Register for Suicide Attempts

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ABSTRACT

Background: The Register for Suicide Attempts (RSA) is a product of the WHO research project "WHO/Euro Multicentre Study on Parasuicide", which, among other things, had the purpose of collecting data on suicide attempts from 13 European countries. Data is collected in order to calculate trends and identify high-risk groups. Data collection for the RSA started in 1989.

Methods: The RSA is a longitudinal, person-based register. It contains information about people who have been in contact with the health care system in the County of Funen as a result of a suicide. The RSA contains 11 variables, which describe the incident in detail, and a number of variables describing the person. The RSA contains data covering the period April 1989 to December 2001 and is updated annually. Data is collected from somatic and psychiatric hospitals in an administrative district (County of Funen). The data collection is done manually by going through all the records in which a contact to the health care system, i.e. a potential suicide attempt, is described. Only incidents matching the WHO definition of an attempted suicide are registered.

Conclusion: Data from the RSA has been used in national and international studies. The RSA is the most suitable register in Denmark for analyses of suicide attempts.

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BACKGROUND

There has never been a systematic registration of suicide attempts in Denmark, although suicides have been registered systematically since the middle of the 19th century (1). After World War II, WHO introduced the international illness and causes of death classification system, and a registration of suicide attempts based on The Danish Psychiatric Central Register diagnosis system was expected. For some years this registration also included suicide attempts. However, lack of a clear definition of suicide attempts resulted in different interpretations of the incidents referred to in the diagnoses (2). In the late 1970s, WHO introduced the main target area "Health for all by the year 2000", in which target number 12 was to stop the current growing trend in suicide and suicide attempts in Europe. A working party of suicidologists was established, which was to prepare a common European research programme, part of which was a research project aiming, among other things, at monitoring suicide attempts, in order to calculate trends and identify groups at risk.

As the basis for the study of suicide attempts in Europe, the most recent WHO definition on suicide attempts (ICD-10) was used:

> "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 recognized therapeutic dosage, and which is aimed at realizing changes which the subject desires via the actual or expected physical consequences". WHO Regional Office for Europe, 1986 (3)

The research project originally included 15 European centres from 13 different countries. The data on suicide attempts was ideally to be collected from a well-defined geographical and administrative area, making it possible to compare information about the population of suicide attempters and the normal population in the area. The County of Funen was chosen for Denmark. Suicide attempts in the County of Funen have been systematically registered since April 1st 1989. The registration includes only people who are 15 years or older. In 1997, the register became an official register.

METHODS

The catchment area covers the County of Funen, consisting of a population of 465,000 persons in 1989, of whom 385,000 were 15 years or older. In 1989, data was retrieved from psychiatric and relevant somatic departments, from general practitioners (GPs), specialists in psychiatry, and from prisons and county jails. From 1990 onwards, the number of suicide attempts registered by GPs decreased and reached zero in 1994. In the same year, the registration of suicide attempts in prisons and county jails stopped as well. In 1994, registration only took place at all somatic and psychiatric hospitals in the County of Funen. Later on, registration at some psychiatric hospitals stopped and from the year 2002 onwards, registration only took place at psychiatric and somatic departments at Odense University Hospital, including somatic and psychiatric emergency wards, and somatic hospitals in Middelfart, Nyborg, Svendborg, Faaborg, Rudkøbing, and Ærøskøbing. Suicide attempt incidents where the person goes directly to a psychiatric department for treatment, other than the department in Odense, are not registered in RSA.

Every six months, the Centre for Suicide Research receives a list containing the CPR-nos of the persons who have attempted suicide and the date of contact to the hospital. The list from the psychiatric department in Odense derives from the department's registration of suicide attempts among people who have been admitted to or have been in contact with the psychiatric emergency ward. The staff at the departments does the selection among the incidents from the psychiatric department. The Patient Register of Funen is the basis of registration from somatic departments and emergency wards. One of the NOMESCO (Nordic Medico-statistical Commitee) classifications of contact reasons is "E4 – Suicide/suicide attempts", which can also erroneously include incidents other than suicide/suicide attempts. All the incidents on the lists are checked by manually reading all case records to see if they match the WHO definition of suicide attempt. Incidents which do not fit the WHO definition are omitted. The registration procedure is time-consuming but nevertheless necessary to ensure a valid, consistent and unambiguous registration.

DATA

The data is registered electronically and contains information about the incident and the socio-demographic conditions of the attempter. Information about the incident consists of the following 11 variables (Figure 1).

Information about the person is collected in 16 variables which contain information about socio-demographic conditions, such as nationality, residence, marital status, education, occupation and income, and previous suicide attempts. This information is derived from the case records, for which reason a small amount of errors in the registration of the socio-demographic data is to be expected. The register contains approximately 11,000 suicide attempts committed by approximately 6000 different persons recorded from April 1st 1989 to December 31st 2001. Age ranges from 15 years and upwards, but there is a majority of younger people in the register. The register is updated every year.

DATA ACCESS

The Act on Processing of Personal Data, Act no. 429 from May 31st 2000, subsequently amended as Act no. 280 from April 25th 2001, applies to the RSA. The act allows the use of data for research projects contributing knowledge about prevention within the area of health care. Processing of data may be conducted to perform statistical or scientific studies of major importance to the society.

Researchers who desire access to data from the RSA must apply to

1. Date of registration of the suicide attempt.
2. Place of registration.
3. CPR-no. The CPR-no. is a unique ten-digit identification number. Every Danish citizen or foreigner with a permanent residence in Denmark has a CPR-no. Every incident is matched uniquely to a CPR-no., and a CPR-no. can figure in more than one incident. This makes the structure of the register longitudinal.
4. Date of the suicide attempt.
5. Time of day for the suicide attempt.
6. Date of first contact to the health care system after a suicide attempt.
7. Whether or not the suicide attempts result in admission to a hospital.
8. Referrals. Information about where the patient is referred from and to where the patient is referred after ended treatment at the ward.
9. Gender and age. Information about gender and age can also be derived from the CPR-no.
10. Method. Detailed information about the method used in the suicide attempt classified according to the ICD-10 diagnoses X60-X84. As much as twenty-four methods are coded, distinguishing between 10 classes of self-poisoning, including drugs, alcohol, other liquids, gasses, or poison. Also 14 violent methods of self-harm by hanging, drowning, firearms, burning, sharp or blunt objects, jumping from high places, jumping in front of a car or train, besides unspecified methods are included.
11. Alcohol. Information about consumption of alcohol and estimation of alcohol intake. Alcohol is included so that it is possible to analyse the complex and important relationship between suicidal behaviour and alcohol.

Figure 1. Variables in RSA describing the incident.

the Centre of Suicide Research to be granted access. The application must include a description of the project, including objective, methods, and description of the specific data needed for the study.

Processing of data must be approved by the Danish Data Protection Agency.

The Centre for Suicide Research willingly participates in any project aiming to advance knowledge about prevention of suicidal behaviour or contribution of knowledge within the social area or health care.

DISCUSSION

DATA VALIDATION

We expect the data describing the incident to reflect the real incident, but that is not documented. The information derives from the case records, which are filled out by a competent staff, and subsequently controlled for errors by the staff at the Centre for Suicide Research. The material is controlled for errors such as multiple registrations of a single incident, as well as validity of CPR-no. and data. On the other hand, the data concerning the attempters is assumed to be less valid. This information is derived from the case records, which sometimes contain conflicting information or information contrary to information registered earlier about the person. The patient can also give false information about socio-demographic variables to hide unfavourable circumstances. The socio-demographic data is suitable for a general view of the situation only, making the use of the register to scientific studies undesirable. For such purposes, we recommend that the socio-demographic data is obtained elsewhere.

Studies have been made with the purpose of identifying risk factors for suicide attempts, based on contact reason "E4 suicide/suicide attempts" from the National Patient Registry (NPR) as a selection criterion (4). This form of selection can create a bias in the data, because the contact reason E4, in addition to incidents of suicide attempts, also contains other types of incidents. In our experience, approximately 30% of the incidents in the E4 code must be left out. In a study by K. Helweg-Larsen where 1762 suicide attempt incidents with an E4 code were examined, it turned out that only 71% of the cases met the WHO criterion of a suicide attempt (5). In other words, about 30% of the incidents were erroneously registered as a suicide attempt.

The RSA only contains incidents that resulted in a contact to the health care system. We assume that every day, suicide attempts take place in the County of Funen which never result in a contact to the health care system. These incidents will never be registered in the RSA. This assumption is confirmed in some studies (6, 7). Estimates have been made of how large a part of the suicide attempts result in a contact to the health care system. In a study by Jessen et al (6), it is estimated that among 15-24-year-old adolescents under education, approximately 75-90% of all suicide attempts are not registered in the health care system. A study by Kjøller et al (7) estimates that 40-50% of the suicide attempts among adolescents aged 16 years and more are not registered in the health care system.

If only life-threatening incidents are registered in the health care system, then RSA is biased and becomes non-representative of all suicide attempts.

The checking procedure ensures that RSA is an incident-based register.

We do not know anything about suicide attempts registered with other contact reasons, such as "accident". Registration errors like this may lead to an under-registration of suicide attempts.

FUNEN AS A REPRESENTATIVE OF THE DANISH POPULATION

In a study by Bille-Brahe (8) of the living conditions in the County of Funen, it was concluded that Funen is extremely useful as a basis for social studies, and the population of the county is suitable as a representative basis for the creation of control groups for the normal population in Denmark. The conclusions of the study emphasize the great advantage in using the population of the County of Funen as basis for epidemiological research. The study is 20 years old, however, and socio-demographic conditions may have changed during the period. A study by Gaist et al (9) indicates that the inhabitants of Funen in many respects constitute a representative sample of the Danish population.

EARLIER USE OF THE RSA

Since its start, the RSA has been used in many studies. Initially, the focus was on the size of the problem, and especially the development in gender and age specific rates. The characterization of the person's gender, age, marital status, educational and occupational background has been investigated (10, 11), and there has been a study of the circumstances surrounding suicide attempts (12). Some of the studies showed that suicide attempts were dominated by poorly educated younger females, who were divorced or who had never married.

The RSA contains information about persons who had a suicide attempt which resulted in a contact to the health care system, and therefore it is relevant to study the suicide attempts that resulted in admittance to a hospital (12), as well as which suicide attempt methods were used (13) and what kind of drugs were used in self-poisoning (14, 15). Self-poisoning was the most frequently used method for both repeaters and non-repeaters.

The RSA is a longitudinal register, which makes it suitable for examining the occurrence of repeated suicide attempts, because it is possible to obtain information on a person's suicidal behaviour as long as the person is living in the County of Funen (11, 13). Methodological problems about whether analyses were based on incidents (attempted suicides) or persons (suicide attempters) have been elucidated from the use of the RSA (16). The sample of suicide attempters showed that 31% had made only one attempt.

Because the RSA is a part of a larger international organization (WHO/EURO Multicenter Study on Parasuicide), it has been used in many international comparative studies. The centres and their methods for data collection are described in (3, 17).

Gender and age specific rates are compared in (18) for Nordic

countries and in (19, 20-23) for European countries. Funen was among the regions with the highest male and female age-standardized rates, and the comparison of rates shows striking differences between the areas.

Seasonality in suicide attempts, i.e. variation of suicide attempts in regard to time of the day, day of the week, day of the month and distribution around holidays were studied in a European project (24, 25). Some differences among temporal fluctuations and seasonality in suicide and suicide attempt were found.

Comparative studies of methods for attempted suicides (26) and recommendation for treatment of adolescents have been performed (27).

The RSA contributed with statistics of attempted suicide for preparing the national programme for prevention of suicide and suicide attempts. The errors in the NPR have been recognized by the committee preparing the programme (28).

NEED FOR FURTHER RESEARCH

During the last decade, much attention has been paid to register research in Denmark. Within the last five years, co-workers at the National Centre for Register-based Research at the University of Aarhus have published several register-based studies on risk factors for suicide (29). These excellent studies have contributed to a better understanding of the risk factors for suicide. The studies follow the recommendations in the national programme for prevention of suicide and suicide attempts (28) of enhanced register-based research on suicidal behaviour. However, there is a lack of research on attempted suicides. In Denmark, an increase in rates of attempted suicides has been observed during the last five years, especially among young females. The reasons for this have not been found. The risk factors for the first suicide attempt have not been analysed to the same extent as suicides. Furthermore, the effect of treatment of attempters has not been documented. Knowledge of risk factors for repeated suicide attempts is scarce.

REFERENCES

1. Paerregaard G. Suicide in Denmark: a statistical review for the past 150 years. Suicide Life Threat Behav 1980; 10: 150-6.
2. Munk-Jørgensen P, Mortensen PB. The Danish Psychiatric Central Register. Dan Med Bull 1997; 44: 82-4.
3. Bille-Brahe U, Schmidtke A, Kerkhof AJ, De Leo D, Lonnqvist J, Platt S et al. Background and introduction to the WHO/EURO Multicentre Study on Parasuicide. Crisis 1995; 16: 72-8.
4. Christoffersen MN, Poulsen HD, Nielsen A. Attempted suicide among young people: risk factors in a prospective register based study of Danish children born in 1966. Acta Psychiatr Scand 2003; 108: 350-8.
5. Helweg-Larsen K, Laursen B, Trabjerg Johansen AM. Registrations of parasuicides in the Danish national hospital register. Oral-session. XXII World Congress of the International Association for Suicide Prevention (IASP). Sep. 2003. Stockholm, Sweden.
6. Jessen G, Andersen K, Bille-Brahe U. Selvmordstanker og selvmordsforsøg blandt 15-24-årige i det danske uddannelsessystem. Ugeskr Laeger 1996; 158: 5026-9.
7. Kjøller M, Helweg-Larsen M. Suicidal ideation and suicide attempts among adult Danes. Scand J Public Health 2000; 28: 54-61.
8. Bille-Brahe U. Levekårene i Fyns Amt. Psykiatrisk Institut. Odense Universitet 1982.
9. Gaist D, Sørensen HT, Hallas J. The Danish prescription registries. Dan Med Bull 1997; 44: 445-8.
10. Bille-Brahe U. The role of sex and age in suicidal behaviour. Acta Psychiatr Scand Suppl 1993; 371: 21-7.
11. Bille-Brahe U, Jessen G, Nielsen E, Schiødt H, Søgaard Nielsen A. Attempted Suicide in a Danish Region 1989-1992. I: Kerkhof AJFM, Schmidtke A, Bille-Brahe U, De Leo D, Lönnqvist J (eds.). Attempted Suicide in Europe. DSWO Press. Leiden University, The Netherlands, 1994: 35-51.
12. Bille-Brahe U. Selvmordsforsøg i Fyns Amt 1989/1990. Ugeskr Laeger 1991; 153: 1119-22.
13. Bille-Brahe U, Jessen G. Repeated Suicidal Behavior: A Two-Year Follow-up. Crisis 1994; 15: 77-82.
14. Nielsen AS, Nielsen B, Bille-Brahe U. Selv-forgiftninger og præparatvalg. Bør undersøgelser baseres på henvendelser eller patienter? Nord J Psychiatry 1992; 46: 195-9.
15. Nielsen AS, Nielsen B. Mønsteret i præparatvalg ved intenderede selvforgiftninger – med særligt henblik på ændringer i ordinationsmønstret. Ugeskr Laeger 1992; 154: 1972-6.
16. Bille-Brahe U, Jessen G, Jensen B. Monitoring Repeated Suicidal Behavior: Methodological problems. I: Brian Mishara (ed.). The Impact of Suicide. New York: Springer, 1994: 156-66.
17. Bille-Brahe U, Schmidtke A, Kerkhof A, De Leo D, Lönnqvist J, Platt S. Background and Introduction to the Study. I: Kerkhof AJFM, Schmidtke A, Bille-Brahe U, De Leo D, Lönnqvist J (eds.). Attempted Suicide in Europe. DSWO Press. Leiden University, The Netherlands: 1994: 3-15.
18. Wasserman D, Fellman M, Bille-Brahe U, Bjerke T, Jacobsson L, Jessen G et al. Parasuicide in the Nordic Countries. Scand J Soc Med 1994; 22: 170-7.
19. Platt S, Bille-Brahe U, Kerkhof A, Schmidtke A, Bjerke T, Crepet P et al. Parasuicide in Europe: the WHO/EURO multicentre study on parasuicide. I. Introduction and preliminary analysis for 1989. Acta Psychiatr Scand 1992; 85: 97-104.
20. Schmidtke A, Bille-Brahe U, De Leo D, Kerkhof A, Bjerke T, Crepet P et al. Rates and Trends of Attempted Suicide in Europe 1989-1992. I: Kerkhof AJFM, Schmidtke A, Bille-Brahe U, De Leo D, Lönnqvist J (eds.). Attempted Suicide in Europe. DSWO Press. Leiden University, The Netherlands. 1994: 209-29.
21. Schmidtke A, Bille-Brahe U, De Leo D, Kerkhof A, Bjerke T, Crepet P et al. Attempted suicide in Europe: rates, trends and sociodemographic characteristics of suicide attempters during the period 1989-1992. Results of the WHO/EURO Multicentre Study on Parasuicide. Acta Psychiatr Scand 1996; 93: 327-38.
22. Bille-Brahe U, Andersen K, Wasserman D, Schmidtke A, Bjerke T, Crepet P et al. The WHO-EURO Multicentre Study: risk of parasuicide and the comparability of the areas under study. Crisis 1996; 17: 32-42.
23. Hawton K, Arensman E, Wasserman D, Hulten A, Bille-Brahe U, Bjerke T et al. Relation between attempted suicide and suicide rates among young people in Europe. J Epidemiol Community Health 1998; 52: 191-4.
24. Jessen G, Andersen K, Arensman E, Bille-Brahe U, Crepet P, De Leo D et al. Temporal fluctuations and seasonality in attempted suicide in Europe. Findings from the WHO/EURO multicentre study on parasuicide. Archives of Suicide Research 1999; 5: 57-69.
25. Jessen G, Jensen BF, Arensman E, Bille-Brahe U, Crepet P, De Leo D et al. Attempted suicide and major public holidays in Europe: findings from the WHO/EURO Multicentre study on parasuicide. Acta Psychiatr Scand 1999; 99: 412-8.
26. Michel K, Ballinari P, Bille-Brahe U, Bjerke T, Crepet P, De Leo D et al. Methods used for parasuicide: results of the WHO/EURO Multicentre Study on Parasuicide. Soc Psychiatry Psychiatr Epidemiol 2000; 35: 156-63.
27. Hulten A, Wasserman D, Hawton K, Jiang G-X, Salander-Renberg E, Schmidtke A et al. Recommended care for young people (15-19 years) after suicide attempts in certain European countries. Eur Child Adolesc Psychiatry 2000; 9: 100-8.
28. Sundhedsstyrelsen. Forslag til handlingsplan til forebyggelse af selvmordsforsøg og selvmord i Danmark. August 1998.
29. Qin P, Agerbo E, Mortensen PB. Suicide Risk in Relation to Socioeconomic, Demographic, Psychiatric, and Familial Factors: A National Register-Based Study of All Suicides in Denmark, 1981-1997. Am J Psychiatry 2003; 160: 765-72.