

# SUICIDE AND ATTEMPTED SUICIDE: EPIDEMIOLOGICAL SURVEILLANCE AS A CRUCIAL MEANS OF A LOCAL SUICIDE PREVENTION PROJECT IN TRENTO'S PROVINCE

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## SUMMARY

The World Health Organization identifies suicide among the top 10 causes of death in many countries with an overall mortality rate of 16 per 100,000 inhabitants. Furthermore suicide attempts present a frequency 4-10 times greater than the suicidal events, representing also one of the main risk factors to lead to recurrent attempts of suicide. In 2008 the Autonomous Province of Trento launched a suicide prevention program called "Invitation to Life" which includes various interventions intended to counter the phenomenon of suicide in the region. Actually the epidemiological research upon the phenomenon of suicide in Trentino region is one of the main pillars of the project: it represents a fundamental requirement to identify risk and protective factors in the population in order to adopt more specific and effective preventive strategies. This article aims to present methods and instruments for epidemiological monitoring of suicide and attempted suicide which are applied in Trentino and to describe results after seven years from the beginning of the local prevention program "Invitation to life".

**Key words:** suicide - monitoring – prevention - epidemiology

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## BACKGROUND

A million deaths from suicide occur every year, a death every 40 seconds and an overall mortality rate of 16 per 100,000 inhabitants. These data provided by the World Health Organization identify suicide among the top 10 causes of death in many countries. Globally, the phenomenon seems to be increasing from year to year especially in low and middle income countries. In 1995, deaths from suicide accounted for a number equal to 900,000 victims in the world, in some countries the suicide rate in the last 45 years has grown by more than 60% and also the future globally shows an increase in suicide deaths that is estimated exceeding 1.5 million victims in 2020 (WHO 2014).

Furthermore suicide attempts are also events of great importance: they have a frequency 4-10 times greater in those who previously committed suicide, representing one of the main risk factors since those who have attempted suicide have a higher risk than the general population of committing suicide again (Reulbach & Bleich 2008).

A project of suicide prevention, according to WHO instructions, can greatly reduce the number of deaths as a result of self-destructive choices, and should develop strategies integrated into different policy areas at a local level, supported by territorial resources and the community. The most effective preventive strategies identified and proposed by WHO (WHO 2014) are:

- restriction of access to suicide means;
- implementation of community interventions;
- defined guidelines for advertising campaigns;
- recruitment of experts for training programs in the field.

Based on these proposals and on other international prevention experiences (Mann 2005) in 2008 the Autonomous Province of Trento launched a suicide prevention program called "Invitation to Life" which includes various interventions and strategies intended to counter the phenomenon of suicide in the region.

The main goals of the project were:

- increasing awareness of the phenomenon;
- combating stigma;
- developing proper treatment of the phenomenon;
- providing guidance on strategies and possibilities of intervention;
- strengthening protective factors;
- direct intervention on risk factors;
- monitoring the phenomenon.

Actually all these objectives are achieved through specific interventions, but the epidemiological research about the phenomenon of suicide in Trentino region is one of the main pillars of the project: it represents a fundamental requirement to identify risk and protective factors for the population in order to adopt more specific and effective preventive strategies.

This article aims to present methods and instruments for epidemiological monitoring of suicide and attempted suicide which are applied in Trentino and to describe results after seven years from the beginning of the local prevention program "Invitation to life".

## MATERIALS AND METHODS

The epidemiological surveillance of the phenomenon in our province was granted by the collaboration established in Trentino between different institutions

including the Mental Health Department, the Epidemiological Observatory of Trento and the contribution of Mario Negri Institute of Pharmacological Research in Milan.

The reality in the Trento Province has undoubtedly facilitated this goal thanks to some supportive factors:

- a widespread computerization in the hospitals all over the region (SIO: Hospital Informative System), which has allowed us to directly develop a detection system connected to the network;
- data analysis carried out more quickly and in greater detail than the average time necessary at a national level by the Epidemiological Observatory of Trento.

However, while we have a system of suicide detection, based on death certificates (ISTAT), which assures good quality of the data, as regards suicide attempts available data is uncertain, due to the lack of reliable and standardized detection systems, and because of their heterogeneous nature, which make them more difficult to identify and define (Piffer 2008).

An ongoing surveillance of suicide attempts based on reliable data has many advantages:

- quantification and description of the characteristics of the phenomenon;
- identification of the population groups with higher suicidal risk;
- monitoring people who attempted suicide;
- quantification of care needs connected with attempted suicide.

An accurate detection of attempted suicides would also assess the impact in the medium and long term period of preventive actions, in terms of effectiveness and cost/benefit, and would offer more elements to establish priorities and programmatic interventions. In this context we considered that about 80% of attempted suicides come to the hospital, especially to emergency ward (Ronquillo 2012, Allen 2013). This was the reason that led us to create a computerized detection system in order to identify people who attempted suicide and to deepen various aspects about both socio-demographic and clinical characteristics of the phenomenon.

A computerized questionnaire of self injurious acts and suicide attempts was produced with the contribution and supervision of Mario Negri Institute of Pharmacological Research in Milan with the aim of obtaining data on:

- socio-demographic factors;
- methods and place of suicide;
- psychiatrist's assessment about lethality and intentions (high, medium, low);
- possible previous attempted suicide of patients and/or family (yes or not);
- possible psychiatric diagnosis of family (yes or not);
- previous contacts with the general practitioner (yes or not; when);

- previous treatments (yes or not; specify);
- drugs or alcohol disorders (yes or not);
- physical illness (yes or not);
- psychiatric diagnosis (ICD-X);
- predictive factors and triggering events (specify);
- care programs and therapies suggested after the event (specify).

It contains data regarding the majority of factors which are considered in the scientific literature relevant for determining the risk of suicidal behavior. We decided to fill out the form for any self-injurious act, both for the substantial suggestions in the literature of an increased risk even with "minor" acts, both for the difficulty to establish a clear threshold between impulsive or demonstrative actions and true suicidal intentions (Wang 2009).

These data are usually collected by the psychiatrist in the first consultation that takes place in the emergency ward or sometimes in other care units. At the end of every psychiatric visit on the computer's monitor a warning appears to remind specialists of the questionnaire to avoid possible loss of information due to doctor's oversight. We tried to create a flexible and easy instrument to minimize the risk of not filling it and missing data, but at the same time we made an effort to make it as exhaustive as possible. After compiling the document it can be changed only within 24 hours and by the same psychiatrist who has compiled it first, this is done to allow specialists to add other information gained in a possible second contact (people who attempted suicide may be more willing to talk with a doctor after some time from the event or after having met him in a first contact). The creation of a detection system embedded in the ordinary database of all hospitals of the Province of Trento, with complete coverage of all emergency wards and all hospital departments, to survey attempted suicide, added to the possibility of achieving regularly epidemiological data about suicide deaths from the Epidemiological Observatory of Trento, through the analysis of ISTAT schedules, is a great property of this prevention project, unique in Italy, also thanks to the accuracy of collection. This has permitted us to obtain sufficiently reliable data to study in depth suicidal behavior in the specific area of Trentino and has allowed us to define the problem of identifying population groups at high-risk, and to focus interventions on detected critical areas.

## RESULTS

As we can see in the figure 1 below the average number of suicides in Trento's Province is about 41 deaths/year. The trend shows three peaks with about 50 events: 1991, 1995 and 2004, fewer events in 2010, and it highlights a reduction since 2005 (Piffer 2014).

In figure 2 we can see that the trend rate, four times higher for males, is consistent with results from international scientific literature and confirms the significant impact of the phenomenon in the district. The average

mortality rate is of 0.9/10,000 inhabitants with an average mortality rate in males of 1.4/10,000 inhabitants and an average mortality rate in females of 0.4/10,000 inhabitants (Piffer 2014).

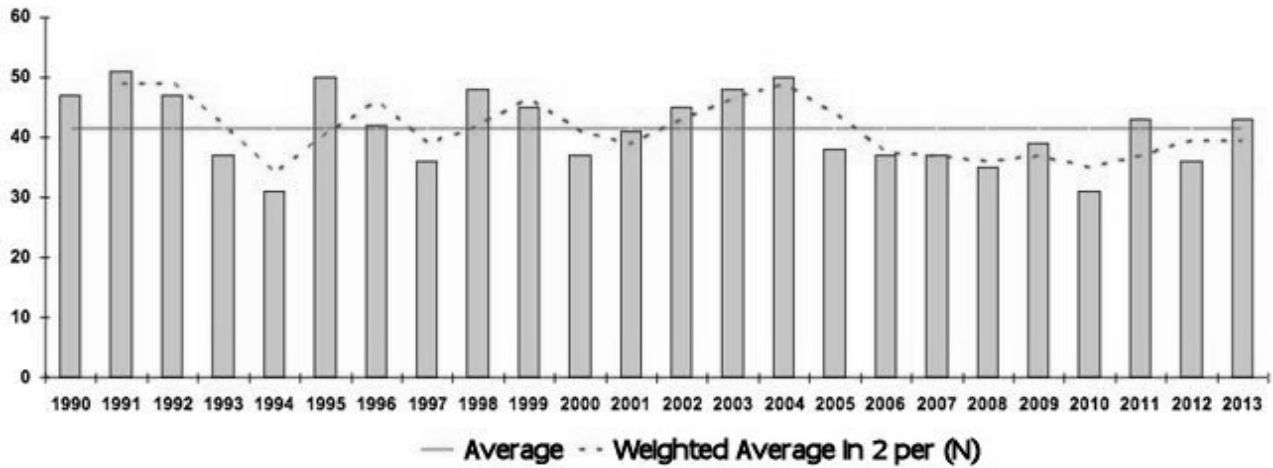


Figure 1. Absolute number of suicides. Male + Female. Trend 1990-2013. Epidemiological Observatory of Trento

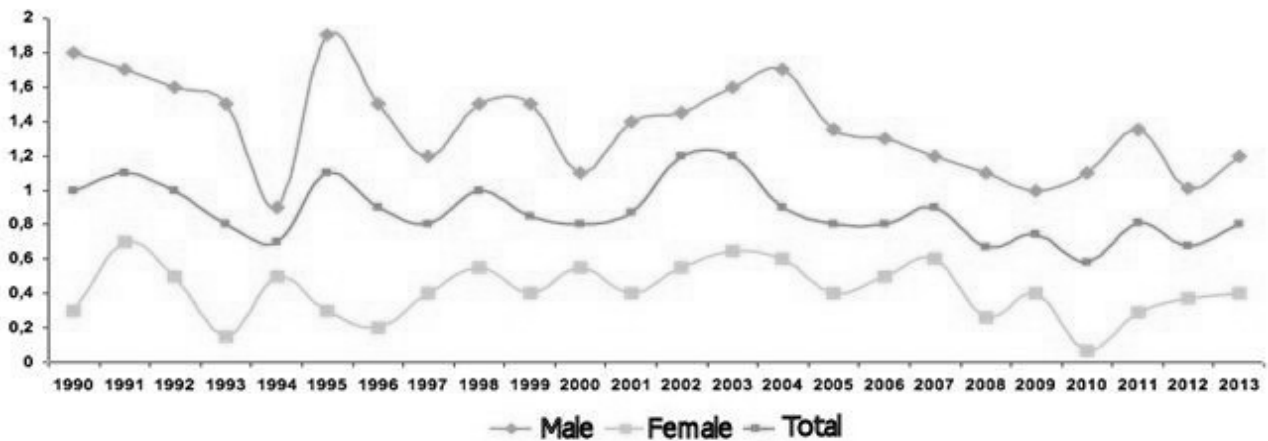


Figure 2. Suicide rate/10,000. Male, Female and General population. Trend 1990-2013. Epidemiological Observatory of Trento

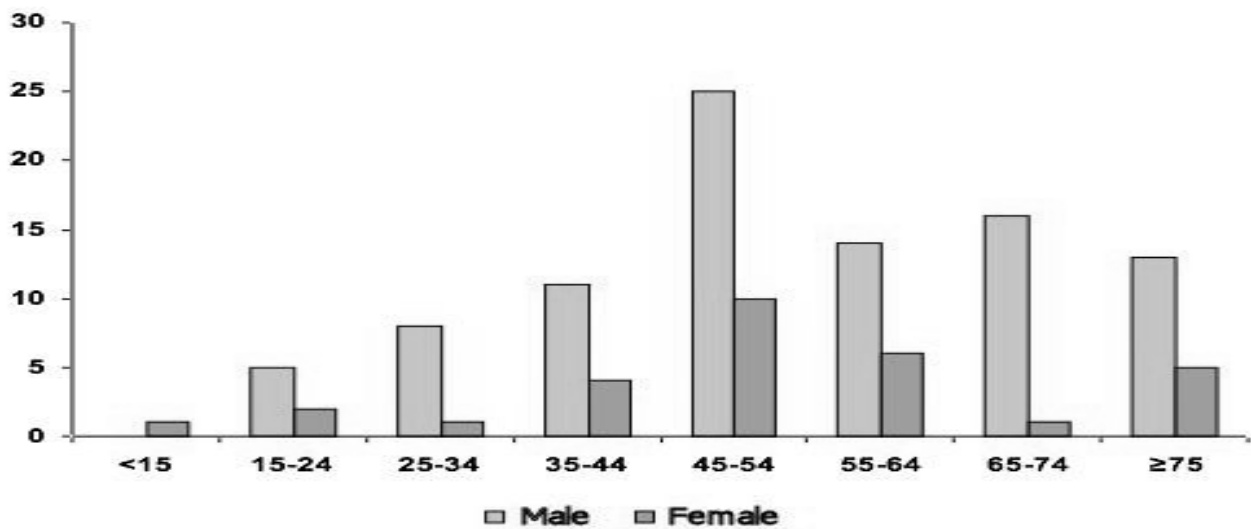
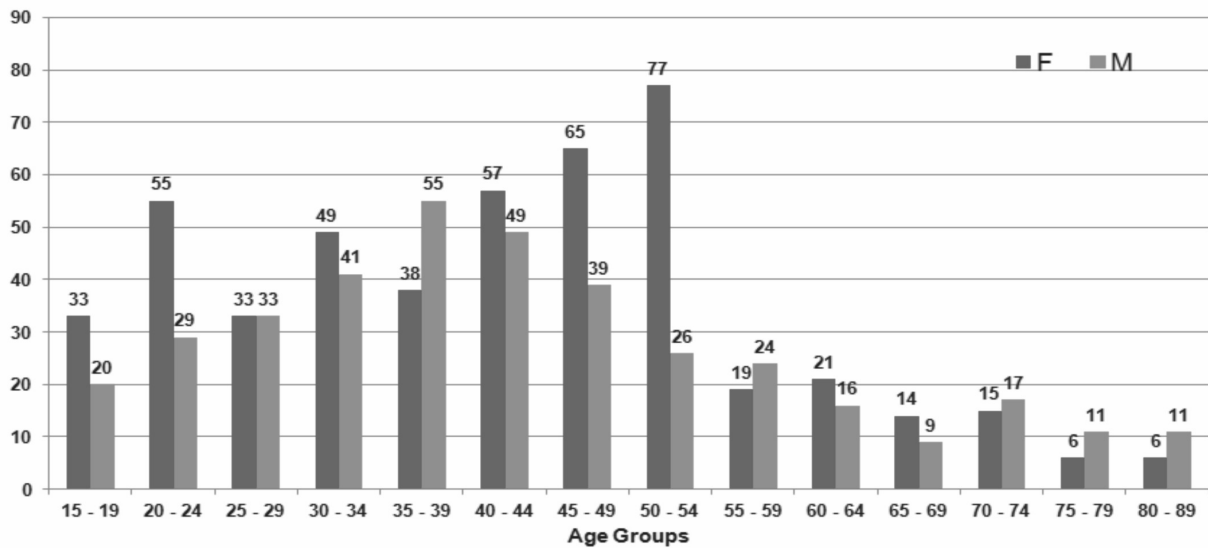


Figure 3. Distribution of Number of suicides by age group. Years 2011-2013. Epidemiological Observatory of Trento

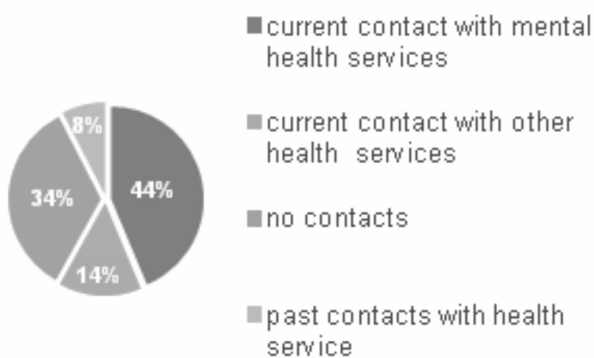


**Figure 4.** Distribution of Number of attempted suicides by age group in males and females. Years 2009-2014

In figure 3 we can point out that suicidal trend is increasing through life long with a peak in the middle age (modal class: 45-54 years) and an overall mean age of 54 years, but the phenomenon in young people (15-24 years) is alarming, thus considering that suicide is the second cause of death in earlier ages (Cash 2009).

Analyzing data coming from our specific questionnaire on attempted suicide we obtained other significant elements: 868 schedules were filled out during the period 2009-2013, 488 regarding events performed by 407 women, 380 events made by 310 men. Even suicide attempts show an increasing trend through life ages, with a peak in middle age (for females 50-54 years, for males 35-39 years) and a worrying high rate in earlier ages in young women (15-19 and 20-24 years) as we can see in figure 4 (D'Avanzo 2014).

suicide, besides data showed a high percentage of people with attempted suicide who proved to be in charge or had previous contacts with health services mental health, psychology units, services for substance abuse or alcohol disorders, private practitioner) as shown in figure 5 and 6 (D'Avanzo 2014).



**Figure 5.** Distribution Number of attempted suicides in charge by health services. Years 2009-2013

The most interesting finding revealed from these data analysis was that suicide rate in the population with history of suicidal behavior was of 12 suicides in 1000 in a year versus 0.07 suicides in 1000 in the general population, confirming the compelling evidence of a higher suicidal risk for people who already attempted



**Figure 6.** Distribution Number of attempted suicides in charge by health service different than mental health services. Years 2009-2013

This discovery strengthened the health services's awareness about the requirement of a prevention strategy specific for people with a past history of attempted suicide and led health professionals working for the prevention program Invitation to life to discuss and develop new strategies of prevention and management of suicide risk.

## DISCUSSION

From available data analysis it was possible to reveal a small decline of the suicide trend in the province of Trento from 2004 to 2010, in 2011 the rate underwent a new rise proceeding with a slight decrease until 2013: this trend could be connected to recent socio-economic events that involved Italy, so that the

economic crisis, unemployment and welfare cuts may have partially contributed. The rate in the younger classes of age also show a slow but steady increase in recent years, defining itself as the second leading cause of death in earlier ages after traumatic accidents. This fact has oriented local institutions to perform several prevention programs that focused on awareness-raising in schools, in cooperation with associations that deal with youth problems, and on the creation of a website dedicated to young people and aimed at disseminating correct information on prevention and treatment of psychological distress and suicide thoughts, and at promoting health services. The comparison of the suicide rates in the two populations, males and females, confirms the trend shown in other statistical surveys, with the male rate significantly higher than the female one, contrary to suicide attempts where we find generally the female rate even 4 or 5 times higher than male one, as reported in other scientific studies. The analysis of findings collected through the computerized hospital schedule in Trento's Province on attempted suicide has partly disconfirmed this knowledge: data collected from 2009 to 2013 in fact show a self harm rate for women higher than for males, but not so significantly. This difference is particularly noticeable in the younger age groups, from 15 to 24 year, appears to go in a reverse direction in the age group 35-39 and go back to being almost double in the age groups 40-55.

Among factors which characterize the population of people who attempted suicide one of the most interesting element concerns the utilization of health services. Thanks to the survey we could highlight that more than half people with previous attempted suicide were already being cared for by the health service, especially mental health service, and also substance abuse service and private practitioners. This element, considering that suicide rates in this sample was much higher than in the general population (12/1000 versus 0.07/1000), demonstrates the need to direct more efforts towards programs for proper care of people receiving treatment at mental health services.

## CONCLUDING REMARKS

Epidemiological knowledge of the suicide phenomenon is an essential element in a prevention program, since it shows the real terms of the problem and helps to avoid two extreme attitudes: a catastrophic sight sometimes powered by media emphasizing individual cases and a lack of clearness about the phenomenon that reinforces denial attitudes of the problem (Wasserman 2012).

Epidemiological surveillance has different goals (Ahmedani 2014, Wasserman 2012):

- achieve an assessment and a descriptive analysis of the phenomenon and an evaluation of care pathways for people with suicidal risk;

- build indicators for implementing and improving the care strategies of recognition and management of people at risk of suicide by health services;
- identify the prevention project's leaks;
- target improvement programs.

In the future we intend to go on monitoring regularly suicide rates in the Province of Trento through processing data coming from ISTAT schedules, in order to verify possible changes in the habits and socio-demographic characteristics of population, and we will proceed in analyzing suicide cases matching these data with the health services's database, and with data about attempted suicide collected in hospitals, so that we will have more possibilities to identify population groups at higher risk for suicide on which to focus preventive interventions, and to obtain risk markers and performance indicators to implement prevention and treatment methods. In addition we are performing a program of follow-up by phone calls for people with previous attempted suicide who refused contacts with mental health services after the suicidal event, with the aim of giving them additional support and exert an additional preventive influence.

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**Conflict of interest:** None to declare.

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