

# Analysis of the phenomenon of attempted suicides in 1978-2010 in Poland, with particular emphasis on rural areas of Lublin Province

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## Abstract

The increasing quality of life of modern man should go hand-in-hand with reducing the scale of the problem of attempted suicides. During the last 55 years, the World Health Organization has recorded an increase in the number of suicides by about 60% in the developed and developing countries. In Poland, the highest rate of suicides have been committed by males, and the circumstances depended on gender, age and socio-economic factors. The aim of the presented study is to present the scale of the problem and present results of the analysis of the phenomenon of attempted suicides in 1978-2010, with particular emphasis on a Polish agricultural region – the Lublin Province in eastern Poland. 167,557 attempted suicides were analyzed across the country, included suicide attempts that resulted in death. Brief description of the state of knowledge and summary: Between 1978-2010 in Poland, the number of attempted suicides was higher in urban than in rural areas, especially among men aged between 31-50 years, while the tendency to commit suicide increased in rural areas in comparison to urban areas. Women usually represented a quarter of the people who attempted or committed suicide, with the majority cases reported in 2002. Most attempted suicides were carried out in the cities, but since 1990, the number of attempted suicides in the country is growing by an average of 8 *per annum*. In the Lublin Province, far more people are attempting to commit suicide in the rural areas. Despite the trend of increasing numbers of attempted suicides (about 4.36 suicides per year), the number of fatal suicides is decreasing, and the number of suicides committed by teenagers under 14 years of age is decreasing more dynamically.

## Key words

assisted suicide, attempted suicide, agriculture, village

## INTRODUCTION

Attempted suicides are a subject of interest to the World Health Organization because of the increase in the number of suicides by about 60% over the last 55 years in developed and developing countries. Increasingly, there are also fatal suicides among young people aged 15-21 years [1].

According to Jarosz [2], a group of prominent countries with the highest rates are: Lithuania, Russia, Belarus, Estonia, Hungary, Latvia, Slovenia, Ukraine, Kazakhstan, Finland, Croatia, Switzerland, Luxembourg, France and Austria. According to authors at Oxford, the highest suicide rates are observed among the inhabitants of the British Isles and the countries of Central and Eastern Europe, and the lowest are among the Muslim countries [3].

For many years in Europe, the highest number of suicides has been in Finland, Hungary and the Baltic countries (Lithuania, Estonia), and the least number in southern Europe [4, 5].

Deaths due to suicide are 24.3% of the population deaths from external causes, including 29.2% of the working-age population. With age, the share of suicides in the general

statistics of mortality is declining, while suicides among the elderly are significantly more effective [6].

The increasing quality of life of modern man should go hand in hand with reducing the scale of the problem of suicide. Unfortunately, the available Polish statistics reveal that the scale of this problem has been increasing during the last 50 years [7].

On a global scale, 2,000 people commit suicide every day. Diekstra states that in many European countries the number of suicides committed exceeds the number of deaths from road traffic accidents [8].

In Poland, for every 100,000 inhabitants, about 16 people commit suicide. In 2005, there were 5,625 attempted suicides, of which 4,621 were fatal [9]. In 2010, 5,456 attempted suicides were recorded in Poland (including 4,480 men) of which 4,087 (3,517 men) were fatal [2].

Poland was previously classified as a country in which suicide is strongly conditioned by gender [10, 11]. Women are more likely to commit non-fatal attempted suicides, which may be due to the patriarchal traditions of the Polish family, which is dominated by male the model, designed to ensure family survival. In times of high unemployment, men, unable to cope with the pressure of society, more often commit fatal suicide. Another reason is also the nature of women, who often seek help – it is easier for them to confide, while men are

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afraid to admit defeat and live with the belief that they have to deal with problems on their own [12]. Men in Poland are more likely to commit suicide against the background of all the European countries and worldwide, with the sole exception of China [13]. The highest rate of suicides committed by men is in Poland, followed by Belarus. Northern European countries have higher rates of suicides committed by men, in comparison with the countries in southern Europe. [14]

Lublin province, an agricultural region located in the central-eastern part of Poland and on the borders of Belarus and the Ukraine, was selected for a detailed study of the problem of attempted suicides. 41 cities are located in the region, together with 4,300 villages and rural settlements. The rural population constitutes more than half of the population – 53.5%, with an average of 39.9% living in the country. Rural areas cover 96.2% of the territory of the region, and 71.8% is related to agriculture. A new and very developmental direction of the agricultural economy of the region is ecological farming. Since the mid-1990s, every year the population of Lublin Province has been steadily decreasing, and according to 'Population Projections for the 2008-2035', compiled by the Central Statistical Office in Warsaw, this trend will persist. The Lublin region is characterized by a high level of mortality. In 2011, 22,981 people died, that is by 0.2% less than the previous year, and 1.1% less than in 2000. In the rural areas, this was 61.5% of all reported deaths. The structure of deaths by gender shows excessive mortality of men, whose share in the total number of deaths was 53.0% (previous year 53.4%) [15].

From a review of the literature on the subject, it is known that residence in an urban community or country is a factor in attempted suicides. Large urban centers are widely-known globally as the most suicidal environment [16]. Authors' opinions on this issue are divided, and the presented study attempts to characterize the trend of attempted suicides in the Lublin region, i.e. in a region where there is a prevalence of rural over urban areas.

Attention should be paid to the common phenomenon of travelling away from home in order to commit suicide, which greatly interferes with making comparisons of the prevalence of suicide in rural and urban areas. British researchers studied the phenomenon of socio-demographic factors and methods of committing suicide among British suicides. 12% of suicides were committed in places far from home. The reason for this remains little known. Factors predisposing to the occurrence of events described were: young age, social adversity, and the presence of mental disorders [17].

**Aim of the study.** Describing the scale of the problem and presenting the results of analysis of the phenomenon of attempted suicides in 1978-2010, with particular emphasis on rural areas on the example of the Lublin Province, compared to the highly urbanized Mazowieckie Province.

## MATERIALS AND METHODS

167,557 attempted suicides were analyzed across Poland in 1978-2010, among which 3,601 included attempted suicides in Lublin Province in 2000-2010, representing a 2.15% interest. The presented study highlights attempted suicides and completed (fatal) suicides, which are included in attempted suicides in general. All given numbers of cases are calculated per 100,000 inhabitants. For this purpose, public statistics and strategic documents were used:

1. Statistical Yearbooks, 1978, 1988, 1998, 2008 and 2011.
2. Health Status of the Polish Population in 2009, GUS, Warsaw 2011.

The collected information and analysis also allowed the tracing of the dynamics of change at intervals that provide inferences about the scale, structure and trends, using trend extrapolation. The significance of differences between the independent variables were calculated using Chi<sup>2</sup> test, at  $p < 0.05$ .

## RESULTS

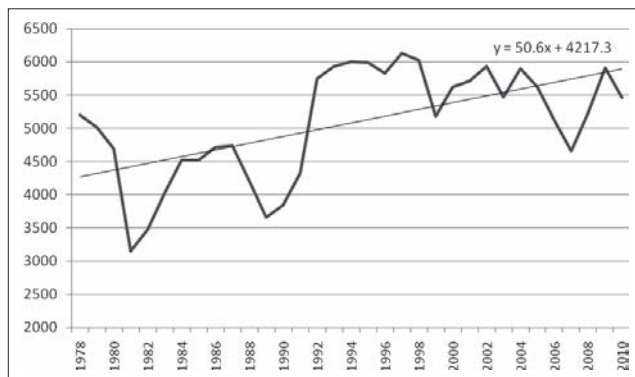
**The phenomenon of attempted suicides in 1978-2010.** The number of attempted suicides in the analyzed period was always higher in cities than in rural areas, especially among men within the age range of 31-50 years (Tab. 1). The number of attempted suicides in those years was not uniform, most dynamic can be observed until 1990 (Tab. 1), due probably to the then prevailing socio-political conditions. The best example is the year 1981-1982, when the number of attempted suicides fell to the lowest level in the period considered. However, already in 1983, the number of suicide attempts dramatically increased. The year 1989 brought a drop in the number of people who attempted suicide, which is associated with the stabilization of the internal life of the country. The only exception was the year 2007. After 1991, the number of attempted suicides decreased (Figs. 1, 2), whereas the trend line after 1992 is characterized by an even more dynamic decrease in the number of attempted suicides.

**Table 1.** The number of attempted suicides in 1978-2010, divided by gender, place of residence and age group

| Year | In general | Gender |       | Including completed attempted suicides | Place of residence |         |              | Age   |       |       |       |             |
|------|------------|--------|-------|--|--------------------|---------|--------------|-------|-------|-------|-------|-------------|
|      |            | Men    | Women |  | Cities             | Village | 14 and under | 15-20 | 21-30 | 31-50 | 51-70 | 71 and more |
| 1978 | 5198       | 4132   | 1066  | -                                      | 3389               | 1809    | 61           | 467   | 1327  | 1868  | 1157  | 318         |
| 1979 | 5017       | 3985   | 1032  | -                                      | 3217               | 1800    | 49           | 393   | 1286  | 1903  | 1109  | 277         |
| 1980 | 4693       | 3698   | 995   | 4338                                   | 3024               | 1669    | 43           | 939   | 1186  | 1717  | 1101  | 306         |
| 1981 | 3155       | 2430   | 725   | 2915                                   | 2058               | 1097    | 34           | 245   | 848   | 1141  | 680   | 207         |
| 1982 | 3481       | 2709   | 722   | 325                                    | 2284               | 1197    | 53           | 273   | 592   | 1344  | 788   | 136         |
| 1983 | 4021       | 3150   | 871   | 3761                                   | 2543               | 1478    | 39           | 257   | 997   | 1519  | 942   | 237         |
| 1984 | 4519       | 3553   | 996   | 4225                                   | 2807               | 1710    | 41           | 232   | 1031  | 1802  | 1080  | 351         |
| 1985 | 4517       | 3631   | 886   | 4278                                   | 2809               | 1708    | 28           | 227   | 944   | 1846  | 1162  | 310         |

**Table 1** (Continuation). The number of attempted suicides in 1978-2010, divided by gender, place of residence and age group

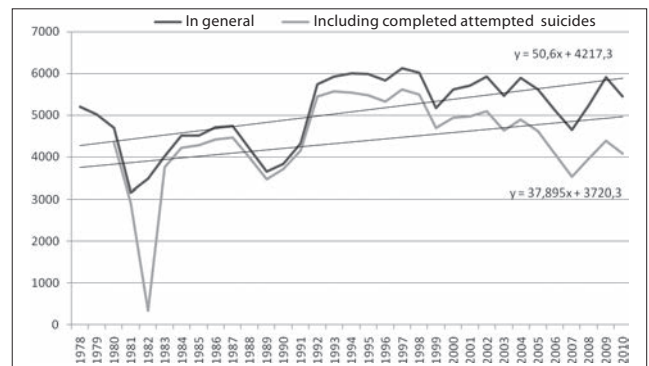
| Year | In general | Gender |       | Including completed attempted suicides | Place of residence |         | Age          |       |       |       |       |             |
|------|------------|--------|-------|--|--------------------|---------|--------------|-------|-------|-------|-------|-------------|
|      |            | Men    | Women |  | Cities             | Village | 14 and under | 15-20 | 21-30 | 31-50 | 51-70 | 71 and more |
| 1986 | 4713       | 3755   | 958   | 4426                                   | 2953               | 1760    | 55           | 277   | 908   | 1847  | 1285  | 341         |
| 1987 | 4740       | 3717   | 1023  | 4460                                   | 2948               | 1792    | 48           | 233   | 882   | 1985  | 1249  | 343         |
| 1988 | 4208       | 3328   | 880   | 3993                                   | 2573               | 1635    | 38           | 226   | 731   | 1761  | 1123  | 329         |
| 1989 | 3657       | 2889   | 768   | 3469                                   | 2237               | 1420    | 20           | 215   | 619   | 1557  | 1003  | 243         |
| 1990 | 3841       | 3101   | 740   | 3714                                   | 2316               | 1525    | 37           | 211   | 619   | 1700  | 1039  | 235         |
| 1991 | 4327       | 3495   | 832   | 4159                                   | 2632               | 1695    | 30           | 227   | 616   | 1972  | 1201  | 281         |
| 1992 | 5746       | 4627   | 1119  | 5453                                   | 3526               | 2220    | 46           | 309   | 818   | 2564  | 1603  | 374         |
| 1993 | 5928       | 4745   | 1183  | 5569                                   | 3556               | 2366    | 73           | 392   | 764   | 2719  | 1568  | 355         |
| 1994 | 6004       | 4832   | 1172  | 5538                                   | 3538               | 2471    | 92           | 464   | 799   | 2708  | 1494  | 390         |
| 1995 | 5988       | 4794   | 1194  | 5485                                   | 3452               | 2536    | 125          | 452   | 782   | 2708  | 1513  | 354         |
| 1996 | 5830       | 4936   | 894   | 5334                                   | 3409               | 2421    | 100          | 462   | 771   | 2603  | 1501  | 352         |
| 1997 | 6129       | 4936   | 1193  | 5614                                   | 3639               | 2490    | 83           | 556   | 840   | 2762  | 1462  | 383         |
| 1998 | 6028       | 4923   | 1105  | 5502                                   | 3608               | 2420    | 100          | 511   | 874   | 2693  | 1400  | 408         |
| 1999 | 5182       | 4292   | 890   | 4695                                   | 2989               | 2193    | 54           | 474   | 751   | 2329  | 1224  | 315         |
| 2000 | 5621       | 4677   | 944   | 4947                                   | 3301               | 2307    | 77           | 460   | 886   | 2437  | 1337  | 391         |
| 2001 | 5712       | 4677   | 1035  | 4971                                   | 3364               | 2334    | 94           | 459   | 894   | 2328  | 1400  | 368         |
| 2002 | 5928       | 4428   | 1500  | 5100                                   | 3510               | 2418    | 57           | 396   | 968   | 2361  | 1656  | 443         |
| 2003 | 5467       | 4428   | 1039  | 4634                                   | 3303               | 2164    | 52           | 349   | 907   | 2185  | 1554  | 395         |
| 2004 | 5893       | 4799   | 1094  | 4893                                   | 3519               | 2359    | 55           | 372   | 1038  | 2250  | 1698  | 448         |
| 2005 | 5625       | 4596   | 1029  | 4621                                   | 3359               | 2253    | 56           | 349   | 997   | 2107  | 1650  | 426         |
| 2006 | 5125       | 4174   | 978   | 4090                                   | 3045               | 2097    | 50           | 345   | 917   | 1894  | 1476  | 425         |
| 2007 | 4658       | 4207   | 451   | 3530                                   | 2756               | 1891    | 49           | 344   | 870   | 1658  | 1315  | 386         |
| 2008 | 5237       | 4207   | 1030  | 3964                                   | 3005               | 2208    | 54           | 362   | 971   | 1788  | 1600  | 431         |
| 2009 | 5913       | 4480   | 1433  | 4384                                   | 3606               | 2401    | 49           | 356   | 1031  | 2120  | 1894  | 418         |
| 2010 | 5456       | 4480   | 976   | 4087                                   | 3178               | 2278    | 42           | 317   | 962   | 1809  | 1755  | 406         |

**Figure 1.** The phenomenon of attempted suicides in 1978-2010

Number of suicides in the years 1978-2010 showed an upward trend, with a year-after-year average of 50.6. The most dynamic growth was observed between 1978-1992 (Fig. 1).

The number of committed suicides was always less than or equal to the number of attempted suicides. With the increase in the number of attempted suicides, the number of completed (fatal) suicides increased (Fig. 3). Between 1980-2010, a faster growth rate of completed suicides was also observed, compared to all suicides in total, an average of 12.7 per year (Fig. 2).

Figure 3 presents the trend of reducing the number of attempted suicides and committed suicides after 1991. The

**Figure 2.** Trend lines of attempted suicides and completed attempted suicides in 1978-2010

suicide trend line after 1991 reduced each year by an average of 74.91 per year. Assuming this trend continues, it may be assumed that in 2030 the number of committed suicides will be 2,618.7, i.e. about 1,500 less of committed suicides compared to 2010.

The suicide trend line in Figure 3 with a score of  $y = x + 5,724.4 - 12.811$  suggests an annual decline in the number of suicides by an average of 12.811. If this trend is maintained in Poland, in 2030, the number of suicides would be 5,212.

Figure 4 presents the trend of attempted suicides and completed attempted suicides by in years (after 1992), characterized by an even more dynamic decreasing

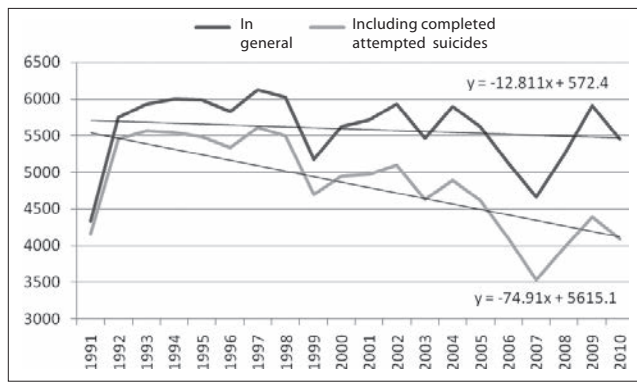


Figure 3. Trend lines of attempted suicides and completed attempted suicides after 1991

trend. Assuming that this trend continues, the number of committed suicides will reach 1,988.64 in 2030 – about half as compared to 2010, while the number of attempted suicides – 4580.322, nearly 1,000 less than in 2010 (Fig. 4). The completed attempted suicides trend line falls more than twice as fast than the attempted suicides trend line.

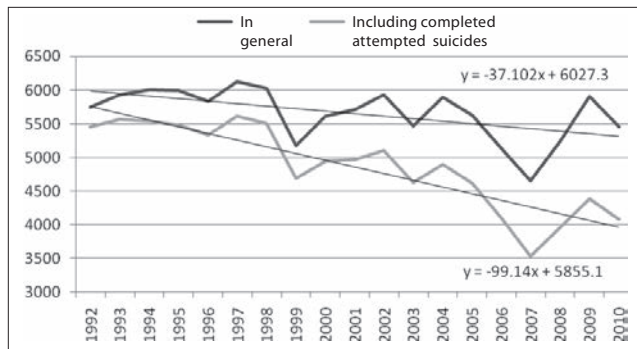


Figure 4. Trend lines of attempted suicides and completed attempted suicides after 1992

Regarding the division of the number of attempted suicides in terms of gender, the majority of attempted suicides occur among men (Fig. 5). Women usually constitute a quarter of the people attempting suicide in the scale of a year; most of such cases were reported in 2002 – 1,500 (Tab. 1) In subsequent years, the trend of increasing number of suicides among women was low and amounted to about 5 suicides of women each year; for men, it was much more dynamic, amounting to an average of 45 per year (Fig. 5).

Nationally, most attempted suicides were committed in urban areas (Fig. 6) However, since 1990, the number



Figure 5. The number of attempted suicides in 1978-2010 according to the division of gender

of attempted suicides in the countryside has continued to increase, the highest increase recorded in 1992, which may be related to the liquidation of the State Agricultural Farms and the increasing impoverishment of rural residents. The trend of the increasing number of suicides in rural areas is greater than the number of suicides committed in the cities by an average of 8 per annum, assuming a stability trend from 1978-2010, when the number of suicides in the country increased by 29.334 and 21.487 in cities each year (Fig. 6).

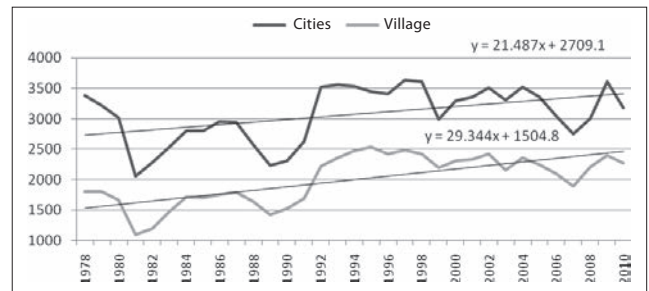


Figure 6. The number of attempted suicides in 1978-2010 according to the division of city and village

**Analysis of the phenomenon of attempted suicides in Lublin Province.** Analysis of the data for the first decade of the 21<sup>st</sup> century reveals interesting results. As with the data from the whole country, in the Lublin region, a huge tendency of a non-significant deviations was seen. Also in 2007, a marked decline in the number of attempted suicides was also seen (Tab. 2). In Lublin Province, far more people in rural areas attempted to commit suicide. As far as the age group is concerned, most attempts were committed by people in the age group 31-50 – as in the study population for the whole country. The least number of attempts was observed among people under 14-years-old, which is interesting: within in this age group in the Lublin Province, a dynamic decrease in the number of suicides attempts was seen, even though the total amount of attempts increased.

The trend in suicides in the Lublin Province has increased slightly in recent years (by 4.36 suicides per year). Assuming this trend continues, by 2030, the number of suicides will be 467.558 (from the equation  $y = 4.368 \times 332.15$ ) (Fig.7). In contrast to the results obtained on a national scale, in the Lublin Province, in spite of the increasing trend in suicides, the number of committed suicides which ended in death, is decreasing. The average annual decline is about 5.53 deaths; if this trend is maintained, in 2030 the number of committed suicides will be equal to 147.45, i.e. more than 100 less in comparison to 2010 (Fig. 7).

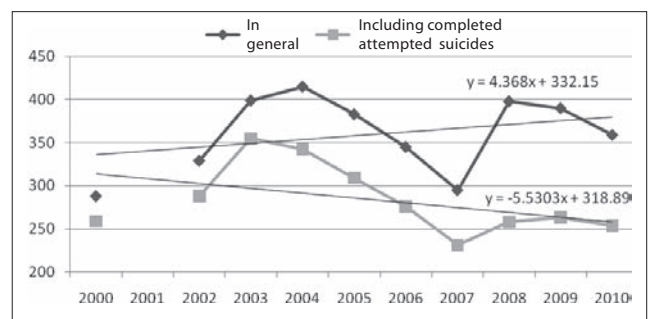


Figure 7. Trend lines of attempted suicides and completed attempted suicides in 2000-2010

**Table 2.** The number of attempted suicides in Lublin province in 2000-2010

| Year | In general | Gender |       | Including completed attempted suicides | Place of residence |         | Age          |       |       |       |       |             |
|------|------------|--------|-------|--|--------------------|---------|--------------|-------|-------|-------|-------|-------------|
|      |            | Men    | Women |  | Cities             | Village | 14 and under | 15-20 | 21-30 | 31-50 | 51-70 | 71 and more |
| 2000 | 288        | -      | -     | 259                                    | 119                | 169     | 7            | 25    | 46    | 117   | 67    | 24          |
| 2001 | -          | -      | -     | -                                      | -                  | -       | -            | -     | -     | -     | -     | -           |
| 2002 | 329        | -      | -     | 288                                    | 127                | 202     | 5            | 28    | 47    | 147   | 72    | 22          |
| 2003 | 399        | 344    | 55    | 355                                    | 169                | 230     | 6            | 25    | 76    | 157   | 104   | 24          |
| 2004 | 415        | -      | -     | 342                                    | 164                | 251     | 6            | 32    | 79    | 145   | 111   | 36          |
| 2005 | 383        | 315    | 68    | 309                                    | 156                | 227     | 3            | 22    | 76    | 129   | 117   | 27          |
| 2006 | 345        | 293    | 52    | 276                                    | -                  | -       | 1            | 26    | 60    | 129   | 87    | 42          |
| 2007 | 295        | 247    | 48    | 231                                    | -                  | -       | 4            | 27    | 52    | 102   | 87    | 20          |
| 2008 | 398        | 227    | 161   | 258                                    | -                  | -       | 3            | 29    | 68    | 111   | 97    | 19          |
| 2009 | 390        | 326    | 54    | 263                                    | -                  | -       | 1            | 22    | 67    | 123   | 95    | 18          |
| 2010 | 359        | 305    | 54    | 254                                    | -                  | -       | -            | 16    | 58    | 102   | 105   | 24          |

The phenomenon of attempted suicides in Lublin Province in 2000-2010, compared to the rest of the country.

If one considers the number of suicidal attempts in the Lublin Province against the whole country, it represents only a small percentage of the total – between 5.12% – 7.60% (Tab. 3).

**Table 3.** The number of attempted suicides in Lublin province against the country in 2005-2010

| Year | In general COUNTRY | Lublin Province N | %    |
|------|--------------------|-------------------|------|
| 2000 | 5621               | 288               | 5.12 |
| 2001 | 5712               | -                 | -    |
| 2002 | 5928               | 329               | 5.55 |
| 2003 | 5467               | 399               | 7.30 |
| 2004 | 5893               | 415               | 7.04 |
| 2005 | 5625               | 383               | 6.81 |
| 2006 | 5125               | 345               | 6.73 |
| 2007 | 4658               | 295               | 6.33 |
| 2008 | 5237               | 398               | 7.60 |
| 2009 | 5913               | 390               | 6.60 |
| 2010 | 5456               | 359               | 6.58 |

The Lublin Province does not really stand out against the country's distinct variations in the number of attempted suicides. Comparing the results from 2005 with those obtained in 2010, they do not show statistically significant differences:  $\chi^2=0.50$ ,  $df=1$ ,  $p=0.4797$  (Tab. 3). In calculating this figure, the population of the Lublin Province was taken into account as of 31 December 2005-2010.

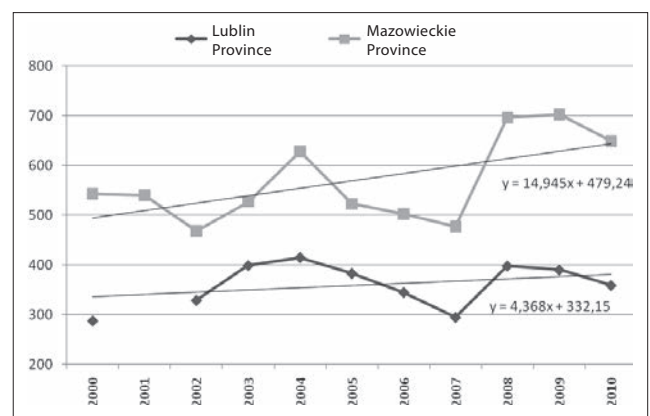
The situation is similar in the case of the number of attempted suicides and disaggregated by gender. In the Lublin Province, as well as throughout the rest of the country, men occur significantly more often in the statistics. The only exception is 2008, when the number of suicides among women was about 3 times higher for the years 2000-2010, which accounted for 15.63% of all suicides in the country that year (Tab. 4).

In Table 4, the calculated % is the percentage of the total population in the country. Rated differences between the group of men and women for the Lublin Province in 2005-2010 for each year were statistically significant ( $p > 0.05$ ).

**Table 4.** The number of attempted suicides in Lublin province against the country divided by gender in years 2005-2010

| Year | In general COUNTRY |         | Lublin Province |              | $\chi^2$ , p                |
|------|--------------------|---------|-----------------|--------------|-----------------------------|
|      | Men N              | Women N | Men N/%         | Women N/%    |                             |
| 2005 | 4596               | 1029    | 315 / 6.85%     | 68 / 6.61%   | $\chi^2=156.14$ , $p<0,001$ |
| 2006 | 4174               | 978     | 293 / 7.02%     | 52 / 5.32%   | $\chi^2=168.35$ , $p<0,001$ |
| 2007 | 4207               | 451     | 247 / 5.87%     | 48 / 10.64%  | $\chi^2=134.24$ , $p<0,001$ |
| 2008 | 4207               | 1030    | 227 / 5.40%     | 161 / 15.63% | $\chi^2=11.23$ , $p=0.001$  |
| 2009 | 4480               | 1433    | 326 / 7.28%     | 54 / 3.77%   | $\chi^2=194.70$ , $p<0,001$ |
| 2010 | 4480               | 976     | 305 / 6.81%     | 54 / 5.53%   | $\chi^2=175.49$ , $p<0,001$ |

Regarding the agricultural nature of the Lublin Province, it was compared with the typical urban Province of Mazowieckie and the capital city of Warsaw. Mazowieckie Province consists of 37 counties, and 5 cities with county rights. Counties are divided into 314 municipalities – 35 urban, 50 rural-urban and 229 rural [18], while in Lublin Province, the 4,300 villages and rural settlements account for only 41 cities. In the Mazowieckie Province, the number of attempted suicides increased 3.42 times faster than in the Lublin Province. If this trend persists, by 2030, the number of suicides in the Mazowieckie Province will be 942.535 and 467.558 in Lublin Province, more than twice as many (Fig. 8).

**Figure 8.** Comparison of the number of attempted suicides and the trend lines in 2000-2010 in Lublin province and Mazowieckie voivodship

Taking into account the data from 2000-2005, this imbalance will significantly increase: in 2000, the Mazowieckie Province recorded 1.88 times more attempted suicides, and in 2005 – 1.36 times more than in the Lublin Province (Tab. 5).

**Table 5.** Comparison of the number of attempted suicides in Lublin region and in the Mazowieckie voivodship

| Year | Lublin Province |         | Mazowieckie voivodship |         |
|------|-----------------|---------|------------------------|---------|
|      | Cities          | Village | Cities                 | Village |
| 2000 | 119             | 169     | 297                    | 246     |
| 2001 | -               | -       | 264                    | 276     |
| 2002 | 127             | 202     | 243                    | 225     |
| 2003 | 169             | 230     | 291                    | 236     |
| 2004 | 164             | 251     | 387                    | 241     |
| 2005 | 156             | 227     | 272                    | 251     |
| 2006 | -               | -       | 282                    | 221     |
| 2007 | -               | -       | 252                    | 225     |
| 2008 | -               | -       | 323                    | 374     |
| 2009 | -               | -       | 359                    | 344     |
| 2010 | -               | -       | 313                    | 336     |

Between 2000-2005 in Lublin Province there was a greater number of attempted suicides in rural areas and these differences were significant (Tab. 5). In Mazowieckie Province in 2000-2002, a comparable number of suicides were reported in urban and rural areas. In 2003-2007, the number of suicides in urban areas compared to rural areas increased, and from 2008, again a slightly higher number of suicides in the country was recorded, with the exception of a slight difference in 2009.

## DISCUSSION

Considering the phenomenon of attempted suicides in 1978-2010, there was always indicated a large number of suicides in the cities, and an upward trend. After 1991, the number of attempted suicides decreased, while the trend line after 1992 was characterized by an even more dynamic drop in the number of attempted suicides in Poland. These results confirm the reports of 2000 and 2009 [19, 20].

Results of the analysis indicate that the trend of suicides committed after 1991 decreased each year by an average of 74.91 per year. Assuming that this tendency will continue, it can be assumed that in 2030 the number of completed attempted suicides will decrease by about 1,500 attempted suicides, compared to 2010. Research carried out in 2007 in Białystok show a similar downward trend in the period 1991-2006, compared to the period 1977-1991 [21].

Later that same year, however, there was the opinion that in most EU countries that the incidence of suicide had decreased to 2007, while in Poland there had been an upward trend, particularly in men in the age group 15-29 [22]. Among young people aged 15-19, dependence on nicotine, alcohol and psychoactive substances had a negative impact on health, and may be related to the committed attempted suicides very often observed. Studies conducted in Western Pomerania indicate that in rural areas a higher percentage of young people abuse alcohol and smoke cigarettes, compared to young people living in cities [23]. According to the World

Health Organization, suicide is one of the five most common causes of death in the age group 15-19.

Regarding the distribution of the number of attempted suicides in terms of gender, it is usually men who attempt suicide, especially in the age group 31-50. This trend is similar for both the Lublin Province and the whole of Poland. Data from 2005 and 2007 from Białystok, however, suggest that most men who committed suicide belonged to the age groups 19-25 and 41-45, and women to the age groups 19-25 and 31-50 [24, 25].

The fact that the number of teenagers under 14 years of age committing suicide in Lublin Province is decreasing more rapidly than in the rest of Poland is characteristic, despite the fact that the trend in suicides in recent years increased slightly – by 4.36 suicides per year. This result, however, requires further verification over a longer follow-up period. In 2002, researchers scientists in Lublin noticed a trend of increasing number of suicides among children and adolescents, compared to the years 1989-1996. The most common cause of suicide was pathologies within family life [26]. In Poland, the problem of suicide among youths remains an unknown factor. This includes estimation of the scale of the phenomenon, identification of the factors and risk groups. An alarming increase in the number of suicides in the whole of Poland was recorded in 1999-2007 in the group of girls aged between 10-14 [27, 28].

Taking into account the place of residence, results of the analysis of the literature show that most attempted suicides in Poland are committed in cities. It is generally accepted that in the cities there is a greater incidence of suicide than in the rural environment, and even became a product of the urban lifestyle [29, 30]. The development of civilization is connected directly with the development of diseases, and the dynamic globalization is associated with a number of hazards to human health [31].

In Poland, the empirical material for the years 1951-2000, data by Jarosz cited in the presented study, also shows that the rural environment is more suicidogenic than the city. The author presents the unpublished source data from Central Statistical Office, and shows that in the period 1979-2000 there was an increase in the number of suicides in the rural environment [2, 32].

In 2011, the authors of the presented study the produced results showing a strong connection between the place of residence, and both the environmental and psychosocial risk factors among women aged 40-65. It has been recognized that women living in rural areas have worse physical health but better mental health, which may also be associated with a lower percentage of women committing suicide in the rural environment [33].

The presented analysis shows that since 1990 in the rural environment the number of attempted suicides continued to increase, the highest increase being recorded in 1992. The trend of increasing number of suicides in rural areas is greater than the number of suicides committed in the cities.

The characteristic factor for the Lublin Province is the advantage number of attempted suicides in the rural areas, which differs in this part of Poland from the rest of the country, where the cities have the advantage. The Lublin Province does not really stand out against the distinct variations in the number of attempted suicides in the whole of Poland.

Data from Australia in 2010 also show an advantage in the number of suicides committed in rural areas as opposed to

urban areas [34]: more than 60% of suicides were committed in rural areas [35]. The factors influencing this fact can be the availability of mental health care, socioeconomic conditions, and age of the suicides [36, 37]. In the United States, there was also noticed a trend that gave Jack P. Gibbs a prospective basis to predict the increase in the number of suicides in rural areas [38]. In rural counties in Michigan in the 1950s, the number of suicides in the cities of this state there were twice as high [39].

In contrast to the results obtained on a national scale, in the Lublin Province, in spite of the increasing trend in suicides, the number of completed attempted suicides which ended in death is decreasing. The average annual decline is 5.53 deaths. If this trend is maintained, in 2030 the number of suicides will be only 147.45, an increase of 100 less in comparison to 2010; therefore, in 2030 the number of attempted suicides will amount to 467,558. This may indicate an improvement in the quality of life-saving health services, the development of medicine and /or an increasing number of mental illnesses in the course of which depression is observed, often concomitant with bungled or attempted suicide in an increasing number of women in the total number of suicides. These, as such, are rarely are successful/fatal, and are attempted to get the attention of their family and friends.

In the literature on this subject, the factor of seasonality and weather conditions affecting the frequency and nature committed suicide is cited; trends in mountainous areas, in coastal areas, or in gorges areas would therefore be completely different. Analysis of the literature, however, shows that a much larger number of suicides occur in the autumn-winter period of the year [40]. Unfortunately, reports on climatic factors [41] do not explain this phenomenon, as well as the more likely but less studied environmental factors [2]. Research conducted in Cracow in 1991-2002 showed the climatic factors affecting the increase in the number of suicides committed. These include, *inter alia*, storms, heat waves, mountain wind in the mountainous regions, and a sharp drop in atmospheric pressure during the day, accompanied by a high temperature [42].

## CONCLUSIONS

1. The number of attempted suicides in 1978-2010 in Poland was higher in urban than in rural areas year-by-year, especially among men aged 31-50. After 1991, the number of attempted suicides and completed attempted (fatal) suicides in Poland decreased.
2. The trend of increasing number of suicides in rural areas is greater than the number of suicides committed in the cities.
3. In the Lublin region, despite the trend in increasing numbers of attempted suicides, the number of committed suicides which ended in death, is decreasing.
4. In the Lublin Province the number of suicides committed by teenagers under the age of 14 is dynamically decreasing, compared with the rest of Poland.

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