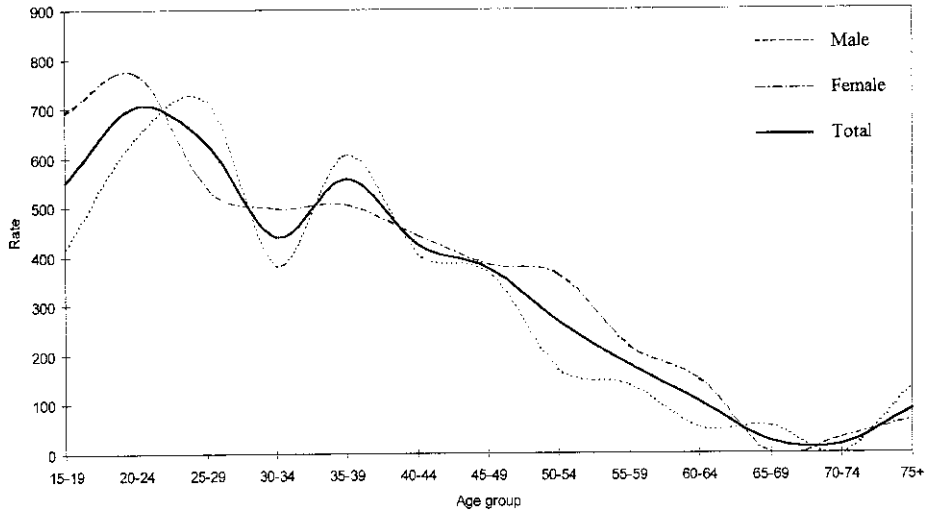

Fig. 1: Person-based annual rates of attempted suicide per 100.000, by gender and age group

TABLE 1
(Person-based) annual rates of attempted suicide per 100.000 inhabitants, by age group and gender

	Male		Female		Total	
Age group	N	R	N	R	N	R
15-19	26	417	42	691	68	552
20-24	45	641	55	771	100	706
25-29	69	714	50	539	119	629
30-34	37	383	45	499	82	439
35-39	53	607	42	506	95	557
40-44	32	405	34	443	66	424
45-49	27	367	27	384	54	375
50-54	11	171	24	363	35	268
55-59	8	139	13	217	21	179
60-64	3	52	10	150	13	104
65-69	3	56	0	0	3	25
70-74	0	0	2	31	2	18
75+	8	134	8	67	16	89
Total	322	355	352	356	674	356

females regarding marital status. The marital status-specific annual rates per 100.000 were 85 for persons who are married, legally cohabiting, or widowed, 280 for those who were never married, and 473 for those who are divorced or separated. The majority of attempted suicide patients were living alone. However, among female attempters the majority were living with a partner, the difference between males and females being significant ($\chi^2 = 12.3$; df = 2; $p < 0.01$).

Level of education

Approximately half of the suicide attempters completed secondary school (Table 2), while only a minority completed high school or university. There was no significant difference between males and females regarding the educational level ($\chi^2 = 4,21$; df = 2; p = 0,12).

Employment status

As shown in Table 2, the majority of attempted suicide patients were employed at the moment of their attempt, while approximately one quarter was unemployed. The distribution according to employment status was significantly different between males and females ($\chi^2 = 6.76$; df = 2; $p < 0.05$). Almost half of the female suicide attempters (49.1%) were

TABLE 2
Characteristics of suicide attempters, by gender

	Male		Female		All
	n	%	n	%	%
Age group					
15-34	129	55.4	138	56.8	56.1
35-49	80	34.3	70	28.8	31.5
≥ 50	24	10.3	35	14.4	12.4
Marital status					
Married, legally cohabiting, widowed	46	25.0	72	40.0	32.4
Never married	96	52.2	76	42.2	47.3
Divorced, separated	42	22.8	32	17.8	20.3
Living situation					
Alone	114	64.4	83	46.6	55.5
With partner	63	35.6	95	53.4	44.5
Level of education					
Primary school	48	34.3	45	33.3	33.8
Secondary school	72	51.4	63	46.7	49.1
University, High school	20	14.3	27	20.0	17.1
Employment status					
Employed	69	38.3	54	31.6	35.0
Unemployed	47	26.1	33	19.3	22.8
Inactive	64	35.6	84	49.1	42.2
Method					
Poisoning	166	73.5	214	88.4	81.2
Violent methods	60	26.5	28	11.6	18.8
Referral					
Not referred	45	19.8	40	17.8	18.8
Outpatient	17	7.5	19	8.4	8.0
Inpatient	165	72.7	164	73.8	73.2
Previous attempts in 1996					
None	72	48.6	70	48.6	48.6
One	35	23.6	30	20.8	22.3
Two or more	41	27.8	44	30.6	29.1

considered to be economically inactive (including students, retired persons, housewives and disabled persons) opposed to approximately one third of the male attempters (35.6%).

Methods

The most commonly used method for attempted suicide was self-poisoning with medication, alcohol, pesticides and / or vapours. Male

attempters significantly more commonly used violent methods (including hanging, self-cutting, strangulation, jumping in front of moving objects or from a height, or shooting) than female attempters ($\chi^2 = 17.17$; df = 1; $p < 0.001$). More than one method was used by 199 attempters (42%), alcohol being the most commonly used second method (61%). It is noteworthy that a violent method was involved in 11 out of the 12 suicide attempts occurring in the prison.

Referral

Approximately three quarters (73.2%) of the suicide attempters were referred for inpatient treatment (Table 2). There was no significant difference in referral pattern between male and female suicide attempters ($\chi^2 = 0,46$; df = 3; $p = 0,93$).

Earlier attempts

Approximately half of the suicide attempters (48.6%) reported that the current attempt was the first in 1996, while in 22.3% one earlier suicide attempt was made. A history of two or more attempts was reported by 85 attempters (29.1%).

Month and time

There appeared to be two peaks in the distribution of suicide attempts throughout the year, the first peak occurring during the months March and April, and the second peak occurring during September and October. Lower numbers of attempted suicide were found in January and June.

A vast majority of suicide attempts (69,7%) occurred between noon and midnight.

Suicide attempts according to type of health facility

As shown in Table 3, suicide attempters referred to general hospitals differed significantly from those seen in other health facilities as in general hospitals patients were significantly more commonly female ($\chi^2 = 9.91$; df = 1; $p < 0.01$), living with a partner ($\chi^2 = 9.77$; df = 1; $p < 0.01$), and using self-poisoning to attempt suicide ($\chi^2 = 50.73$; df = 1; $p < 0.001$).

TABLE 3
Characteristics of suicide attempters, by type of health facility

	General Hospitals		Other Health Facilities	
	n	%	n	%
Gender				
Male	198	46.5	35	70.0
Female	228	53.5	15	30.0
Age group				
15-34	236	55.4	31	62.0
35-49	138	32.4	12	24.0
≥ 50	52	12.2	7	14.0
Civil status				
Married, legal cohabiting, widowed	106	33.7	12	24.5
Never married	145	46.0	27	55.1
Divorced, separated	64	20.3	10	20.4
Living situation				
Alone	161	52.3	36	76.6
With partner	147	47.7	11	23.4
Level of education				
Primary school	85	31.3	18	38.3
Secondary school	139	51.1	26	55.3
University, High school	48	17.6	3	6.4
Employment status				
Employed	114	37.7	9	18.4
Unemployed	71	23.5	9	18.4
Inactive	117	38.7	31	63.2
Method				
Poisoning	358	85.6	22	44.0
Violent methods	60	14.4	28	56.0
Referral				
Not referred	69	17.1	16	33.3
Outpatient	38	9.4	13	27.1
Inpatient	297	73.5	19	39.6
Previous attempts				
None	122	48.6	20	48.8
One	57	22.7	8	19.5
Two or more	72	28.7	13	31.7

Area of residence

When compared to suicide attempters living in the suburbs, those who lived in the city were significantly more commonly male ($\chi^2 = 5.89$; df = 1; $p < 0.05$), living alone without being married ($\chi^2 = 20.31$; df = 2; $p < 0.001$), having a lower educational level ($\chi^2 = 10.92$; df = 2; $p < 0.01$), and unemployed ($\chi^2 = 19.93$; df = 2; $p < 0.001$) (Table 4).

TABLE 4
Characteristics of suicide attempters, by area of residence

	City of Ghent		Municipalities	
	n	%	n	%
Gender				
Male	153	51.9	60	39.7
Female	142	48.1	91	60.3
Age group				
15-34	153	51.9	90	59.6
35-49	102	34.6	42	27.8
≥ 50	40	13.6	19	12.6
Civil status				
Married, legal cohabiting, widowed	54	25.4	62	49.2
Never married	108	50.7	46	36.5
Divorced, separated	51	23.9	18	14.3
Living situation				
Alone	119	56.1	59	49.6
With partner	93	43.9	60	50.4
Level of education				
Primary school	75	39.7	23	21.3
Secondary school	87	46.0	68	63.0
University, High school	27	14.3	17	15.7
Employment status				
Employed	64	30.9	55	45.1
Unemployed	64	30.9	12	9.8
Inactive	79	38.2	55	45.1
Method				
Poisoning	232	80.0	124	83.2
Violent methods	58	20.0	25	16.8
Referral				
Not referred	52	18.6	28	19.6
Outpatient	32	11.4	14	9.8
Inpatient	196	70.0	101	70.6
Previous attempts in 1996				
None	82	47.1	49	49.5
One	39	22.4	23	23.2
Two or more	53	30.5	27	27.3

Suicide

The overall suicide rate in the catchment area was 30 per 100.000 inhabitants in 1996 (Table 5). The annual rate per 100.000 inhabitants was more than two times higher among males (42) than among females (19), with the highest rates ocurring in the 34-49 age groups in both sexes.

TABLE 5
Suicide rates per 100.000 inhabitants, by age group

	Male		Female		Total	
Age group	N	R	N	R	N	R
15-34	13	40	6	19	19	30
35-49	12	50	6	26	18	38
≥ 50	13	38	7	16	20	26
Total	38	42	19	19	57	30

TABLE 6
Ratio suicide / attempted suicide (events) (absolute numbers in italic), by age group

	Male		Female		Total	
15-34	1/16	*(13/208)*	1/37	*(6/222)*	1/23	*(19/430)*
35-49	1/11	*(12/129)*	1/19	*(6/112)*	1/13	*(18/241)*
≥ 50	1/3	*(13/36)*	1/8	*(7/57)*	1/5	*(20/93)*
Total	1/10	*(38/373)*	1/21	*(19/391)*	1/13	*(57/764)*

The overall suicide / attempted suicide ratio was 1/13, being smaller among males (1/10) than among females (1/21). The highest ratio was found among younger females (1/37), while the lowest ratio was present among elderly males (1/3) (Table 6).

Discussion

The most important results from this epidemiological study on the occurrence of attempted suicide in a defined area in Flanders in 1996 can be summarised as follows. First, by means of the monitoring of all medically identified suicide attempts this study demonstrates that the overall annual rate of attempted suicide can be estimated at 356 per 100.000 inhabitants. The estimated annual rate of attempted suicide is substantially higher than previous estimates of the occurrence of attempted suicide in Flanders which were based on the monitoring of suicide attempts in general hospitals (10, 6), or by general practitioners (5). As this study was conducted in the context of a multicentre European study the results can be compared to those from other centres. The average European attempted suicide rate per 100.000 inhabitants was estimated at 140 for males and 193 for females in 1992 (11). Rates for 1996 are currently available for comparison with our findings from a limited number of European centres (Schmidtke A. Personal communication). As

TABLE 7
Rates of attempted suicide in selected European centres per 100.000 inhabitants in 1996, by gender

Centre	Males	Rate	Females
Gent	355		356
Helsinki	329		281
Tallinn	229		187
Odense	151		128
Würzburg	122		147
Stockholm	88		190
Padua	69		84

shown in Table 7, the rates vary widely across European centres but it is also clear that the rates in Gent are among the highest known at this moment for males and females.

Epidemiological studies in the previous decades consistently showed higher rates among females than among males. Our monitoring data on attempted suicide referrals between 1986 and 1995 showed a decreasing female to male ratio in the second half of the 1980s due to decreasing rates among females, and a slightly increasing ratio in the second half of the monitoring period due to decreasing rates among males and increasing rates among females (8).

Secondly, the distribution of the occurrence of attempted suicide appears to be strongly influenced by socio-demographic factors, including age, marital status, employment status, and area of living (urban versus suburban). The results indicate no substantial effect of gender on the occurrence of attempted suicide, as overall rates among males and females were found to be approximately similar. Thirdly, this study demonstrates substantial differences in socio-demographic characteristics between suicide attempters admitted to general hospitals and those seen by other health facilities. Fourthly, it appears that attempted suicide is commonly repeated as approximately half of the attempters reported a history of suicide attempts.

Before addressing the implications of these findings for the treatment and prevention of suicidal behaviour the extent to which the results can be generalised and used for the development of preventive measures must be discussed. First, the demonstrated rate of attempted suicide may be an overestimate due to the fact that it is mainly based on referrals from the urban area where the rate of attempted suicide is higher than that in the suburban (and most probably rural) area. A second indi-

cation that the demonstrated rate of attempted suicide in the catchment area might be an overestimate of the overall rate in Flanders is found in the fact that the rate of (completed) suicide in the area is higher for males (42) and females (19) than the regional rates in Flanders (26 and 10, respectively). From a qualitative point of view the demonstrated socio-demographic and clinical profile of attempted suicide patients may be influenced by the fact that the study group consists mainly of urban suicide attempters who differ from those from suburban (and most probably rural) areas. Therefore, male, unmarried, unemployed attempted suicide patients with low educational levels may be overrepresented in the study group. The potential overrepresentation of males may be associated with an overestimate of the use of violent methods (including cutting, strangulation, jumping in front of moving objects, jumping from high places, and the use of firearms) among attempted suicide patients in the region.

Conclusion

While keeping these limitations in mind, the findings from this epidemiological study may have some implications for the treatment and prevention of suicidal behaviour, and for research on the epidemiology of attempted suicide. First, the results demonstrate that the well-documented high suicide rate is associated with a high rate of attempted suicide. This is not surprising as attempted suicide can be regarded as the most robust clinical predictor of completed suicide. Our own longitudinal study demonstrated that approximately 3% of a large group of attempted suicide patients died within one year due to suicide (12). In view of these findings and the common occurrence of repeated suicide attempts, the results indicate that the prevention of repetition with nonfatal and fatal outcome among attempted suicide patients should be a priority among measures to prevent suicide. Strategies for the management of atttempted suicide patients have been described previously (12), and guidelines for their treatment are available from a systematic review of treatment approaches (13). With respect to the primary prevention of attempted suicide this study confirms earlier findings regarding socio-demographic risk factors for attempted suicide. Based on these socio-demographic charactaristics, groups in the general population can be delineated with a potentially increased risk of attempted suicide. However, it is clear that the individual assessment of suicide risk should be based not only on such characteristics but also on a clinical interview (14).

Finally, the results from this study have some implications for further epidemiological research on suicidal behaviour. In order to reliably assess rates and characteristics of attempted suicide, monitoring studies should be performed not only in urban general hospitals, but should include other health facilities, preferably also in rural areas. Furthermore, in view of previously demonstrated time-dependent changes in the occurrence and characteristics of attempted suicide (8) such an epidemiological surveillance should be carried out over a prolonged period of time in order to gain more insight in the pathogenesis of nonfatal and fatal suicidal behaviour.

Acknowledgements

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Samenvatting

Gedurende 1996 werden in de regio Gent 476 zelfmoordpogingen (420 verschillende personen) geregistreerd door twaalf gezondheidsinstellingen in het kader van de Who/Euro Multicentre Study on Parasuicide. De totale jaarlijkse incidentie van zelfmoordpogingen werd geschat op 356 per 100.000 inwoners, met geen significante verschillen tussen mannen en vrouwen. In vergelijking met andere Europese centra in de Multicentre Study zijn deze rates bij de hoogste. De verdeling van de incidentie van zelfmoordpogingen blijkt sterk beïnvloed te zijn door sociodemografische factoren (leeftijd, burgerlijke staat, economische toestand, en woonplaats). Deze sociodemografische factoren verschillen substantieel tussen zelfmoordpogers aangemeld in algemene ziekenhuizen en pogers aangemeld in andere gezondheidsinstellingen. De helft van de zelfmoordpogers heeft reeds eerder een of meerdere pogingen ondernomen. De beperkingen van de studie en implicaties voor behandeling en preventie van suïcidaal gedrag worden besproken.

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