

Suicidal behavior in Croatia

Bilateral Project Cooperation Program
"Surveillance and Prevention of Acts of Self-harm"

Project Number: 2050389

Phase One

Suicidal Behavior in Croatia

June 2007

INTRODUCTION

This overview is written as a part of the report of Phase One of the Bilateral Norwegian and Croatian Project "Surveillance and Prevention of Self-harm" that started in the year 2006.

The Project is funded by a donation from the Government of the Kingdom of Norway, and the Project applicants were:

- **Ministry of Health and Social Welfare of the Republic of Croatia** with Ms. Marija Coupe as the Project Coordinator in the Ministry, and
- **Norwegian Institute of Public Health**, with representatives:
 - o Dr. Johannes Wiik, Director of the Division for Mental Health
 - o Branko Kopjar, MD, MS, PhD, Project Leader
 - o Representative of the Norwegian Institute in Croatia, company Consilior Vita d.o.o., with the project management team: Dr. Tanja Potočki Karačić, Project Manager, Nada Dražić-Stefanović and Slavica Vladetić, Project Assistants.

The institution which carried out the project in Croatia was the **Center for Disaster Management**, Zagreb, with Assistant Professor Neven Henigsberg, MD, PhD, President of the Center as the Local Project Leader, Ms. Šarlota Foro, Vice-President of the Center, and Dr. Zrnka Kovačić, Dr. Tomislav Madžar and Darko Marčinko, MD, PhD, as project collaborators.

Other institutions which cooperated on the project were:

- **The Croatian Institute of Mental Health**, and
- **The Croatian National Institute of Public Health** with Vlasta Dečković-Vukres, MD, PhD, Urelija Rodin, MD, MS, Marijan Erceg, MD, MS, Tanja Ćorić, MD and Branimir Tomić, MD all as project collaborators.

This overview was prepared by Darko Marčinko, MD, PhD, and Assistant Professor Neven Henigsberg, MD, PhD.

Suicidal Behavior in Croatia

Introduction

Suicidal behavior is a major public health problem in the world. There is no explanatory theory of suicidal behavior and various combinations of sociological and biological/medical interventions are required to reduce the mortality and morbidity of this behavior.

The focus of this article is to present an overview of suicide rates in Croatia in the past three decades and demographic characteristics of the people attempting and committing suicide. Epidemiological data on suicides were obtained from a register of the Croatian National Institute of Public Health.

The rates of suicide have declined in several European countries over the past 15 years, while in other countries the rates have increased remarkably among young people, especially males.

In Croatia, with 4.5 million inhabitants, suicides represent, according to statistical data, one of the most important public health problems. In the last few years the national suicide rate was 19 per 100,000 inhabitants per year, which puts it among the leading 15 countries in the world.

Compared to other European countries, high suicide rates were found in Croatia, with a sharp increase in suicide rates during the war period 1991–1992. From the end of war (1995) it appears that suicide rates have somewhat decreased. However, they remained high (around 19 per 100,000). In particular, suicide rates for older males were very high. Older people in Croatia are at higher risk for suicide than any other segment of the population, specifically men older than 65 years of age.

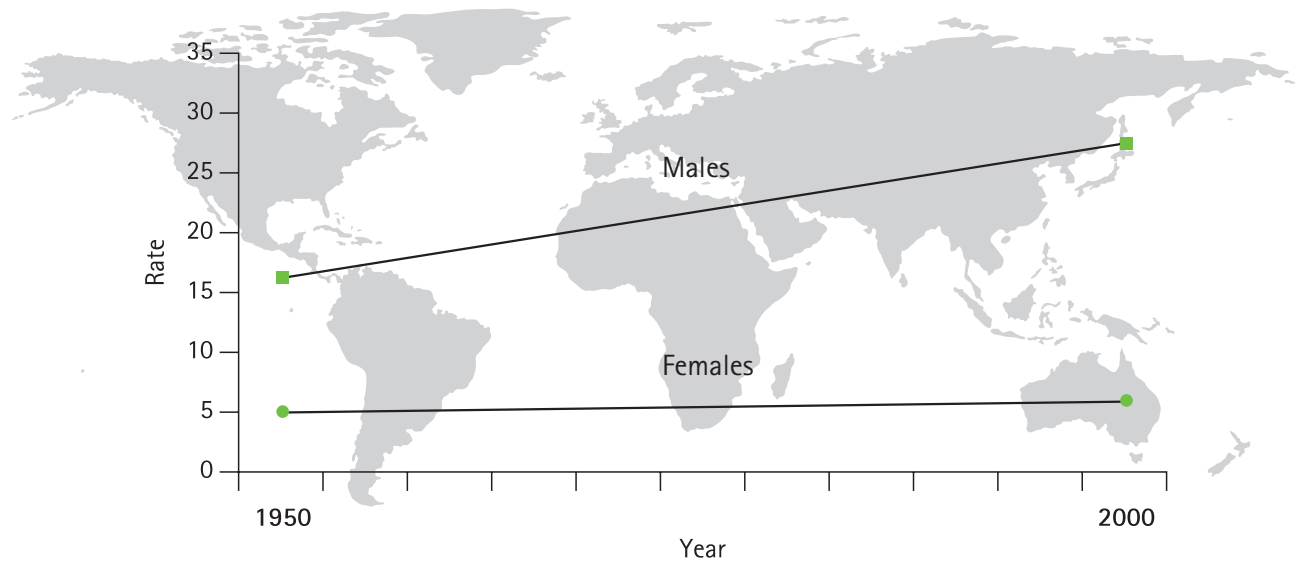
More than 90% of suicide victims have a diagnosable psychiatric disorder, and most individuals who attempt suicide have a psychiatric illness. The most common psychiatric conditions associated with suicide or serious suicide attempts are mood disorders, personality disorders, alcohol/substance abuse, anxiety disorders and schizophrenia. The assessment of suicidal behavior is a topic relevant not only to mental health professionals, but to all clinicians.

In order to make data on suicide rates in the past decade and a half more understandable, it is necessary to say a few more words on the socio-economic conditions in Croatia. After Croatia was attacked in the beginning of 1990s, a war began which lasted until summer 1995. Many families, villages, towns and provinces were ruined. Accordingly many people relocated far away from their homes as refugees. Many factories and firms were destroyed, and a great number of people were left unemployed. At the same time privatization of many firms started. Many middle aged people had to register at the Croatian Employment Service.

Hypothetical explanations of the suicidal behavior are discussed both from a sociological perspective and from an individual psychological perspective, directions for some future research are presented here.

Globally, from 1950 to 1995 suicide rates increased by approximately 35% in men and approximately 10% in women (www.who.int/whosis) in all age groups. The reasons for the differences in rates among different age, sex, and ethnic groups, as well as the change in rates since the 1950 are unknown.

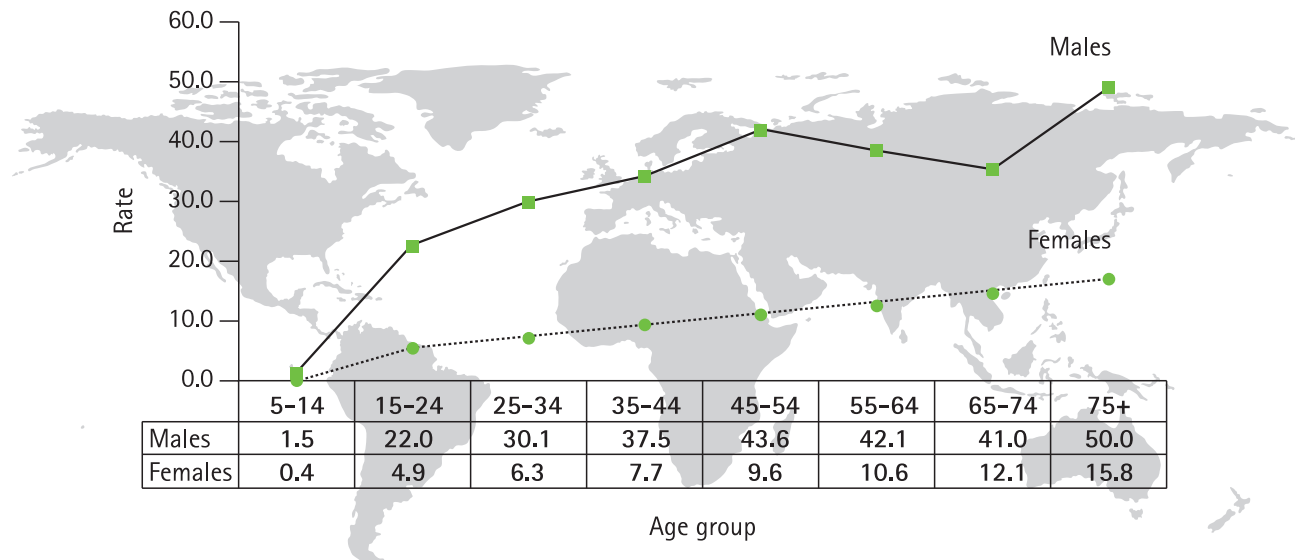
Evolution of global suicide rates 1950–2000 (per 100,000)



World Health Organization, 2002

The graph below presents gender distribution of suicide rates in the world. The ratio of males to females is approximately three to one. The ratio of males to females in Croatia is three to one as well (the suicide rate for men is 30 per 100,000, while the suicide rate for women is 10 per 100,000).

Distribution of suicide rates (per 100,000)
by gender and age, 2000



World Health Organization, 2002

Suicide Rates in Croatia

The suicide rates in Croatia between 1966 and 2001 are shown in figure 1. The rate increased during the pre-war period and during the first two years of the war. After that period the rate slightly decreased. In the past few years the rate is between 18 and 20 per 100,000 people.

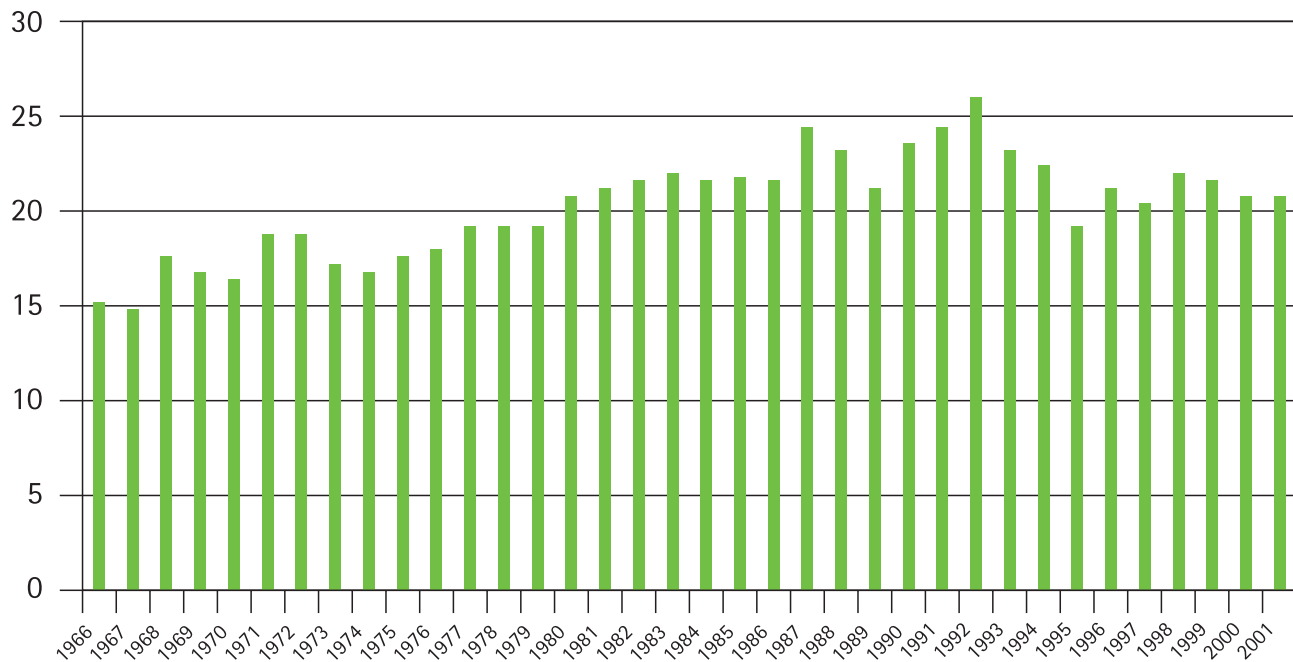


Figure 1 The number (rate) of committed suicide per 100,000 inhabitants in Croatia (period 1966 to 2001)

The Rates of Suicide in Mortality

In figure 2 the rate of suicide in mortality in Croatia for the same time period is presented. The rate is relatively stable during the observed period.

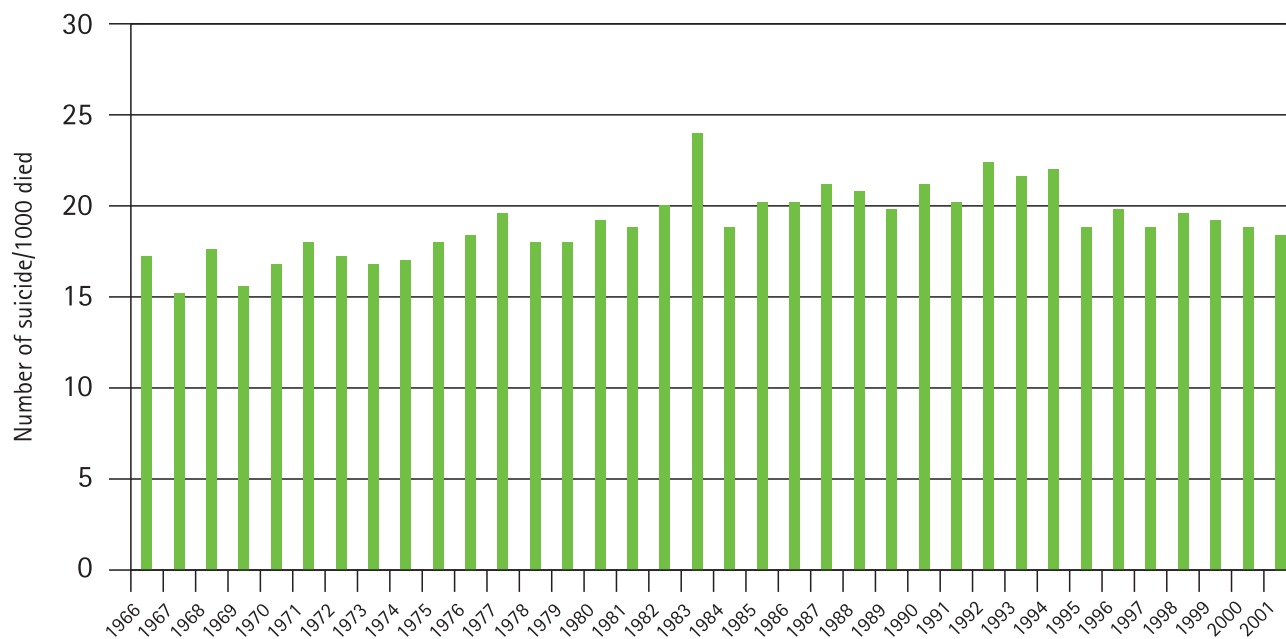


Figure 2 The rate of suicide in Croatia / Number of suicides per 1,000 deaths (period 1966 to 2001)

Comparison of Suicide Rates with Other Countries in Region

Figure 3 shows suicide rates in Croatia in comparison to those in the former Yugoslav republics Slovenia and Serbia & Montenegro (SCG), as well as to those in Hungary and Italy.

The suicide rates in the Republic of Croatia oscillated, but evidently showed tendency of increase from 1966 to 1992 with peaks in 1987 (24.3), 1991 (24.4) and 1992 (25.86). From 1993 to 2002 the data show oscillation but evident tendency of decrease. The suicide rate declined from 25.86 per 100,000 in 1992 to 19.88 in 2001, and 19.69 in 2002, a fall of 6.17 (23.9%).

The postwar period resulted in profound changes in the society, and these rapid social and cultural changes give the best explanations of the decrease of suicide rates since the early 1990s.

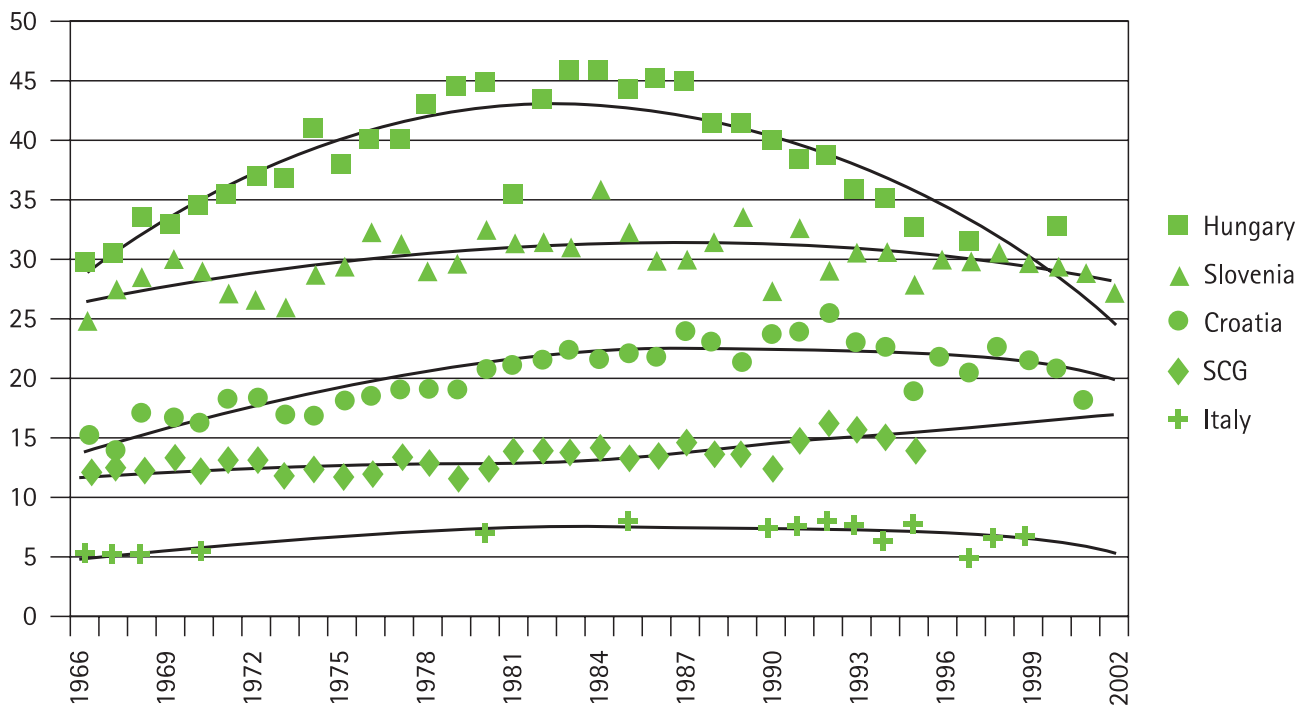


Figure 3 Suicide rates trends in Croatia in comparison to those in Serbia & Montenegro (SCG), Slovenia, Hungary and Italy

Regional Distribution of Suicide

The total area of Croatia is 56,542 km². The Adriatic coast is 5,835 km long. Croatia has 1,185 islands. Geographically Croatia can be divided into the continental and the coastal region.

Continental Croatia consists of 3 subregions: mountainous Croatia, central Croatia and the region of Slavonia and Baranja.

The coastal region consists of: Istria, North Croatian Littoral and Dalmatia.

The continental region has a continental climate with cold winters.

The coastal region has a Mediterranean climate characterized by mild winters, and sunny and hot summers.

Map showing regional distribution.



Legend: Kontinentalna Hrvatska - Continental Croatia; Primorska Hrvatska - Coastal Croatia

Figure 4 shows suicide rates in Continental and Mediterranean Croatia between 1993 and 2001. The suicide rates were lower in the Mediterranean than in the continental parts of Croatia, but a suicide rate decrease was found in both parts of the country.

There are more suicides in some districts of Croatia. The highest suicide rates were found in the northern and western districts of Croatia, which are geographically closest to Slovenia and Hungary, the countries which traditionally have higher suicide rates.

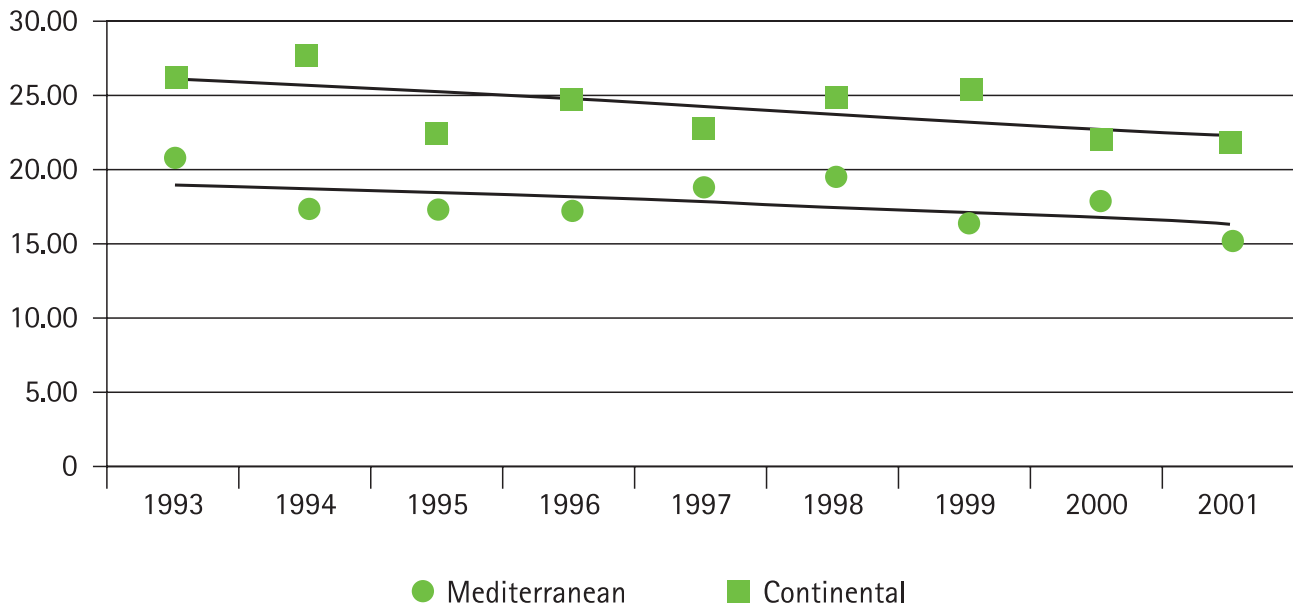


Figure 4 Suicide rates in the Continental and the Mediterranean parts of Croatia

Age and Suicide

In general, suicide rates increase with age. Rates among people age 60 and older are about three times the rates among people 15-29 years of age. The absolute numbers are, however, higher among those below 45 years of age.

A look at international statistics shows that many nations have experienced a rise in adolescent suicide rates since 1970. For example, from 1980 to 1990, Lester (2001) found that male youth (15-24) suicide rates increased in 15 of 32 nations and female youth suicide rates in 10 of the 32 nations. Elders (age 75+) suicide rates rose in 19 nations for men and 16 nations for women; that is a serious public health problem. The increase was much more widespread in the 24 nations during the 1970-1980 time period, when 21 of the 24 nations experienced an increase, whereas only 13 experienced an increase for the 1990-1995 period. In addition, some nations experienced an increase in male youth suicide rates in all three time periods (such as Spain and the United States), while other nations did not (such as Hong Kong and Hungary).

Croatia does not show a trend of increasing suicide rates in adolescent and younger members of the populations; the trend is relatively stable across time. In Croatia, the suicide rate of the elderly still exceeds that of the younger population.

Older people who undertake self-harm are at higher suicide risk than younger patients.

Suicide rates in this age group (older than 65) rose for about 50% between 1972 and 2002. It is not certain why there is a higher rate of committed suicide among the elderly, but possible factors are social isolation, physical vulnerability, and increased lethality of intent.

Figure 5 shows age distribution of suicide rates in Croatia 1972-2002.



Figure 5 Age distribution of suicide rates in Croatia 1972-2002 (standardized rates per 100,000 inhabitants)

During the 1970s and 1980s suicide rates increased especially in the older age group, 65+.

The second highest rate was found in the age group 45-64 years of age; this group had a decrease in trend during the last 10 years.

The lowest rates were found among those aged 24 and higher, with a relatively stable trend throughout the last decade.

Gender Distribution of Suicide Rates

During the 1970s and 1980s suicide rates increased in both genders, but in men the increase was more expressed.

During the second part of the 1990s there was a decrease in both groups. In 2002, the overall age-adjusted rate for men was 30/100,000. The comparable rate for women was much lower. The overall age-adjusted rate for women was 10/100,000.

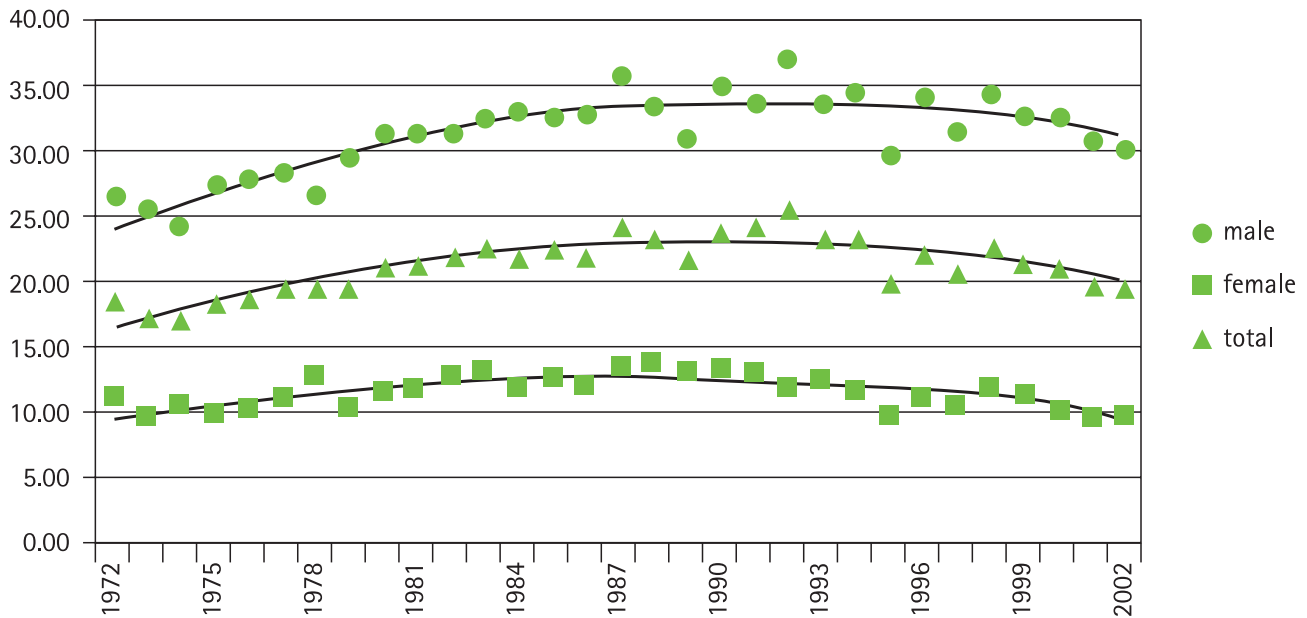


Figure 6 Male and female suicide rates in Croatia 1972–2002

Male/Female Ratio of Suicide Rates

Regardless of year, men consistently have higher suicide rates than women. The ratio of male to female suicide rates in Croatia has increased gradually from 2.5 in 1972 to 3 in 2002.

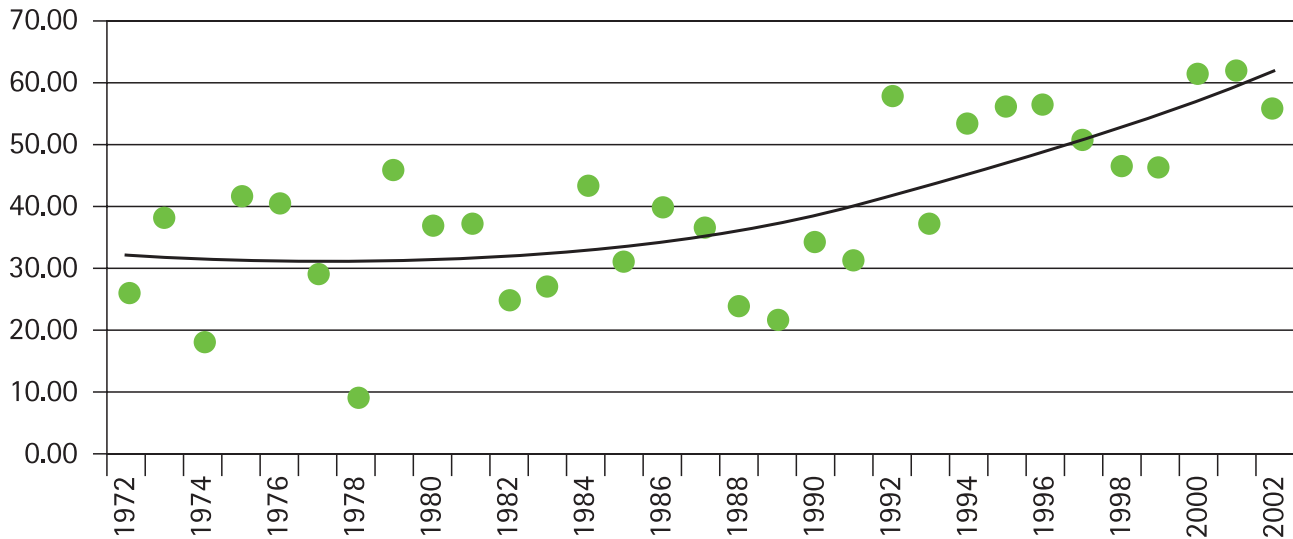


Figure 7 Male/female ratio of suicide rates in Croatia 1972-2002

Distribution of Suicides Specified by Method

The distribution of suicides specified by method of suicide is shown in figure 8a and 8b.

In more than half of the cases suicides were committed by hanging (51%). Firearms were used in 17% of the cases. Other methods, such as overdose of medication, jumping from high places, drowning and cutting were less frequently used.

The continuous monitoring of the methods used in suicide is important, as the proportions of the various methods are not stable over time (e.g. Platt et al.1988; Hawton and Fagg 1992), possibly due to changes in availability of the different means. Theoretically, restricting the availability of one method might increase the use of more lethal methods. For example, firearms were more often present as a suicidal method during the war period (25.9% in 1992) than in the post war period (17% in 2002).

Hanging was the most common suicide method in pre war period (61% in 1989), while during the war and post war period it decreased in a relative amount (50% in 2002).

Gender differences were found for most of the methods. Females took drug overdoses significantly more often than males, while men used more lethal methods, similar to males in other European countries.

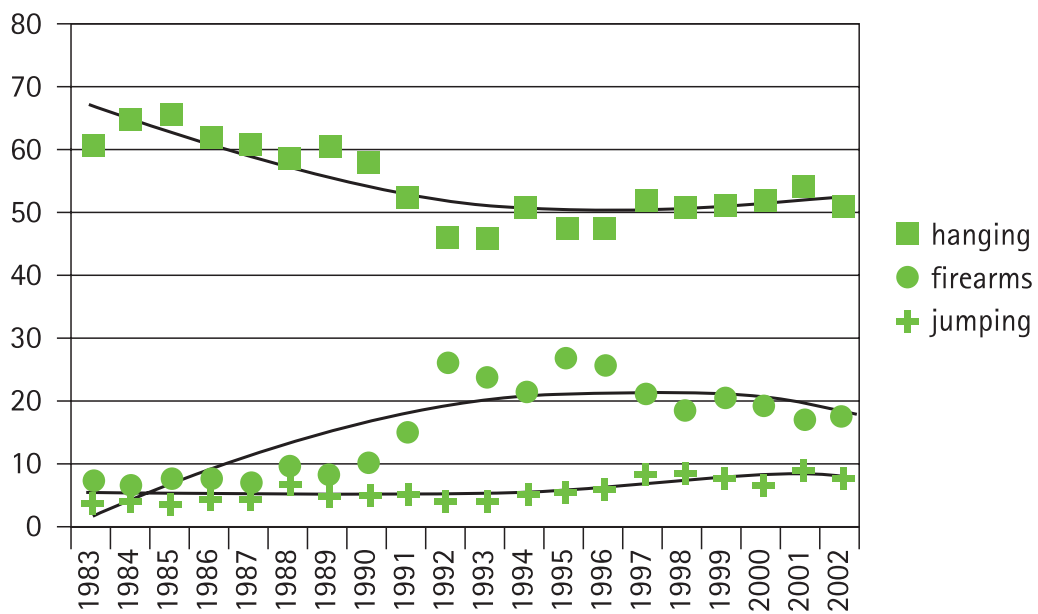


Figure 8a Distribution of suicides by method

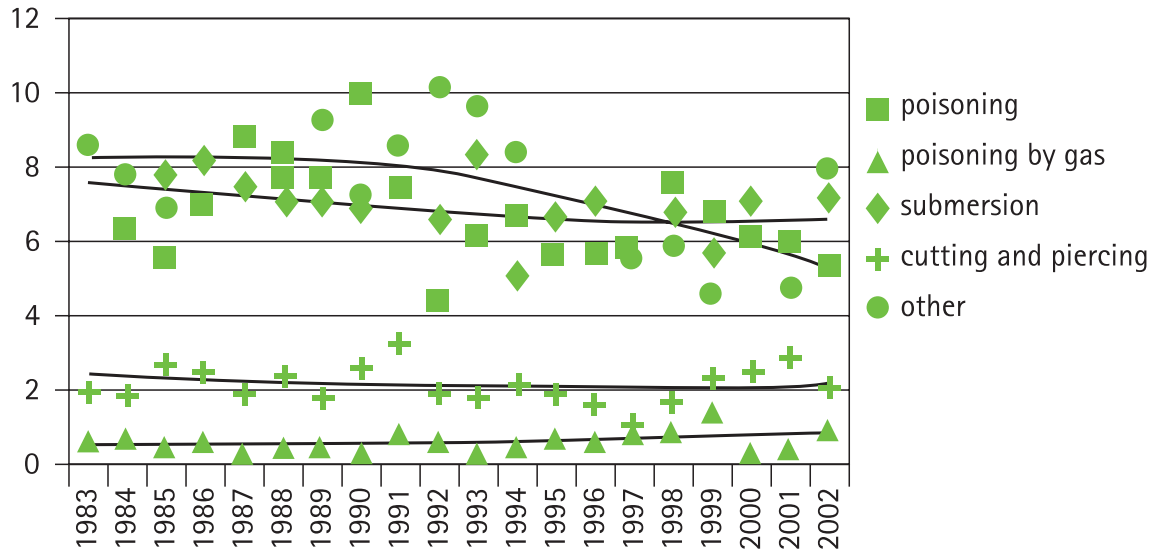


Figure 8b Distribution of suicides by method

Age-Standardized Death-Rates of Suicide and Self-Inflicted Injury

A problem in Croatia is that there is a very high rate of self-inflicted injury involving people older than 65. Standardized death-rates (SDR) are approximately twice as high as in Europe for both men and women (see table below).

SDR, suicide and self-inflicted injury, 65+ per 100,000 – both sexes

Countries	1999	2000	2001	2002
Croatia	57.83	58.49	42.45	45.9
Norway	16.56	13.58	13.38	...
Europe	27.76	27.03	26.11	25.93
EU-25 average, 25 Member States, European Union (from 1 May 2004)	20.6	20.44	19.78	19.98
EU-15 average, 15 Member States, European Union (prior 1 May 2004)	19.19	19.06	18.65	...
EU-10 average, 10 new Member States, European Union (from 1 May 2004)	29.59	29.22	27.03	26.47

SDR, suicide and self-inflicted injury, 65+ per 100,000 – female

Countries	1999	2000	2001	2002
Croatia	31.12	31.77	23.67	23.59
Norway	8.22	6.98	3.92	...
Europe	14.66	13.95	13.05	12.99
EU-25 average, 25 Member States, European Union (from 1 May 2004)	10.76	10.54	10.04	10.06
EU-15 average, 15 Member States, European Union (prior 1 May 2004)	10.13	9.77	9.55	...
EU-10 average, 10 new Member States, European Union (from 1 May 2004)	14.61	15.17	12.99	12.59

(Source: WHO, HFA database, 2005)

Weather and Suicide

Using the theory of suicide proposed by Henry and Short, it can be argued that when external conditions are bad, we have a clear source to blame for our own misery, and this makes us outwardly angry rather than inwardly angry or depressed. When times and weather are good, there is no clear external source to blame for our misery, and so we are more likely to become inwardly angry or depressed. We used this idea to explain the higher rates of suicide in Croatia after winter, in spring: in the months April to June (the milder weather provides fewer external sources to blame for our personal misery).

Our findings are in agreement with the results from other studies (for reviews, see Kevan, 1980; Chew and McCleary, 1995; Preti et al., 2000) that have reported a seasonal variation of suicide. Similar to these, we found the peak to be in spring.

The effect of sunshine and suicidality can be linked with a hypothesis that sunshine acts as a natural antidepressant which first improves motivation, then only later improves mood, thereby creating a potential short-term increased risk of suicide initially upon the beginning of the sunshine period.

A possible explanation might be that the improvement of depression occurs gradually. Depressed individuals may be suicidal, but unable to commit suicide because of the fatigue and the lack of decisiveness or energy. After the initiation of antidepressant treatment, this lack of energy and motivation is gradually withdrawn, and patient may move forward and carry out suicide. Only after several weeks the improvement in mood is substantial enough to actually protect against suicidal thoughts.

Pharmacotherapy and Suicide

During the last ten years, several new antidepressants including selective serotonin reuptake inhibitors (SSRIs) have been introduced on the Croatian market. The new antidepressants have claimed to be as effective as tricyclics, but better tolerated and less toxic. The increased use of SSRIs and new antipsychotics corresponded with a significant decline in suicide mortality in Croatia.

As depression is the main psychiatric condition leading to suicide, it seems reasonable to infer that increases in antidepressant prescriptions, which indicates an improvement in management of depression, should have a beneficial effect on suicide rates. Indeed, an intervention to improve management of depression in primary health care in a Swedish community resulted in increased antidepressant prescriptions and a short term reduction in suicide.

The low toxicity of SSRIs may prevent suicides when people overdose as an attempt to commit suicide. The balance of risks and benefits may vary depending on an individual's underlying suicide risk. For patients with conditions that lead to a higher suicide risk, such as severe depression, the risk-benefit balance may be more favorable than for patients with conditions such as anxiety and mild depression, in which suicide is rare.

Assessment and Management of Suicidal Ideation

Management of suicidal ideation in Croatian psychiatry should focus on establishing safety, possibly through hospitalization. For patients at high, although not imminent risk of suicide, aggressive treatment of the underlying psychiatric illness is imperative and should involve a combination of pharmacotherapy and methods of psychotherapy.

If an imminent risk of suicide is present, hospitalization is indicated. If the risk is not imminent, the physician should establish a plan with the patient that targets the underlying psychiatric illness. Access to means of suicide can be limited by involving family and friends of the patient, and increasing contact of the general practitioner and the patient.

The general characteristics of assessment and treatment of suicidal patient is summarized in *Table 1*.

Table 1 Assessment and Treatment of the Suicidal Patient

· Assessment of the current level of suicide risk
· Identify predisposing suicide risk factors (e.g. psychiatric illness, previous suicide attempts, psychiatric and somatic comorbidity)
· Identify trigger factors for suicide attempts (e.g. family history, current life crises, access to lethal means, socio-demographic factors)
· Conduct a specific inquiry to recognize suicidal behavior, identify a suicide plan or psychiatric risk symptoms (e.g. depression, anxiety, impulsivity, hopelessness, hallucinations) are present
· Identify available interventions, including factors of family and social supports
· Document the assessment and plan

Risk Factors for Suicide

Suicide risk factors include primary (psychiatric and physical illness), secondary (psychosocial), and tertiary (demographic) factors. Primary risk factors include primary psychiatric disorders, comorbid conditions and serious illness, as well as previous suicide attempts, suicide ideation and planning, and a family history of suicide. Secondary risk factors are psychosocial factors such as hopelessness, dysfunctional attitude, poor problem solving skills, and pessimism. Tertiary risk factors are demographic, such as age, gender, vulnerable periods (seasonal variations, premenstrual syndrome), and a minority group affiliation.

Clinical judgment based on an assessment of risk factors is the mainstay of decision making when clinicians are faced with the prospect of hospitalizing a potentially suicidal patient.

Risk factors associated with suicidal behavior tend to have a high degree of sensitivity; that is, they are able to identify, with great reliability, individuals who later commit suicide. They have low specificity, or little ability to exclude individuals who do not later commit suicide.

High Risk Group for Suicide in Croatia

The table below presents high suicide risk groups in Croatia.

Risk groups are numerous and include males and people with some psychiatric disorder. It is interesting that some professions, like doctors and farmers, are under higher risk, as well as the unemployed and people on low incomes.

High risk group	Estimated magnitude of increased risk
Males compared to females	× 2-3
Current or ex-psychiatric patients	× 10
4 weeks following discharge from psychiatric hospital	× 100-200
People who have deliberate self harmed in the past	× 10-30
Alcoholics	× 5-20
Drug misusers	× 10-20
Family history of suicide	Not known
Serious physical illness/handicap	Not known
Prisoners	× 9-10
Offenders serving non-custodial sentences	× 8-13
Doctors	× 2
Farmers	× 2
Unemployed	× 2-3
Divorced people	× 2-5
People on low incomes (social class IV/V)	× 4

Suicide According to Hospital Diagnosis Prior to Suicide

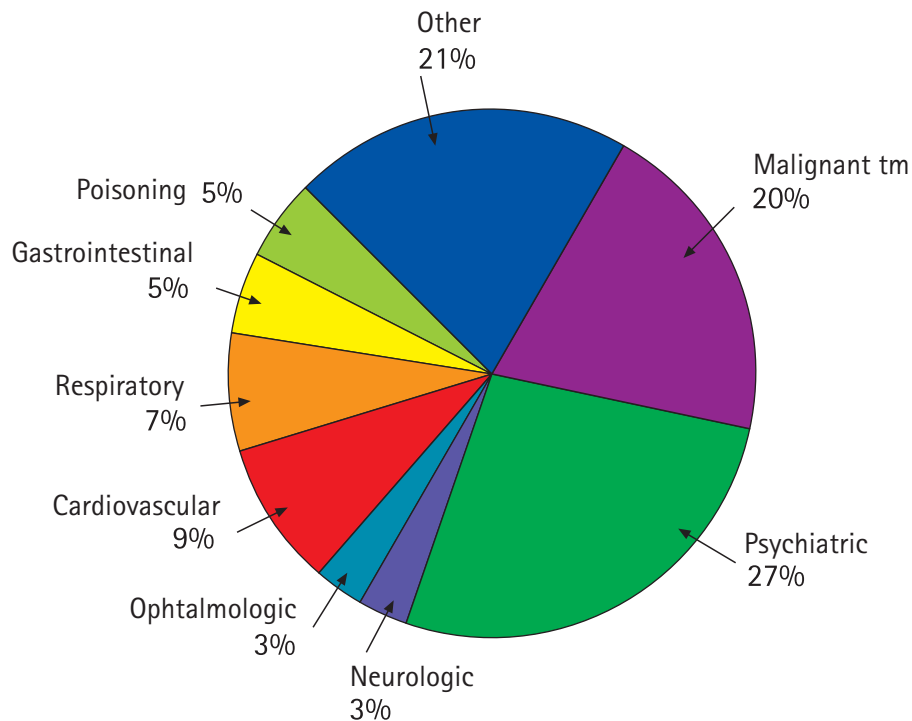
The Croatian National Institute of Public Health data show that there were 216 hospital treatments in 2004 of people who committed suicide later that year.

The graph below presents groups of discharge diagnoses for those 216 hospitalizations that preceded later committed suicide in 2004.

The most frequent first discharge diagnosis was psychiatric disorder (27%); on the second place were malignant tumors (20%).

Interestingly, poisoning was registered as the first diagnosis in 5% of the observed hospitalizations. Poisoning might be explained as an act of parasuicidal behavior that was not recognized in the context of suicidality at the internistic wards. Therefore, it seems that it would be very useful to develop a follow-up program that marks the behavior as parasuicidal and gives opportunity for efficient follow-up psychiatric treatment.

Figure 9 First diagnosis (presented as diagnostic groups) at the discharge from the hospitalization prior to the committed suicide, for 216 hospitalizations of suicidal patients in 2004:



Source: Croatian National Institute of Public Health

Discussion

Epidemiological data on suicide vary from country to country with the highest annual rates in the group of Eastern-European countries, which share similar historical and socio-cultural characteristics, such as Estonia, Latvia, Lithuania, Finland and Hungary and to a lesser extent the Russian Federation. The WHO estimates that suicide accounts for almost 2% of deaths in the world. This overview summarizes the current knowledge about suicide in Croatia.

In the past 10 years suicide rates in Croatia appear to have stabilized. However, the rates are still high when compared to suicide rates in other countries.

During the past few decades, a number of studies have demonstrated the connection between depressive disorders and suicides among elderly individuals. Major depressive disorders are more common among older people who commit suicide than among younger people committing suicide.

Many recent studies have revealed unidentification and undertreatment of depression among suicide victims. Adequate treatment with antidepressants is often useful in the treatment of moderately and severely depressed patients. The increased use of SSRIs and new antipsychotics coincided with a significant decline in suicide mortality in Croatia. Therefore, in suicide prevention the benefits of antidepressants and new antipsychotics should be considered while choosing treatment for patients with suicidal risk.

Much attention has been paid to the recognition of depressive disorders and the education of general practitioners, who have a great responsibility for identifying suicide risk and who also prescribe the majority of antidepressants.

The prevention of mortality due to suicide is a big challenge in Croatia, which faces a multitude of socio-economic issues, limited resources, and stigmatization of mental illness. Priorities in the identification and management of those who are at high risk of suicide need to be established. It is also important to focus on general preventive measures, such as reduction of availability of highly lethal means and overall improvement of mental health services.

There is a relatively consistent predominance of completed suicides in males over those in females; suicide rates are three times higher in males. There is a clear tendency towards an increase in suicide rates with age (for both men and women). Several explanations have been considered for national and regional variations, including climate, religion, and social and political systems, but a more likely scenario is that with time the genetic contributions to suicide will be explained in more details, as well as their interactions with environmental factors.

The importance of primary prevention varies from community to community, and may have an impact on the population level. However, an individual suicidal patient always requires optimal assessment and management and treatment, and that is usually provided by primary health care and emergency medical services. This report provides an overview of the issues of suicide, epidemiological data on suicide, an assessment and possibilities of management and treatment of suicidal patients in Croatia.