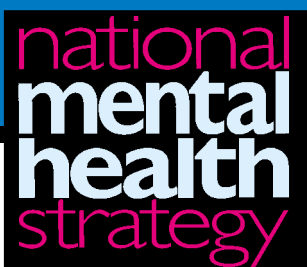


# Ageing and Suicide

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Australian Institute for Suicide Research and Prevention



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**Australian Institute for Suicide  
Research and Prevention**

Commonwealth Department of Health and Aged Care

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## The burden of suicide

The global population, about 5.8 million in 1997, will increase to about eight million by 2025. Every day in 1997 about 365 000 babies were born and about 140 000 people died, 2 600 of them by suicide (nearly 2 per cent of all deaths) (WHO, 1998).

The WHO's World Health Report of 1998 indicates that in 1997 there were approximately 835 000 deaths due to suicide, which means that every 35 seconds in the world one person completed suicide.

Unfortunately, previsions say that suicide will not substantially change its global dimension nor its position amongst the top ten causes of the burden of disease by the year 2020, maintaining the same percentage of 1990 (see Table 1).

Table 1: *The top ten causes of the burden of disease for established market economies and former socialist economies*

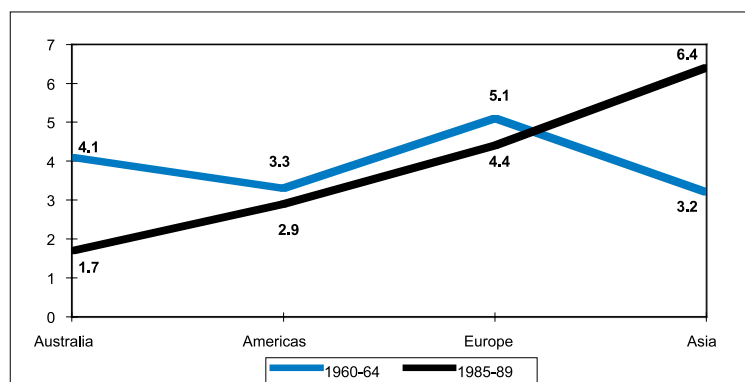
Condition	% of total burden	
	1990	2020
1. Ischaemic heart disease	9.9	11.2
2. Unipolar major depression	6.1	6.1
3. Cerebrovascular disease	5.9	6.2
4. Road traffic accidents	4.4	4.3
5. Alcohol use	4.0	3.8
6. Osteoarthritis	2.9	3.5
7. Tracheal, bronchial and lung cancer	2.9	4.5
8. Dementia and other central nervous system disorders	2.4	3.4
9. Self-inflicted injuries	2.3	2.4
10. Congenital anomalies	2.2	1.0

Source: Murray and Lopez, 1996

Suicide is perhaps the most dramatic epilogue of human existence. Besides the individual involved as actor, it profoundly affects the society, particularly those close to the deceased (partner, family members, friends, etc.). It is thought that each suicide, on average, effects approximately 5-6 individuals, imposing a deep and permanent influence. Bearing in mind that the mourning process caused by suicide is often devastating and that the memory of the event is particularly persistent, the global number of people who are bereaved by suicide in their near and dear is substantial. In one generation span (25 years), at least 120 million of people who survive the suicide of a close person ("suicide survivors": 2 per cent of the world population) may be affected by feelings such as stigma, guilt, intense psychological suffering, sense of difference, fear of becoming crazy, and fear of imitation and of 'genetic contamination'.

Today suicide explains almost as many deaths as road accidents and more than double the number of all the armed conflicts around the world. In almost every country suicide is now one of the three leading causes of death among people aged 15 to 34 years. Until recently suicide was predominating amongst the elderly (>64 years of age), whilst today suicide prevails in younger people in a third of all countries, both in absolute and relative terms (WHO, 1999). However, if the opposite age-groups are considered (15 to 24 and 75+), in all reporting countries suicide in the old-old is up to seven times higher than adolescent suicide (medians for four continents - Africa not included) and the order of magnitude of these indices is stable over a time period of approximately 30 years (Gulbinat, 1995) (see Figure 1).

**Figure 1:** *Medians of old/young ratios (75+/15-24years) of suicide rates in four continents (male)*

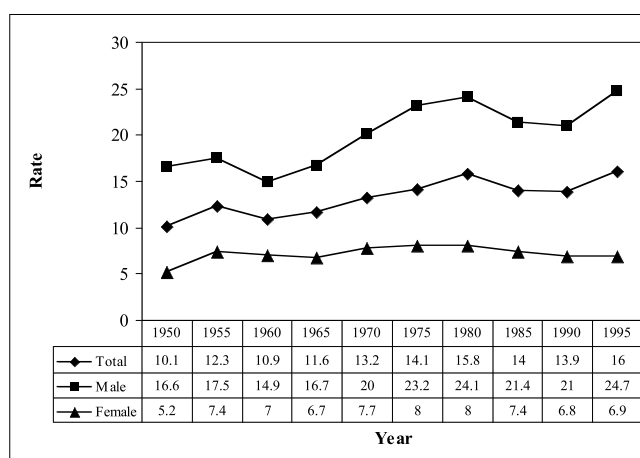


Source: Gulbinat, 1995

## Suicide: an international perspective

A global increase in suicide rates, from 10.1 (x 100 000) to 16 has been registered from 1950 to 1995. Males have predominantly contributed to this increase, with a male:female ratio that rose from 3.2:1 in 1950 to 3.6:1 in 1995 (see Figure 2).

**Figure 2:** Global suicide rates (per 100 000) by gender, 1950-95



Source: WHO, 1999

Table 2 illustrates the rank order of total suicide rates for countries reporting suicide mortality data to the World Health Organization (WHO). It also provides rates by gender.

**Table 2:** Suicide rates (per 100 000) for countries reporting mortality data to WHO (latest available year)

Country	Year	Total Rate	Males	Females
Lithuania	1995	45.6	79.1	15.6
Russian Federation	1995	41.5	72.9	13.7
Latvia	1995	40.7	70.8	14.7
Estonia	1995	40.1	67.6	16.0
Finland	1995	33.8	43.4	11.8
Hungary	1995	32.9	50.6	16.7
Slovenia	1994	31.2	49.8	13.8
Sri Lanka	1995	31.0	44.6	16.8
Kazakhstan	1995	28.6	48.9	9.4
Belarus	1993	28.0	48.7	9.6
Croatia	1994	22.8	34.6	11.7
Ukraine	1992	22.6	38.2	9.2
Denmark	1993	22.3	29.3	15.6
Austria	1995	22.2	34.2	11.0

Switzerland	1994	21.4	30.9	12.2
France	1994	20.7	31.5	10.7
Cuba	1995	20.2	25.6	14.9
Belgium	1992	18.7	26.7	11.0
Czech Republic	1993	18.6	28.1	9.5
Republic of Moldova	1995	18.5	29.7	8.3
Bulgaria	1994	17.3	25.3	9.7
Japan	1994	16.8	23.1	10.9
China (mainland)	1994	16.1	14.3	17.9
<b>World</b>	<b>1995</b>	<b>16.0</b>	<b>24.7</b>	<b>6.9</b>
Germany	1995	15.8	23.2	8.7
Luxembourg	1995	15.4	22.4	8.6
Sweden	1995	15.3	21.5	9.2
Yugoslavia	1990	15.3	21.6	9.2
Poland	1995	14.3	24.3	4.7
Kyrgyzstan	1995	13.5	21.2	6.1
Mauritius	1995	13.5	21.1	5.5
Canada	1995	13.4	21.5	5.4
Singapore	1995	13.4	16.3	10.5
<b>Australia</b>	<b>1994</b>	<b>12.8</b>	<b>21.0</b>	<b>4.7</b>
New Zealand	1993	12.8	20.5	5.4
Romania	1995	12.3	20.3	4.6
Norway	1994	12.2	17.7	6.9
Suriname	1992	11.9	16.6	7.2
USA	1994	11.9	19.8	4.5
China (Hong Kong)	1995	11.8	14.3	9.2
El Salvador	1990	11.6	15.6	7.7
Trinidad and Tobago	1994	11.6	17.4	5.0
Guyana	1994	10.5	14.6	6.5
Uruguay	1990	10.3	16.6	4.2
Netherlands	1995	9.8	13.1	6.5
India	1995	9.7	11.4	8.0
Republic of Korea	1994	9.5	12.8	6.1
Iceland	1994	9.4	15.8	3.0
Italy	1993	9.3	12.7	4.0

Ireland	1993	9.1	14.6	3.7
Puerto Rico	1992	8.7	16.1	1.9
Portugal	1995	8.2	12.2	4.4
Spain	1994	8.1	12.7	3.7
Zimbabwe	1990	7.9	10.6	5.2
Thailand	1980	7.4	7.6	7.3
United Kingdom	1995	7.4	11.7	3.2
Saint Lucia	1986-88	6.9	11.0	3.0
Argentina	1993	6.6	10.6	2.9
Barbados	1995	6.5	9.5	3.7
Belize	1995	6.5	12.0	0.9
Israel	1995	6.5	9.4	3.6
Uzbekistan	1993	6.2	9.3	3.2
Seychelles	1985-87	6.1	12.2	0.0
Turkmenistan	1994	5.8	8.1	3.4
Chile	1994	5.7	10.2	1.4
Venezuela	1994	5.1	8.3	1.9
Costa Rica	1994	4.9	8.0	1.8
Ecuador	1995	4.8	6.4	3.2
Malta	1994	4.1	6.6	1.4
Tajikistan	1992	3.7	5.1	2.3
Georgia	1990	3.6	5.4	2.0
Brazil	1992	3.5	5.6	1.6
Colombia	1994	3.5	5.5	1.5
Greece	1995	3.5	5.9	1.2
Nicaragua	1994	3.4	4.7	2.2
Bahrain	1988	3.1	4.9	0.5
Honduras	1955	3.1	4.4	1.7
Mexico	1995	3.1	5.4	1.0
Sao Tome and Principe	1984-85	2.8	3.7	0.0
Panama	1985	2.6	4.0	1.1
Albania	1993	2.3	2.9	1.7
Armenia	1992	2.3	3.6	1.0
Dominican Republic	1982	2.3	3.7	0.9

Saint Kitts and Nevis	1986	2.3	5.0	0.0
Paraguay	1994	2.3	3.4	1.2
Philippines	1993	2.1	2.5	1.7
Kuwait	1994	1.8	1.8	1.9
Bahamas	1995	1.1	2.2	0.0
St Vincent, Grenadines	1982-85	1.0	2.0	0.0
Azerbaijan	1995	0.7	1.1	0.2
Guatemala	1984	0.5	0.9	0.1
Peru	1989	0.5	0.6	0.4
Jamaica	1985	0.3	0.5	0.2
Syrian Arab Republic	1981	0.3	0.5	0.1
Iran	1991	0.2	0.3	0.1
Jordan	1965	0.2	0.2	0.1
Egypt	1987	0.0	0.1	0.0

Source: WHO databank, February 1999

It is interesting to note that the large majority of countries rank below the world average rate (24th position) and that the Baltic republics and the Russian Federation have rates that are nearly three times the average. It is also striking to observe (see Table 3) that approximately one-third of all world's suicides is attributed to only two countries with large populations, China and India, the ranking of which is, respectively, just one position over the average and 46th. Conversely, with the exception of the Russian Federation, the top ranking countries (in terms of rates) contribute very little to the total number of suicides.

**Table 3:** *Ranking of the top ten countries by number of suicides (estimated by the year 2000) and suicide rates (most recent year available)*

Country	No. of suicides	Rate per 100 000	Ranking by suicide rate	Country	No. of suicides	Rate per 100 000	Ranking by number of suicides
China	190 000	16.1	24	Lithuania	1 600	45.6	22
India	95 000	9.7	45	Russia	58 000	41.5	3
Russia	58 000	41.5	2	Latvia	1 000	40.7	23
USA	33 000	11.9	38	Estonia	600	40.1	25
Japan	27 000	16.8	23	Finland	1 700	33.8	21
Ukraine	15 300	22.6	11	Hungary	3 000	32.9	16
Germany	13 000	15.8	25	Sri Lanka	5 500	31.0	9
France	12 000	20.7	14	Kazakhstan	4 500	28.6	13
Brazil	5 800	3.5	71	Belarus	2 800	28.0	17
Sri Lanka	5 500	31.0	7	Slovenia	600	26.6	24

Source: WHO, 1999

# Transcultural comparison of suicide

The reliability of international suicide data can be highly variable owing largely to differences in death registration practices. In Australia, alone, we have eight different systems over six states and two territories; therefore, international comparisons though valuable must be interpreted with caution.

International comparisons are useful in understanding the role of culture and history in suicidal behaviour. This century cultural attitudes have changed from those of persecution, to more diversified orientations that are still in states of flux. While suicide in most countries is no longer illegal, certain religious influences act as deterrents. Islamic and Catholic religions strongly disapprove of suicide and suicide rates in countries adhering to orthodox teachings tend to be low. Conversely, certain aspects of modern youth culture, for example, heavy metal music tend to positively portray suicide. Moral attitudes are also of relevance to the epidemiology of suicide. Ideally moral attitudes might differentiate and understand diverse motivations for suicide, including mental illness, rational self-euthanasia and the desire to hurt others.

Epidemiological reviews can often suffer from a selection bias when presenting suicide rates from diverse nations because participant nations are selected purely based on data availability. Diversity may obscure observations that might be evident if more homogenous nations were studied. There is no reason to expect that suicide rates in a thriving developed nation would conform to those of a culturally different developing nation. Consequently, former Eastern bloc nations that might be considered western are not included in the comparisons that follow as their social environments are still quite different from the west and are undergoing rapid change which in itself might influence suicide rates.

Generally Eastern European suicide rates are substantially higher than those of Western Europe and have risen in recent years (Sartorius, 1996). Between 1987 and 1991-92 suicide rates in Eastern European countries increased in contrast to decreases in other European countries. However, suicide rates in those over 75 years in Eastern Europe declined (Sartorius, 1996).

While exploration of diverse nations may yield information about gross or universal suicide trends, exploration of more similar nations may be more productive; for example, minor trends in one nation may become more credible when observed in similar nations. Cantor and colleagues (1996) studied suicide rates of eight predominantly English-speaking nations with shared characteristics, finding relatively similar suicide patterns between 1960 and 1989. Historical data collated by Diekstra (1994) further supports this suggestion. When he compared the suicide rates from 1881 to 1988 for 16 European nations, the rank order of national suicide rates remained relatively constant. Similarly, Makinen and Wasserman (1997) found that rankings of European countries by suicide rates were even more stable than the rates themselves. These findings suggest that suicide rates are determined by persisting cross-national differences including traditions, customs, religions, social attitudes and climate.

In the following, we will examine suicide rates of western nations grouped as suggested by Cantor et al (1999a). This approach may add new insights by eliminating comparisons of more heterogeneous nations.

## **Southern Europe (Greece, Italy, Portugal and Spain)**

Over the period 1963 to 1992, Southern European rates were uniformly low. Portugal had the highest rates of the four countries and Greece the lowest. Trends for 15 to 24 year males were variable and unremarkable, with only Spain and Italy showing convincing rises. Modest increases in females 65 to 75+ years in Spain and Italy were observed.

## **Western Europe (Austria, Belgium, France, Germany, West Germany, the Netherlands and Switzerland)**

From 1960 to 1994 Western European suicide rates were uniformly high with the exception of the Netherlands whose rates in males were low but moderate in females. Trends for Austria, Switzerland and Germany in the 1960s and 1980s were remarkably uniform but in the 1970s West German rates diverged from those of Austria and Switzerland. Consequently, West German rates for young males were no higher at the end of the period than at the beginning. In France, Belgium and the Netherlands, however, the suicide rates in young males showed a steady increase during this period. Knowledge of why these different trends have occurred might yield valuable clues for prevention. The other interesting feature is the peaking of suicide rates in the third quarter of the period with subsequent declines - most marked in Austria, Switzerland and Germany, less so in Belgium and France and unobserved in the Netherlands. However, for both sexes and all ages, except 75+ years, suicide rates were declining in the later stages of this period suggesting influences other than youth.

## **Scandinavia (Denmark, Finland, Norway and Sweden)**

Scandinavian suicide rates, during 1960-1993, were moderately high but lower than those of Western Europe, with the exception of Finland where the male rates were particularly high. Norwegian rates for 15 to 24 year old males rose four-fold elevating its position from fourth to second for these nations. Norwegian trends for females 15 to 44 years were also unfavourable. To a lesser extent, most other Norwegian age/sex group rates rose over this period.

## **Britain and Ireland**

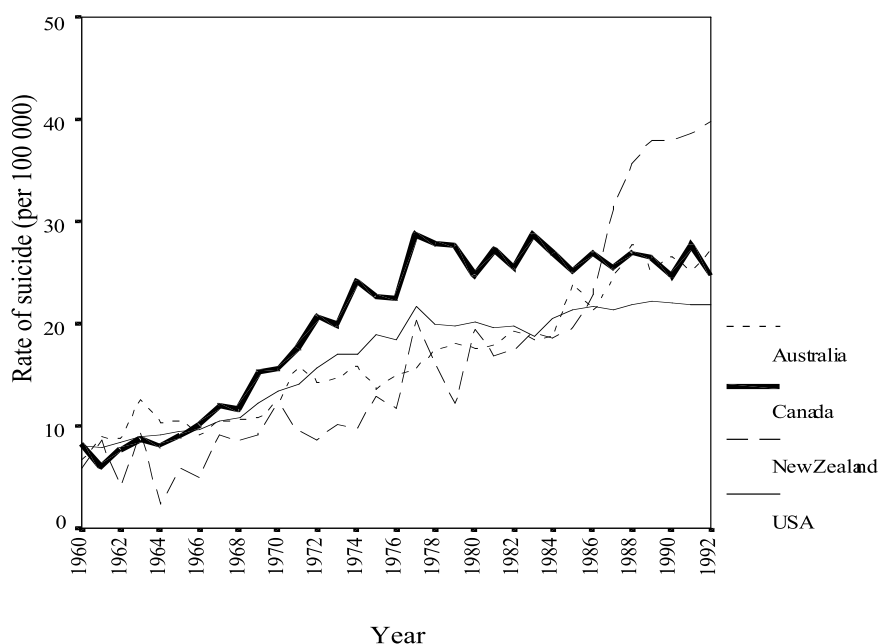
Between 1960-1992, Irish suicide rates increased across all ages. England and Wales showed strikingly favourable trends that were evident in all female age groups except 15 to 24 and in the older male ages from 55 upwards. Scotland showed the most unfavourable changes in rates for the United Kingdom. The most concerning trends were in males aged 15 to 24 years whose rates continued upwards at 1992 - even in England and Wales. However, trends were also upward, although progressively diminishing with age, for males in the 25 to 34 and 35 to 44 year age groups suggesting the problem is most severe in youth but not confined to it. There has been a small but encouraging reduction in rates in 15 to 24 year olds in the most recent years.

## **Australia, Canada, New Zealand and the USA**

These countries, along with Britain and Ireland, showed disturbing trends in males 15 to 24 years of age, with lesser rises in 25 to 34 year old males. However, a distinct plateau of suicide rates for the 15 to 24 age group occurred in both the United States and Canada throughout the 1980s (see Figure 3). In contrast, suicide rates in Australia and New Zealand

coincides with the above-mentioned decline in rates in Western Europe. In contrast, suicide rates in New Zealand for 15 to 24 year old males rose alarmingly between 1986-92 from around 20 to 40 per 100 000. This may partly relate to the small population base, contributing to marked fluctuations in rates. There were favourable declines in suicide rates in females aged 35 to 74 years, in all four countries.

**Figure 3: Suicide rates for New World males, 15-24 years**



A study by Cantor, Neulinger & De Leo (1999a) found while Australian suicide rates for 15 to 24 and 25 to 34 year-old males rose during 1964-97, comparable rates for females showed no significant change. Suicide rates for both genders between the ages of 45 and 74 displayed a trend of decline until 75+ where males showed highly variable rates. When comparing Australia's age/sex suicide rates to those of 22 other Western countries, rankings for Australian males were: ages 15 to 24 years ranked fourth; 25 to 34 eighth; 35 to 44 thirteenth; 45 to 54 thirteenth; 55 to 64 fifteenth; 65 to 74 thirteenth; and 75+ fifteenth. For Australian female's rankings were: ages 15 to 24 ranked eighth; 25 to 34 fourteenth; 35 to 44 sixteenth; 45 to 54 seventeenth; 55 to 64 fourteenth; 65 to 74 sixteenth; and 75+ fifteenth. Therefore, when Australian rates are examined in an international context, Australian youth (15 to 34 year olds) suicide rates are relatively high, but this is not the case for older age groups.

**Table 4: Rank order of mean male suicide rates for 23 Western countries by 10-year age groups, 1990-94 (for latest available years)**

Rank	15-24	25-34	35-44	45-54	55-64	65-74	75+
1st	Finland 41.4	Finland 60.7	Hungary 82.0	Hungary 95.1	Hungary 84.6	Hungary 92.5	Hungary 183.0
2nd	New Zealand 39.0	Hungary 54.4	Finland 67.8	Finland 64.1	Finland 57.3	Austria 61.1	Austria 118.0
3rd	Switzerland 25.8	Switzerland 32.7	France 40.1	Denmark 47.5	Austria 46.7	Belgium 50.4	France 103.0
4th	Australia 25.7	New Zealand 32.0	Denmark 38.1	Austria 41.5	Denmark 42.6	Switzerland 47.4	Belgium 98.6
5th	Canada 25.2	France 32.0	Austria 37.2	France 40.1	Switzerland 41.9	France 47.1	Switzerland 89.8
6th	Norway 24.9	Belgium 30.5	Belgium 35.6	Switzerland 39.8	Belgium 38.9	Denmark 46.4	Germany 86.1
7th	Austria 24.3	Austria 30.3	Switzerland 33.0	Belgium 36.2	France 38.1	Finland 45.9	Denmark 74.9
8th	USA 21.9	Australia 29.0	Sweden 29.3	Sweden 31.9	Germany 32.2	Germany 35.9	Finland 71.9
9th	Hungary 20.1	Canada 29.0	Canada 27.3	Germany 31.1	Sweden 30.7	Sweden 33.7	Portugal 59.1
10th	Scotland 19.0	Ireland 27.1	Norway 26.9	Norway 28.8	Norway 28.8	USA 30.9	USA 55.4
11th	Ireland 18.3	Denmark 26.4	Scotland 26.2	Canada 25.6	Ireland 25.9	Norway 30.7	Sweden 51.9
12th	Nthn Ireland 17.6	Norway 26.1	Germany 26.0	Scotland 24.2	USA 25.0	Portugal 30.1	Spain 47.8
13th	Belgium 15.7	Scotland 26.1	Australia 25.2	Australia 24.2	Canada 24.2	Australia 24.4	Italy 44.3
14th	France 15.3	USA 24.6	New Zealand 23.9	New Zealand 24.2	New Zealand 23.2	Spain 23.2	Netherlands 35.4
15th	Germany 14.0	Sweden 23.9	USA 23.5	USA 23.1	Australia 22.9	Italy 22.9	Australia 32.8
16th	Sweden 13.4	Nthn Ireland 22.4	Ireland 22.9	Ireland 19.6	Portugal 21.5	Canada 22.1	Norway 31.8
17th	Denmark 13.0	Germany 21.3	Netherlands 17.7	Netherlands 16.7	Netherlands 18.6	New Zealand 21.2	New Zealand 29.8
18th	Engl & Wales 11.1	Engl & Wales 16.3	Engl & Wales 17.4	Engl & Wales 16.2	Scotland 18.1	Netherlands 19.7	Canada 28.9
19th	Netherlands 9.3	Netherlands 15.9	Nthn Ireland 15.5	Nthn Ireland 15.1	Nthn Ireland 17.4	Ireland 18.3	Engl & Wales 17.1
20th	Spain 7.0	Portugal 13.2	Portugal 11.8	Portugal 14.6	Spain 17.4	Scotland 14.3	Scotland 16.0
21st	Italy 6.1	Spain 10.6	Italy 10.6	Italy 12.6	Italy 17.1	Nthn Ireland 12.8	Greece 15.8
22nd	Portugal 5.8	Italy 10.3	Spain 9.4	Spain 11.9	Engl & Wales 12.8	Engl & Wales 11.9	Ireland 13.8
23rd	Greece 4.0	Greece 5.6	Greece 5.9	Greece 6.7	Greece 7.8	Greece 10.1	Nthn Ireland 13.3

Source: Cantor et al, 1999a

**Table 5: Rank order of mean female suicide rates for 23 Western countries by 10-year age groups, 1990-94 (for latest available years)**

Rank	15-24	25-34	35-44	45-54	55-64	65-74	75+Rank
1st	Finland 7.5	Finland 12.0	Hungary 20.3	Hungary 26.5	Denmark 28.5	Hungary 37.6	Hungary 67.3
2nd	Austria 6.2	Belgium 11.8	Finland 17.4	Denmark 25.5	Hungary 28.0	Denmark 31.5	Denmark 30.2
3rd	Hungary 6.2	Hungary 11.6	Denmark 15.7	Finland 20.4	Belgium 17.9	Belgium 23.5	Austria 28.5
4th	New Zealand 6.2	Sweden 10.1	Belgium 14.5	Belgium 18.2	France 17.6	Switzerland 19.8	Germany 26.4
5th	Sweden 5.9	Switzerland 9.0	Switzerland 13.5	Austria 17.1	Finland 17.5	Austria 18.5	France 25.3
6th	Switzerland 5.8	France 9.0	France 13.0	Switzerland 16.7	Austria 17.4	France 17.9	Belgium 24.2
7th	Norway 5.5	Scotland 8.3	Austria 12.1	France 16.5	Switzerland 17.0	Germany 16.7	Switzerland 23.0
8th	Australia 5.1	Austria 8.0	Sweden 11.8	Sweden 15.0	Sweden 15.4	Sweden 13.5	Sweden 14.2
9th	Belgium 5.1	Denmark 7.7	Norway 9.8	Germany 12.1	Germany 12.9	Finland 13.3	Portugal 12.2
10th	Canada 4.9	New Zealand 7.3	Netherlands 9.6	Norway 11.5	Norway 12.0	Norway 12.4	Netherlands 12.1
11th	France 4.5	Netherlands 7.2	Canada 8.1	Netherlands 9.5	Netherlands 10.9	Netherlands 10.4	Spain 11.9
12th	USA 3.8	Norway 7.1	Germany 7.7	Nthn Ireland 9.4	New Zealand 7.7	Spain 8.8	Finland 9.6
13th	Netherlands 3.7	Ireland 6.7	New Zealand 6.9	New Zealand 8.9	Ireland 7.7	Portugal 8.1	Italy 9.3
14th	Scotland 3.7	Australia 6.6	Scotland 6.8	Canada 8.1	Australia 6.9	Italy 8.0	Norway 9.2
15th	Germany 3.5	Canada 6.4	Nthn Ireland 6.8	USA 7.3	USA 6.8	New Zealand 6.6	Australia 8.0
16th	Denmark 3.3	Germany 5.7	Australia 6.6	Scotland 7.2	Italy 6.8	Australia 6.6	Scotland 6.0
17th	Ireland 2.5	USA 5.3	USA 6.6	Australia 7.0	Scotland 6.7	Ireland 6.4	USA 6.0
18th	Nthn Ireland 2.4	Nthn Ireland 3.9	Ireland 4.8	Ireland 6.8	Canada 6.4	Scotland 6.4	Engl & Wales 5.9
19th	Portugal 2.2	Portugal 3.5	Engl & Wales 3.9	Portugal 5.0	Portugal 6.2	USA 6.2	Canada 4.7
20th	Engl & Wales 2.1	Engl & Wales 3.5	Italy 3.9	Italy 4.9	Spain 6.0	Canada 6.1	New Zealand 4.3
21st	Italy 1.8	Italy 2.9	Portugal 3.8	Engl & Wales 4.7	Nthn Ireland 4.8	Engl & Wales 5.2	Greece 3.4
22nd	Spain 1.7	Spain 2.6	Spain 3.0	Spain 3.9	Engl & Wales 4.7	Nthn Ireland 3.9	Ireland 3.0
23rd	Greece 0.7	Greece 1.4	Greece 1.3	Greece 2.3	Greece 2.4	Greece 2.8	Nthn Ireland 2.5

Source: Cantor et al, 1999a

continued to rise, although Australian rates have plateaued since 1989. This plateau

One phenomenon which has not yet received sufficient attention is the proportional increase in suicide rates in old age, particularly in Latin countries, with an almost parallel decrease in Anglo-Saxon ones (Cantor et al, 1999a). A similar trend has also been observed in South American countries (Diekstra and Gulbinat, 1993). The explanation for this is probably related to the differences existing between these two cultural poles, over and above all the less favourable recent social changes affecting the elderly in Latin countries (De Leo, 1998b). However, it may also be explained by a breakdown in family structure in recent decades - particularly in Latin countries. Consequently, there has been a significant decline in 'spontaneous' social support, in the absence of replacement by 'formal' support or education on coping with aging (De Leo, 1998b). Another hypothesis is that the fruition of more comprehensive retirement plans (with improved social security benefits), enjoyed above all by Anglo-Saxon citizens (particularly in the United Kingdom and the United States), has further widened the gap between them and citizens in Latin countries, which are on the whole rather backward in old-age-related socioeconomic policy (De Leo, 1999).

The number of elderly suicides is destined to rise, considering that elderly people constitute the fastest-growing segment of the population in terms of both increase in longevity and the 'cohort effect' or rather the aging of the 'baby boom generation' (Conwell, 1992). It is worth questioning whether the baby boomers' high risk of suicide is an American phenomenon only, or whether it holds true for other countries (Bille-Brahe et al, 1994a).

Current mean life expectancy at 65 years is approximately 19 years for females and 15 years for males. This falls to nine and seven years, respectively, if we consider 'disability-free' years, followed by 10 and eight years in the presence of disability (Trabucchi, 1994). Current forecasts do not envisage a change in life expectancy ratios, with or without disability, over the next few years, which may maintain suicide rates at present levels. Increasing socioeconomic pressure combined with a progressive decline in the proportion of the population which is active may nevertheless worsen the quality of life of inactive subjects, particularly the elderly and more so those aged 75 and more (the "old-old"), with an increase in the incidence of suicides (Conwell, 1992). While this view may seem rather pessimistic, it does not consider that, at least in more advanced countries, this 'cohort effect' may be accompanied by changes in opportunities for elderly people. In fact, newly developing attitudes and social attributes are beginning to modify traditional cultural stereotypes (Marrionto et al, 1999). For example, there has been a rise in elderly travellers, sportsmen and women and older migrants.

The incidence of suicide and deliberate self-harm exhibits opposite tendencies with respect to age. The ratio between attempted suicide and suicide in older adults has been estimated at approximately 4:1, versus a ratio of between 8:1 and 15:1 in the general population and 200:1 in the young (McIntosh, 1992). According to the findings emerging from the WHO/EURO Multicentre Study on Parasuicide, based on data collected over the period 1989-93 by 16 centres from 13 European countries, the population aged 65 and over showed a mean suicide rate of 29.3/100 000 and a mean attempted suicide rate of 61.4/100 000 for the total sample. The attempted suicide/suicide ratio was 2.09/100 000 (De Leo et al, 2001). Marked differences in suicidal behaviours also emerged from the above study between the various centres participating in the project.

Of the phenomena which can be located along the suicidality continuum, suicidal ideation is the most difficult to examine. Despite the difficulties in studying a phenomenon which, unlike suicide and deliberate self-harm cannot be objectively examined since it is reported

by the subject, and because of the differences in the methods adopted in studies conducted to date on elderly suicidal ideation, the frequency of recent feelings of dissatisfaction with life, or death, self-destructive or frankly suicidal thoughts among the elderly, ranges between 2.3 per cent and 17 per cent (Jorm et al, 1995; Skoog et al, 1996; Forsell et al, 1997; Rao et al, 1997; Scooco et al, 2001a).

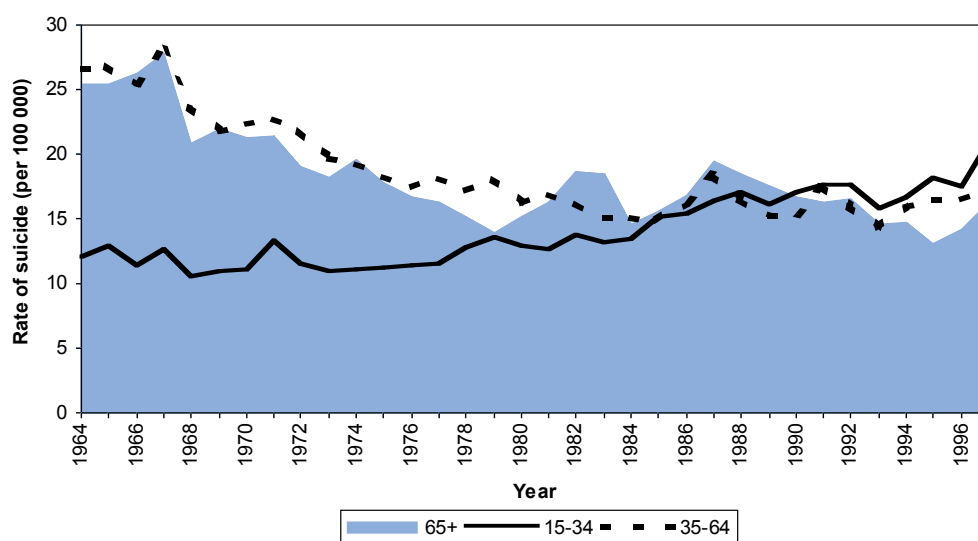


# Epidemiological distribution of suicide in Australia

## Suicide rates across time in Australia

In the following graphs we have chosen to indicate trends by dividing populations in three age groups in order to avoid visual confusion with too many lines and to increase numbers for calculating more reliable rates. We also decided to group 15 to 24 year old and 25 to 34 year old subjects given their common rising trends in Australia during the last decade (Cantor et al, 1999a).

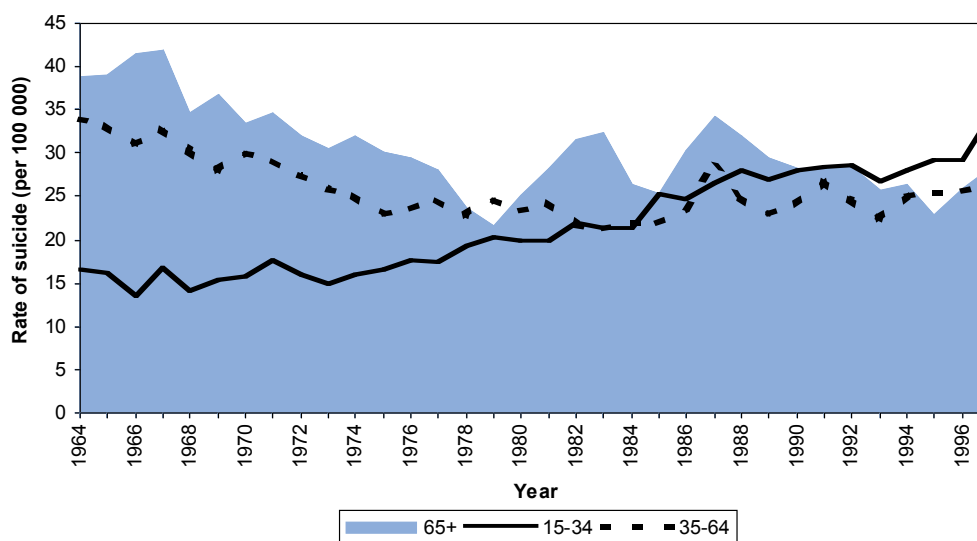
**Figure 4:** *Suicide rates by age groups for both genders, Australia 1964-97*



Source: ABS by request

Overall in Australian it can be seen that middle adult and elderly rates have shown a trend of decline, whereas the 15 to 34 year age group has shown a trend of increasing rates of suicide.

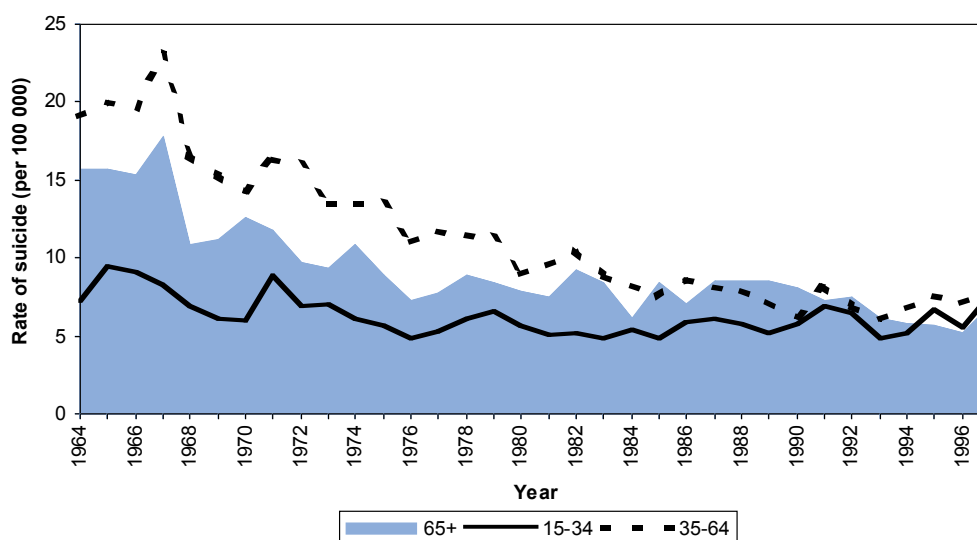
**Figure 5: Suicide rates by age groups for males, Australia 1964-97**



Source: ABS by request

Although erratic, the elderly male age group rates show a trend of decline, as does the middle adult age group. The 15 to 34 year age group shows a clear pattern of increasing rates.

**Figure 6: Suicide rates by age groups for females, Australia 1964-97**

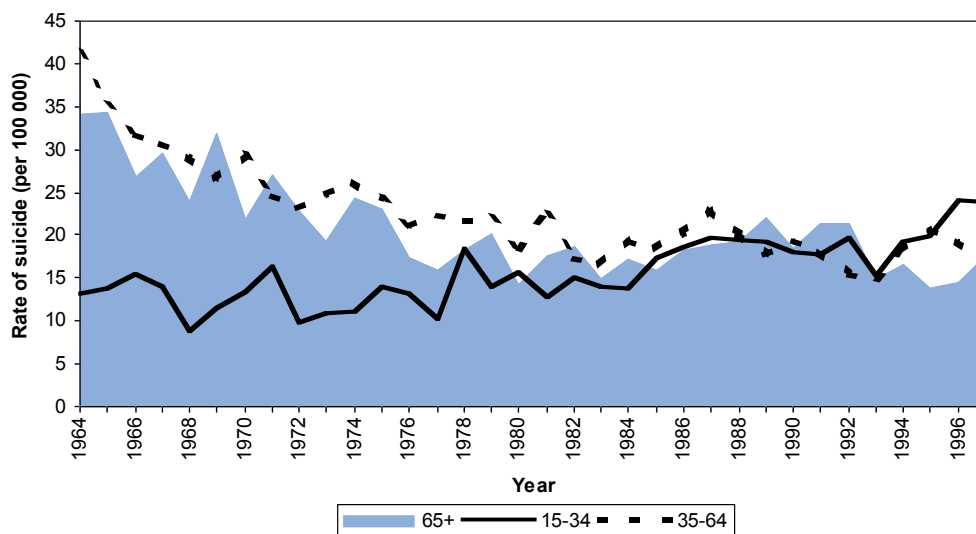


Source: ABS by request

The Australian female rates of suicide show a strong trend of decline in both the elderly and middle adult age group, while the youth maintained a relatively static rate across time.

Goldney and Harrison (1998) reported the overall rates of suicide in Australia to be static over the last century. The above graphs support Goldney and Harrison's findings that the increases seen in young male rates (see Figure 5) have been counteracted by a decline in middle adult and elderly rates for both genders (see Figures 5 and 6). This pattern is most clearly illustrated in Figure 5.

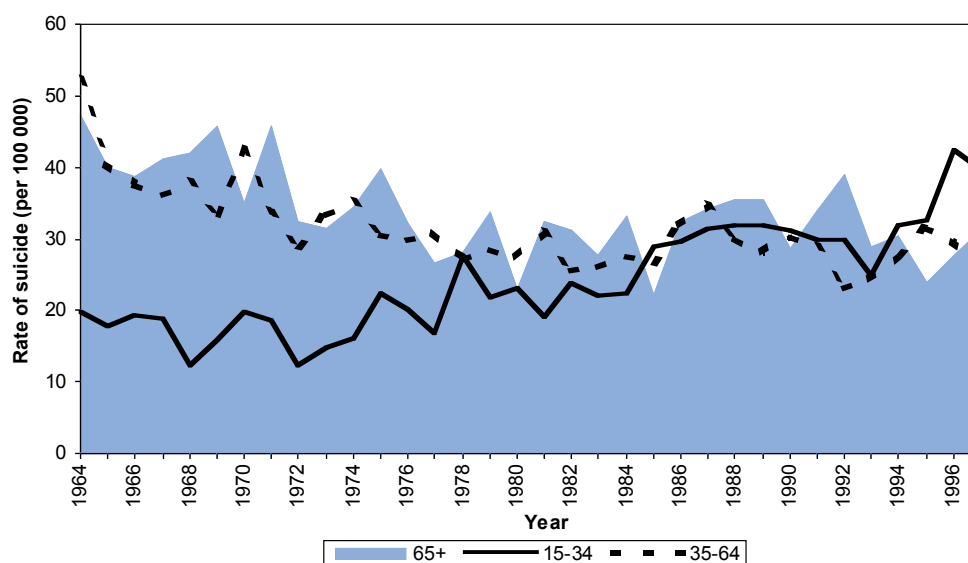
**Figure 7: Suicide rates by age groups for both genders, Queensland 1964-97**



Source: ABS by request

The combined gender suicide rates displayed a trend of decline over the time period studied for the 35 to 64 and 65+ age groups. The 15 to 34 age group showed a modest increase in suicide rates.

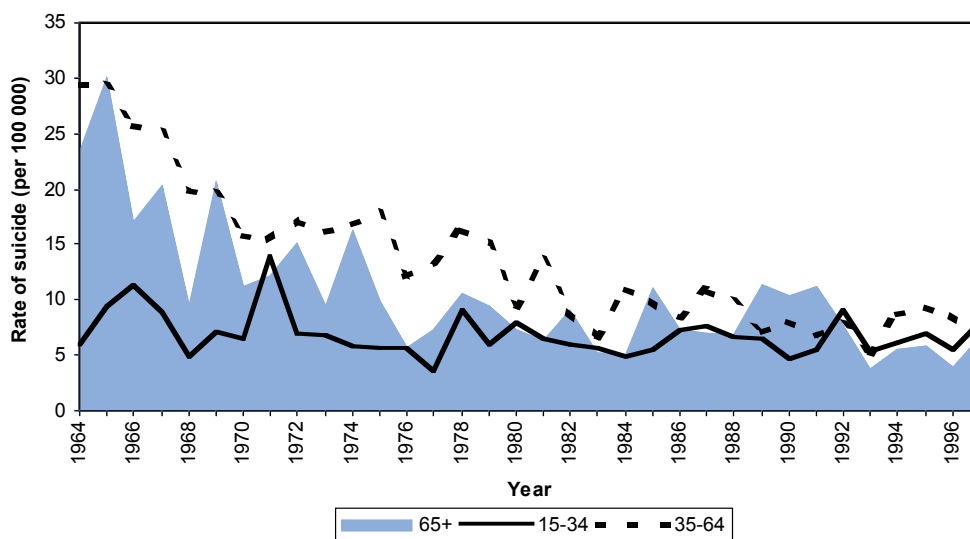
**Figure 8: Suicide rates by age groups for males, Queensland 1964-97**



Source: ABS by request

Queensland male rates showed decline in the older age groups. The 15 to 34 age groups displayed increasing rates over the time period.

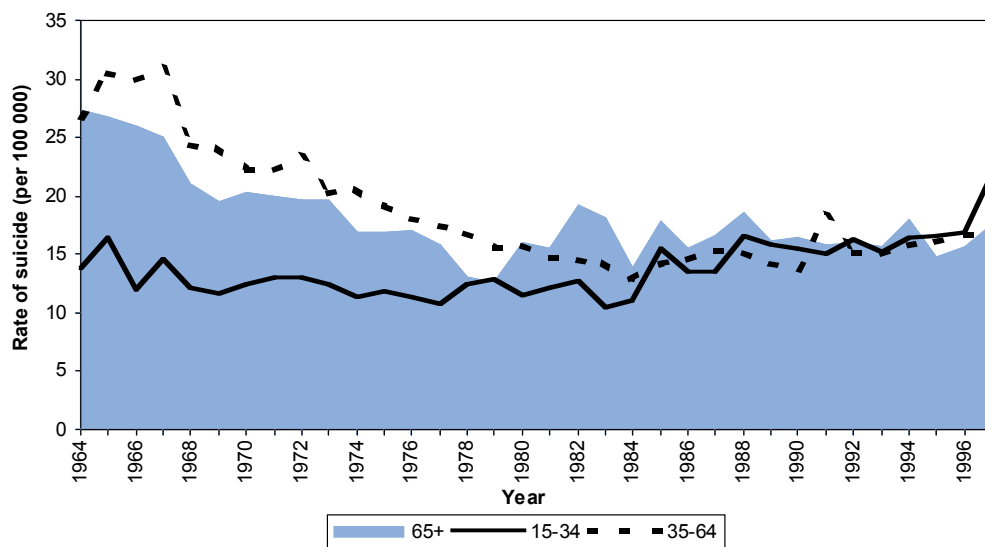
**Figure 9: Suicide rates by age groups for females, Queensland 1964-97**



Source: ABS by request

Queensland female adult and elderly rates showed a strong trend of decline, and relatively steady rates for youth.

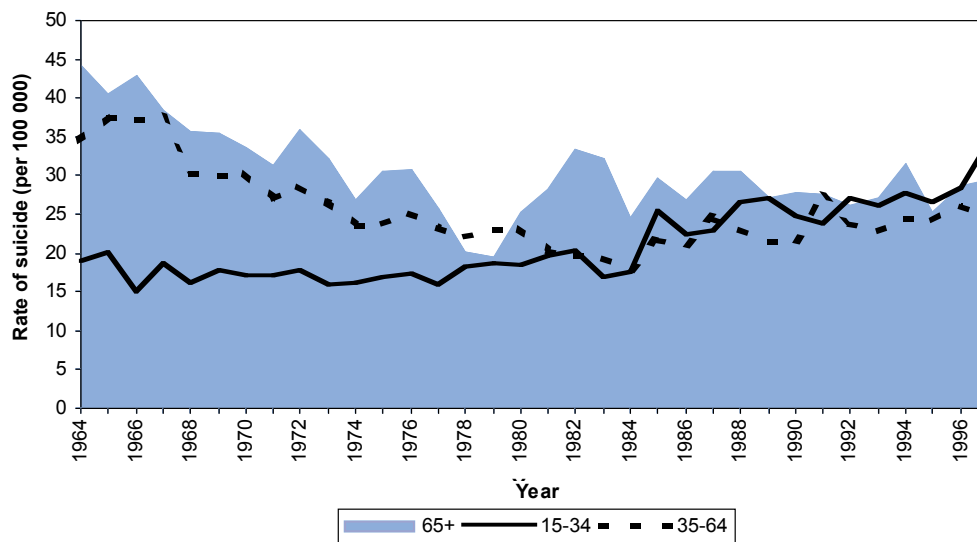
**Figure 10: Suicide rates by age groups for both genders, New South Wales 1964-97**



Source: ABS by request

Combined gender suicide rates in New South Wales showed decreases in the older age groups. New South Wales youth displayed a moderate increase in rates.

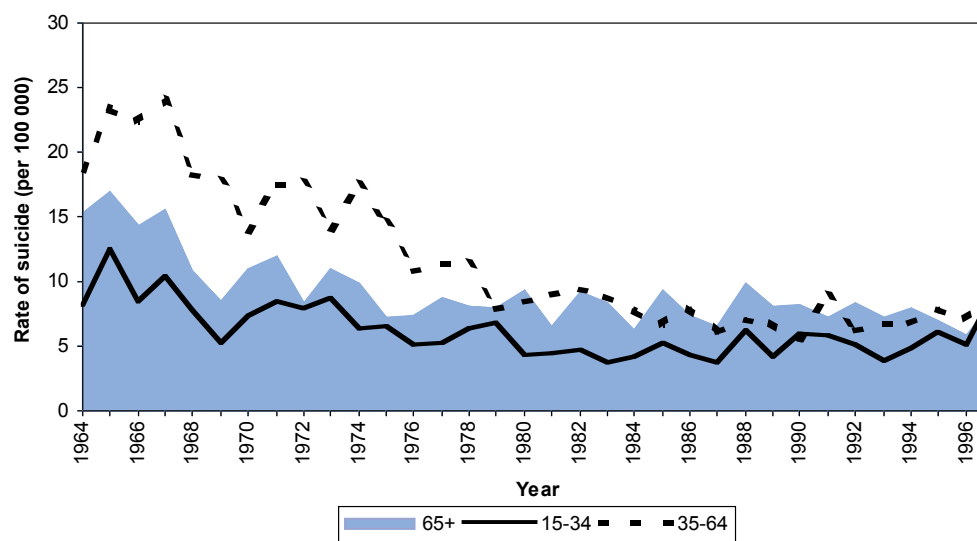
**Figure 11: Suicide rates by age groups for males, New South Wales 1964-97**



Source: ABS by request

New South Wales males showed modestly decreasing rates for elderly and adult populations, however, a modest increase in youth rates was also evident.

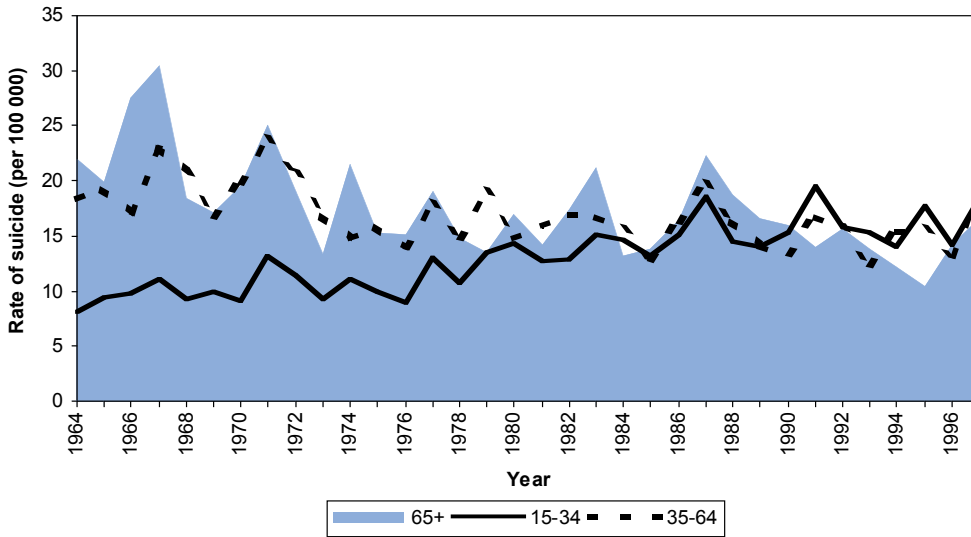
**Figure 12: Suicide rates by age groups for females, New South Wales 1964-97**



Source: ABS by request

A decline in female rates in New South Wales was evident in all age groups with the most dramatic decrease evident in the 65+ age group.

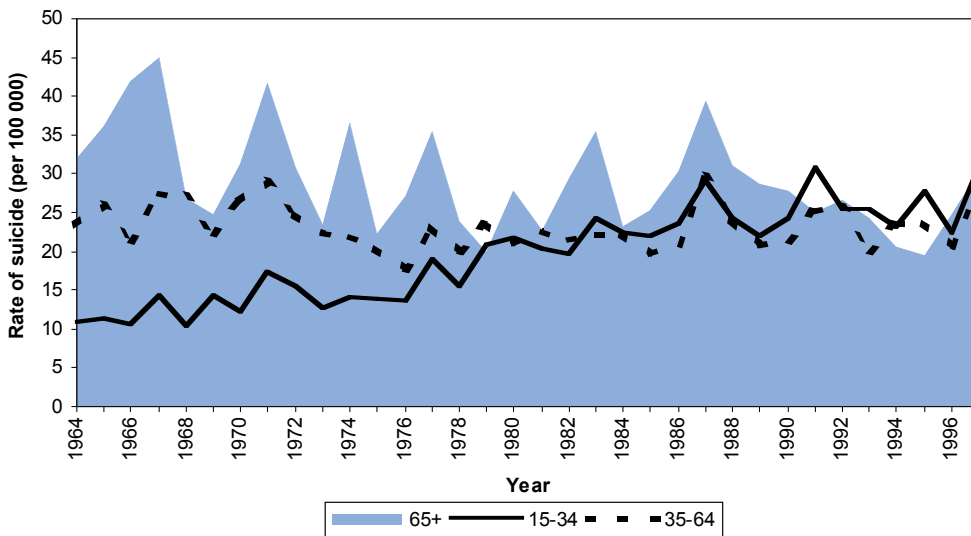
**Figure 13: Suicide rates by age groups for both genders, Victoria 1964-97**



Source: ABS by request

Victorian suicide rates for the elderly displayed large fluctuations over 1964-97, this is likely to reflect a proportionately smaller population base leading to highly sensitive suicide rates. In general, both elderly and adult age groups showed a trend of decline with the adult rates over this period appearing much more stable. Youth suicide rates displayed a trend of growth.

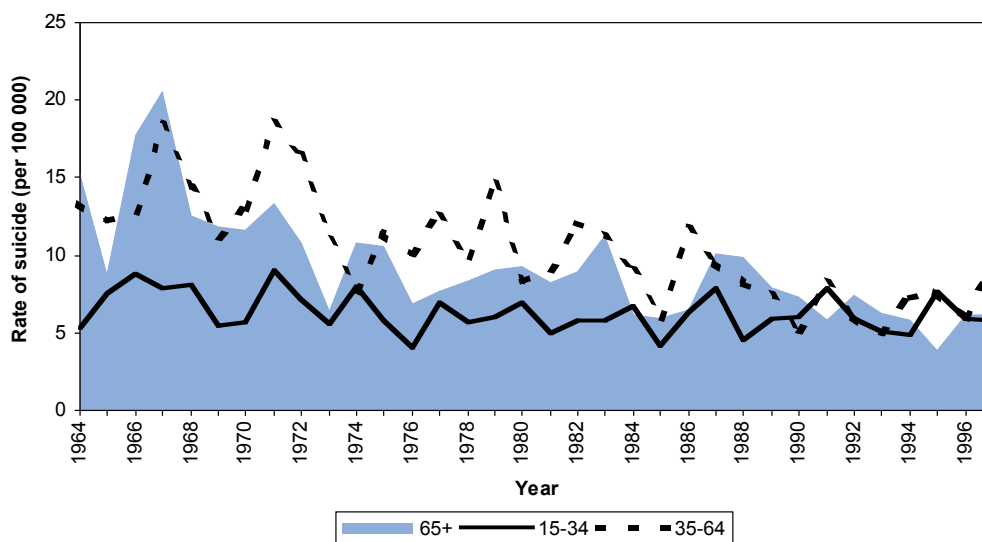
**Figure 14: Suicide rates by age groups for males, Victoria 1964-97**



Source: ABS by request

Victorian elderly males displayed dramatic fluctuations in suicide rates with a trend of decline evident in the last decade. Adult male rates, although less variable, did not display any clear trend. Youth displayed an increase in rates.

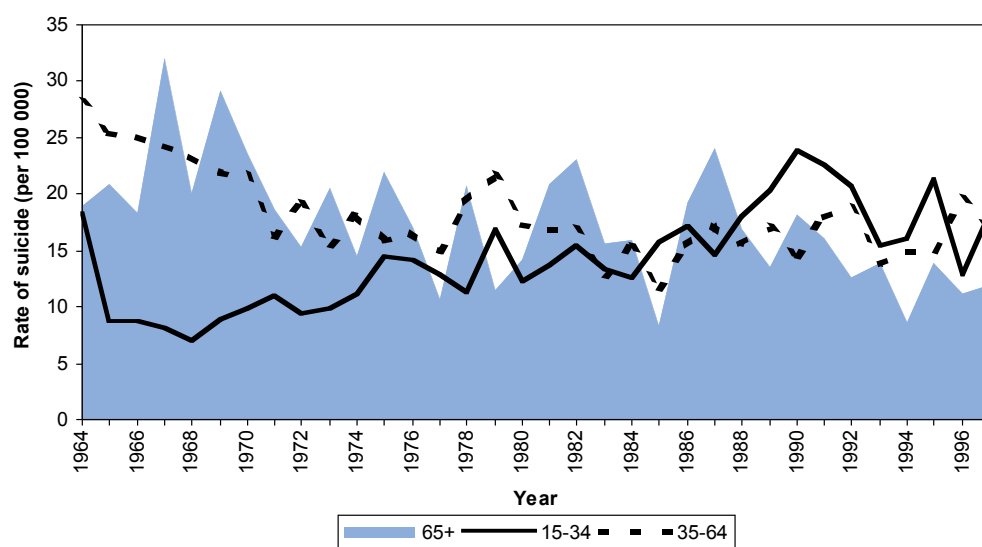
**Figure 15: Suicide rates by age groups for females, Victoria 1964-97**



Source: ABS by request

Victorian females displayed a clear trend of decline in suicide rates for elderly and adult populations. The youth rates remain steady.

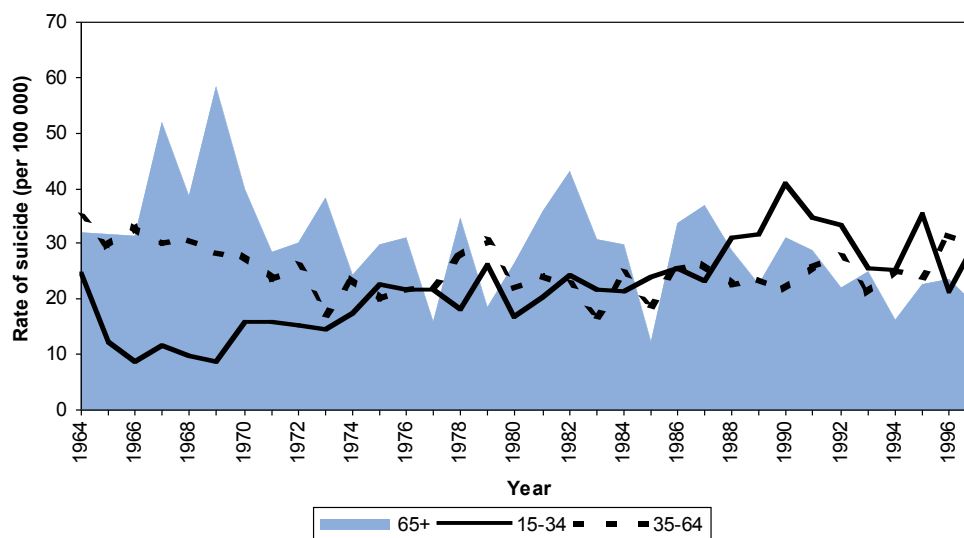
**Figure 16: Suicide rates by age groups for both genders, South Australia 1964-97**



Source: ABS by request

South Australian suicide rates were highly erratic (partly due to its small population) with a possible overall decline in suicide rates for elderly and adult populations. Youth suicide rates appeared to have increased since 1965.

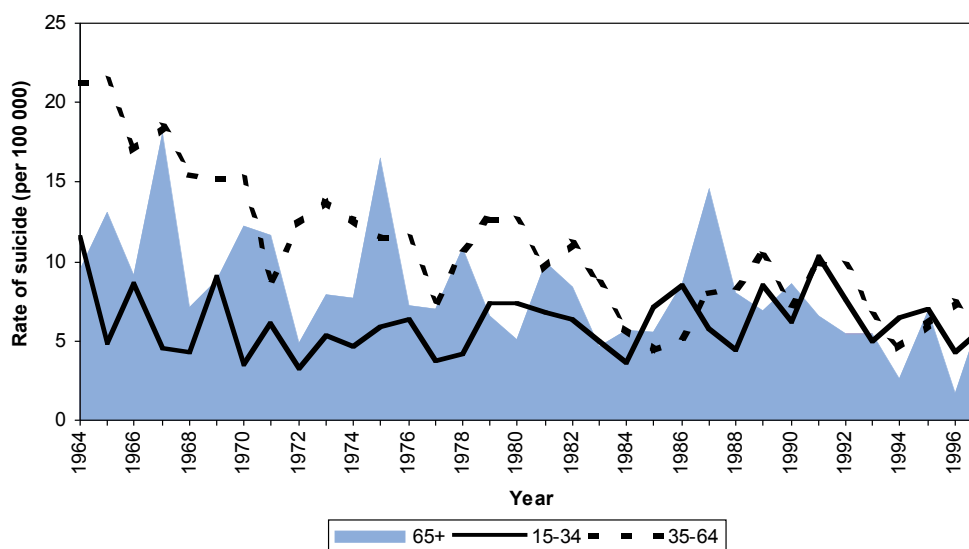
**Figure 17: Suicide rates by age groups for males, South Australia 1964-97**



Source: ABS by request

Elderly South Australian male rates declined over the specified period. No clear trend is evident for adult South Australians. Youth suicide rates in males appeared to increase until this decade where it has possibly begun to decline.

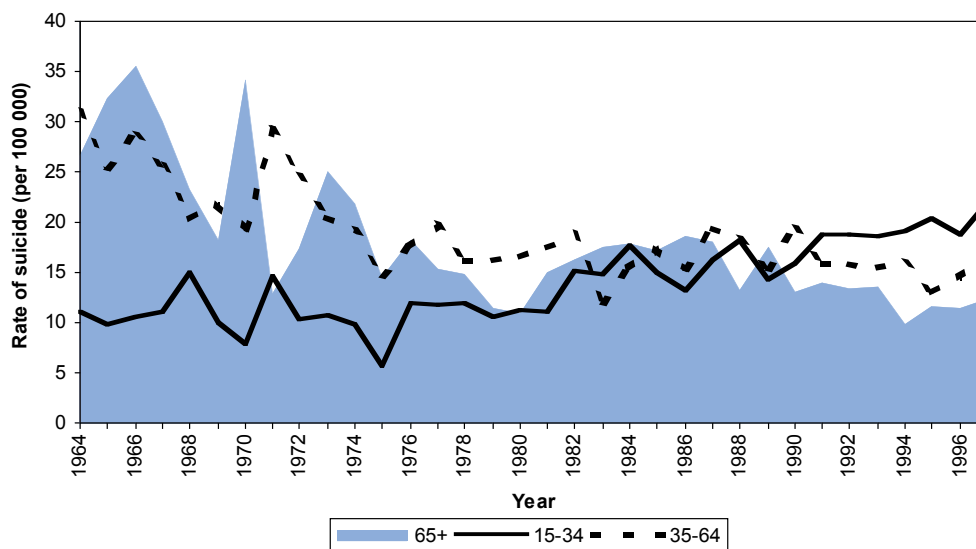
**Figure 18: Suicide rates by age groups for females, South Australia 1964-97**



Source: ABS by request

Female rates for South Australians show a trend of decline in adult and elderly rates, with youth remaining quite constant.

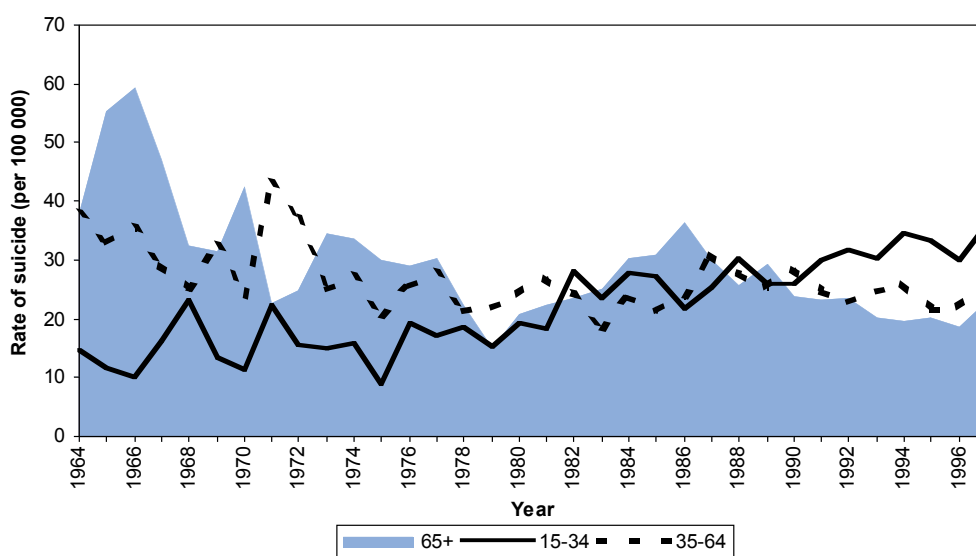
**Figure 19: Suicide rates by age groups for both genders, Western Australia 1964-97**



Source: ABS by request

Western Australian combined gender suicide rates have decreased in the elderly and adult populations, while youth has showed a modest increase.

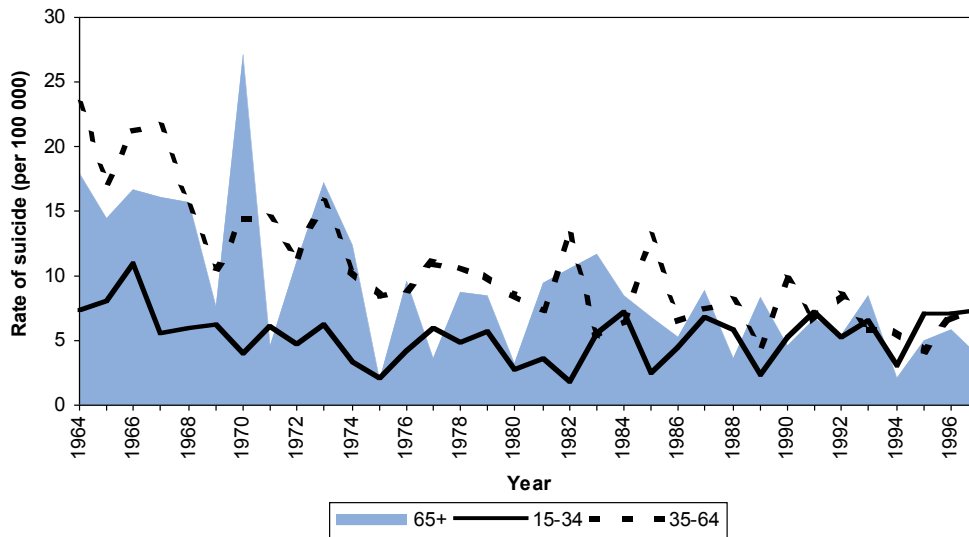
**Figure 20: Suicide rates by age groups for males, Western Australia 1964-97**



Source: ABS by request

The combined gender trends are strongly evidenced in the male suicide rates with youth suicide showing a more prominent increase.

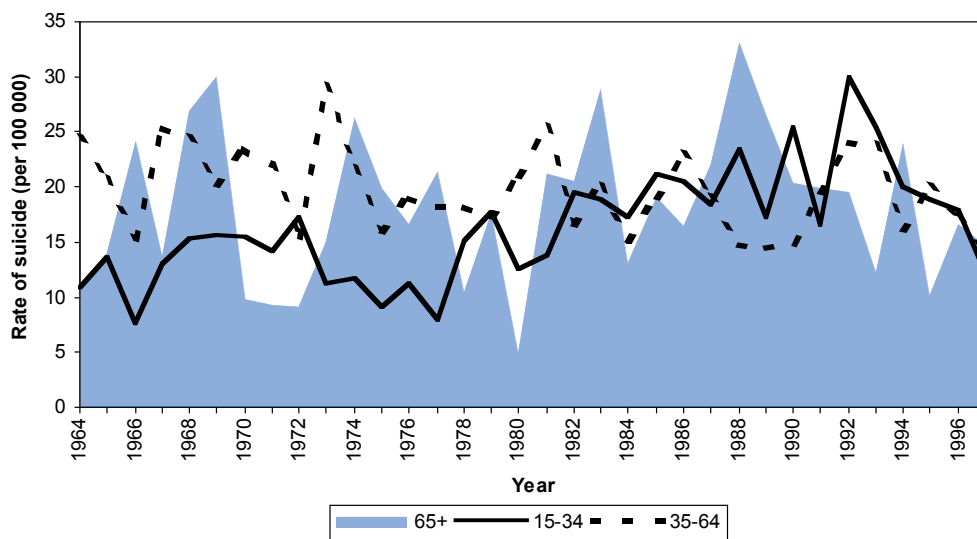
**Figure 21: Suicide rates by age groups for females, Western Australia 1964-97**



Source: ABS by request

Western Australian female suicide rates have clearly declined in adult and elderly populations; however, youth suicide rates have remained steady.

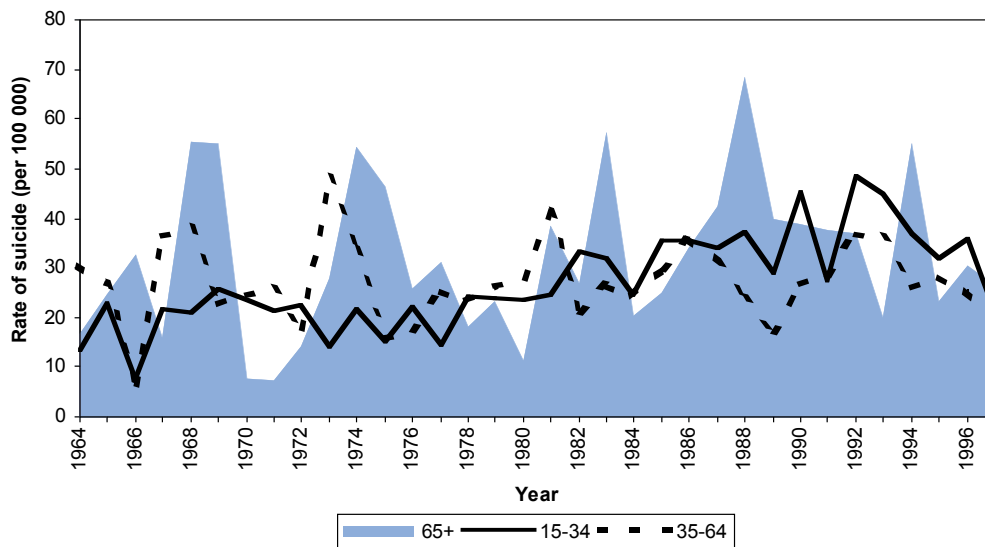
**Figure 22: Suicide rates by age groups for both genders, Tasmania 1964-97**



Source: ABS by request

Tasmanian rates show dramatic fluctuations owing to the small population base from which the rates are calculated. The fluctuations make any general trends difficult to discern, however, an increase in youth suicide rates is seemingly apparent until 1992, since when there has been a marked decline.

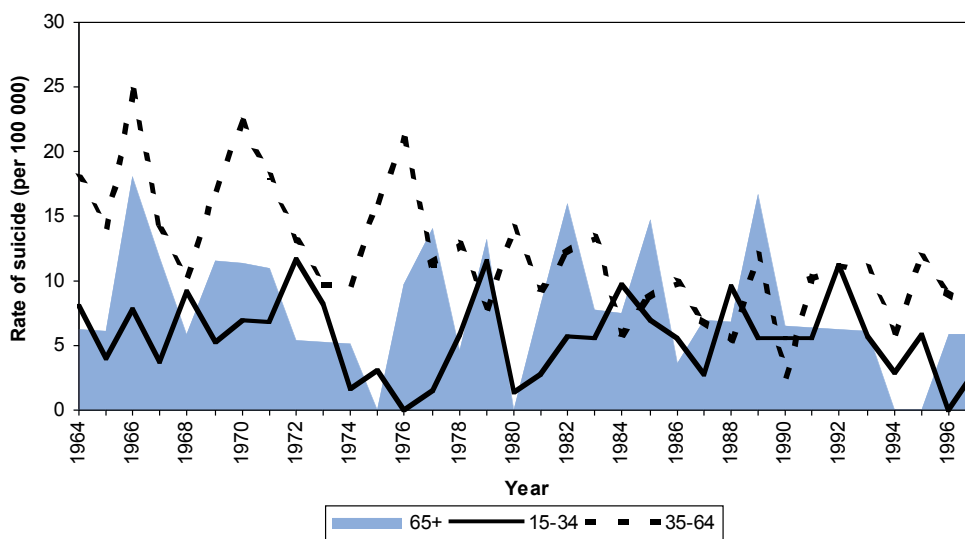
**Figure 23: Suicide rates by age groups for males, Tasmania 1964-97**



Source: ABS by request

As with genders combined, the instability in rates make trend detection extremely difficult (Figure 23). However, males do appear to be driving the youth trends seen in Figure 22 above.

**Figure 24: Suicide rates by age groups for females, Tasmania 1964-97**



Source: ABS by request

Despite the erratic rates, it seems that adult female Tasmanians have higher rates than the other two age groups, especially for the period 1964-76 and for the last decade considered.

## **Summary**

In general, it can be seen that adult and elderly suicide rates in the states of Australia have declined, though in an erratic way, since 1964. Conversely, there is a trend of increasing suicide rates for youth.

## Suicide methods used in Australia

This section compares methods used for suicide in Australia during 1997, as obtained from the Australian Bureau of Statistics (by request). Charts showing the percentage distribution of method by age and gender are shown below. Ninety-five per cent confidence intervals were then calculated for the rates of each method by gender and age group, in order to determine if there were significant differences between groups. Rates were not calculated for those groups that had numbers less than 10 as these figures would not be reliable. Graphs including the rates and confidence intervals for each method are also shown.

**Figure 25: Percentage of suicides by method for males and females all ages, Australia 1997**

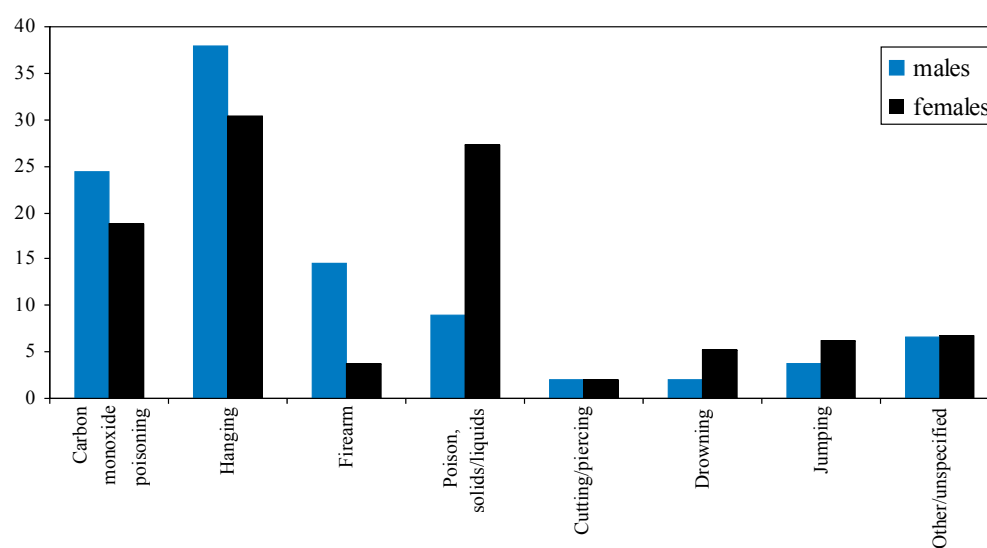


Figure 25 shows the overall percentages of methods by gender. For males, 85 per cent of the suicides were comprised of hanging (38%), carbon monoxide poisoning (24%), firearms (14%) and poisoning by solids and liquids (9%). For females, hanging (30%), poisoning by solids and liquids (27%) and carbon monoxide poisoning (19%) constituted the majority of the deaths, with firearms only contributing to less than 4 per cent of all female suicides.

**Figure 26: Percentage of suicides by method for males and females aged 15-34, Australia 1997**

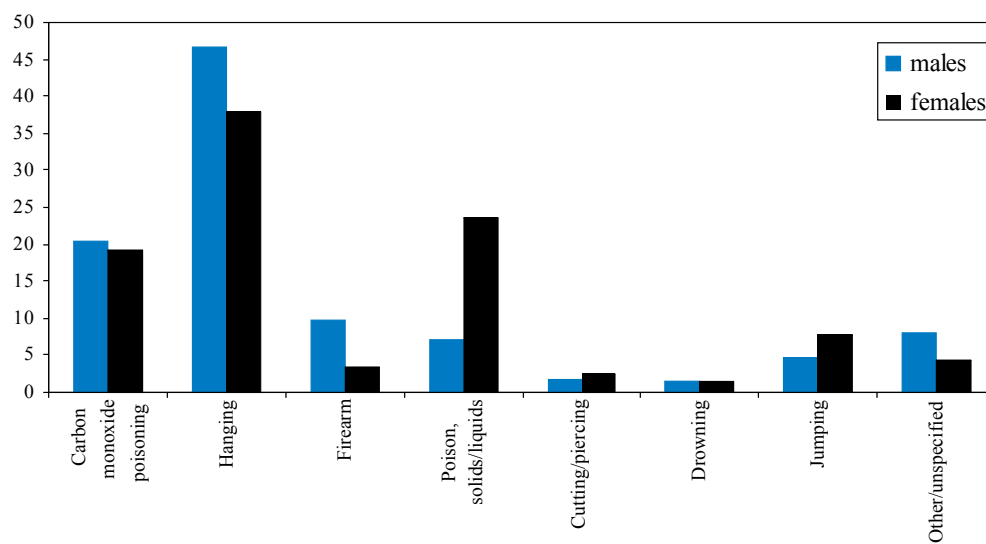
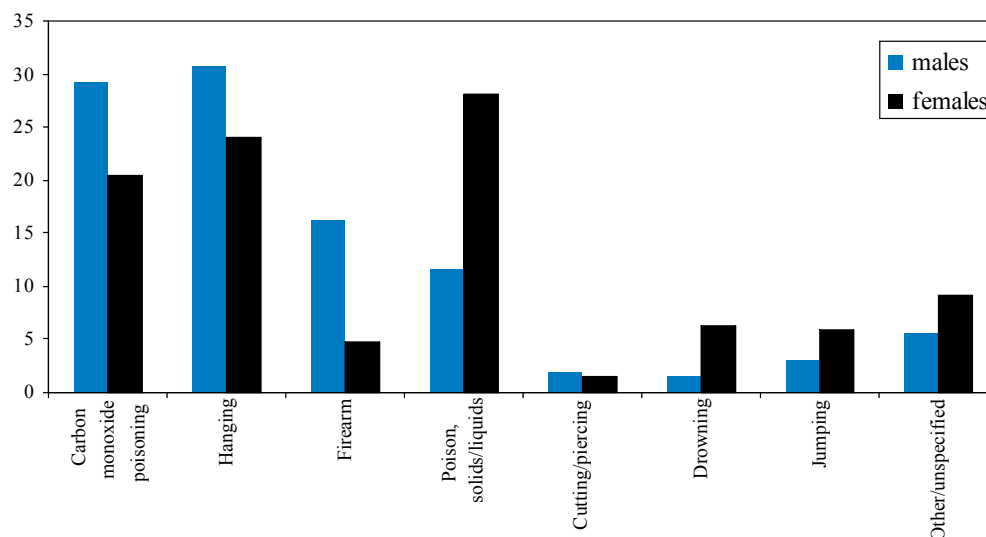


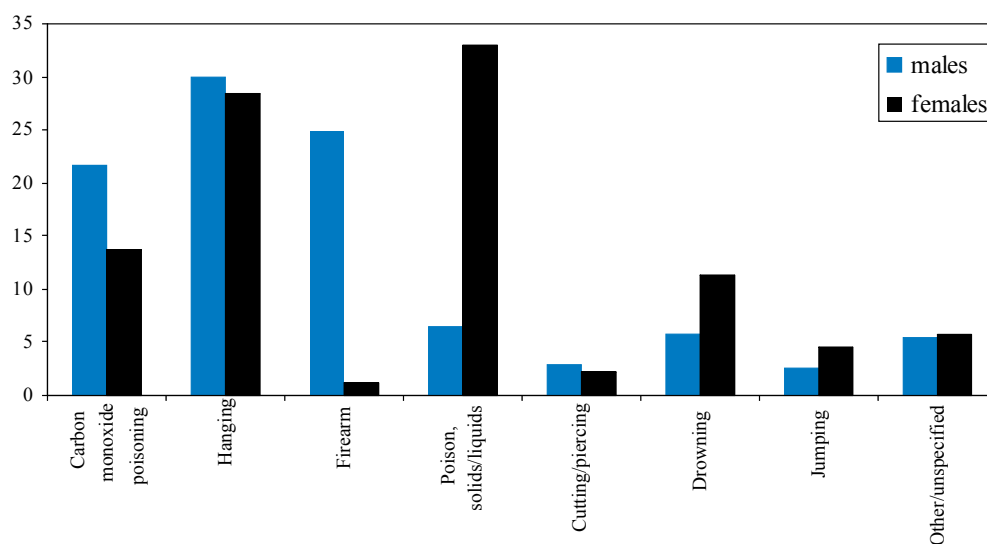
Figure 26 and Figures 27 and 28 illustrate the percentage of methods for 15 to 34, 35 to 64 and 65+ year olds. The four major methods used for males of all ages, are still the predominant four in each age group, however, the distribution changes with age. In males aged 15 to 34, hanging constitutes almost half (47%) of all of the deaths, while in the 65+ age group, less than 30 per cent are hangings. Firearms demonstrate the reverse pattern, with 10 per cent of suicides in the 15 to 34 year olds being by firearms and 25 per cent in males aged 65+.

For females, although the pattern for major methods in the 15 to 34 and 35 to 64 year age groups are consistent with females of all ages, for the elderly group, drowning becomes much more predominant. Just over 1 per cent of 15 to 34 year old female suicides are by drowning, for the elderly this number increases to over 11 per cent. An increase in drownings, although not to the same extent, is also seen in elderly males, with an increase from 1 per cent (aged 15 to 34) to 6 per cent (aged 65+).

**Figure 27: Percentage of suicides by method for males and females aged 35-64, Australia 1997**



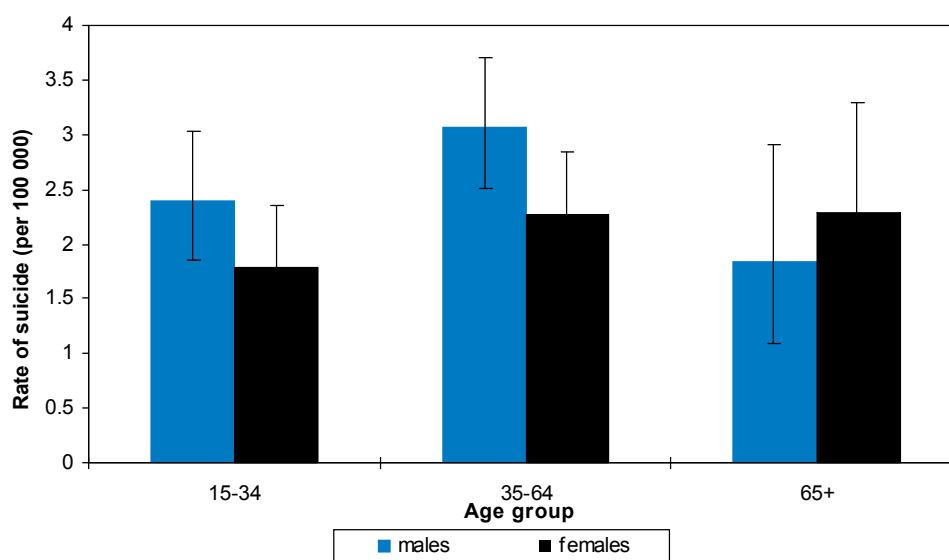
**Figure 28: Percentage of suicides by method for males and females aged 65+, Australia 1997**



**Table 6:** Rates of suicide (per 100 000) by method, gender and age groups, Australia 1997

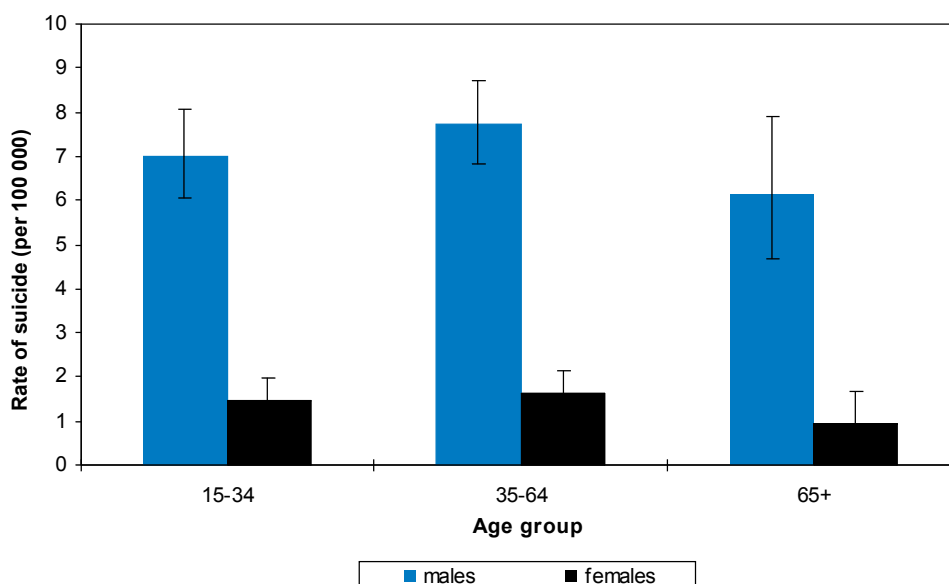
	Males			Females		
	15-34	35-64	65+	15-34	35-64	65+
Poisoning by solids/liquids	2.4	3.1	1.8	1.8	2.3	2.3
Carbon monoxide poisoning	7.0	7.7	6.1	1.5	1.7	0.9
Hanging	15.9	8.1	8.5	2.9	1.9	2.0
Drowning	0.5	0.4	1.6	-	0.5	0.8
Firearms	3.4	4.3	7.0	-	0.4	-
Cutting/piercing	0.6	0.5	-	-	-	-
Jumping	1.6	0.8	-	0.6	0.5	-
Other	2.7	1.5	1.5	0.3	0.7	-
All Methods	34.2	26.4	28.2	7.6	8.1	7.0

**Figure 29:** Suicide by solids/liquids poisoning by age group and gender, Australia 1997



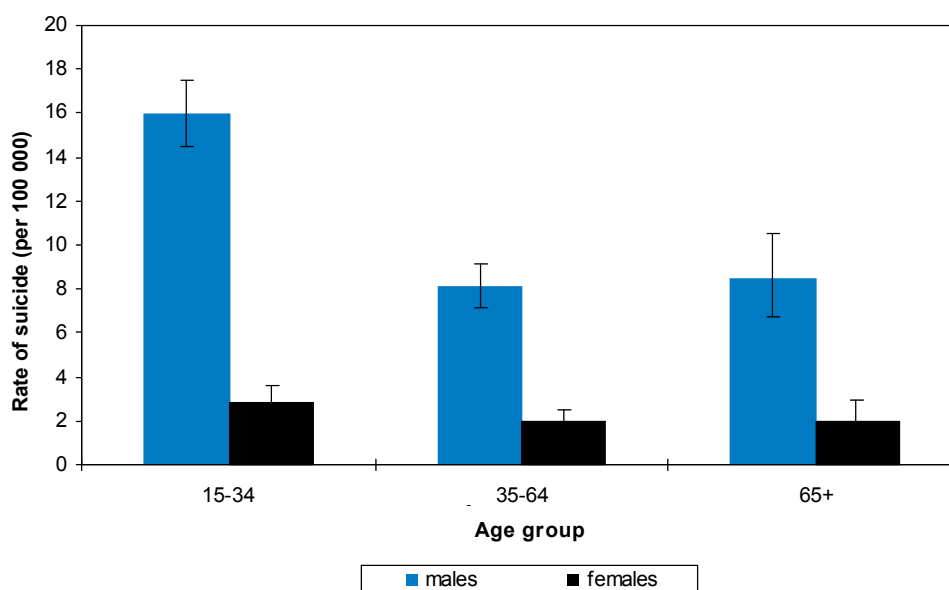
There were no significant differences by gender or by age for this method. This stands in marked contrast to the male predominance associated with most other methods of suicide.

**Figure 30: Suicide by carbon monoxide poisoning by age group and gender, Australia 1997**



Males displayed significantly higher rates of suicide by carbon monoxide poisoning than females across all age groups. There were no significant differences between age groups within genders.

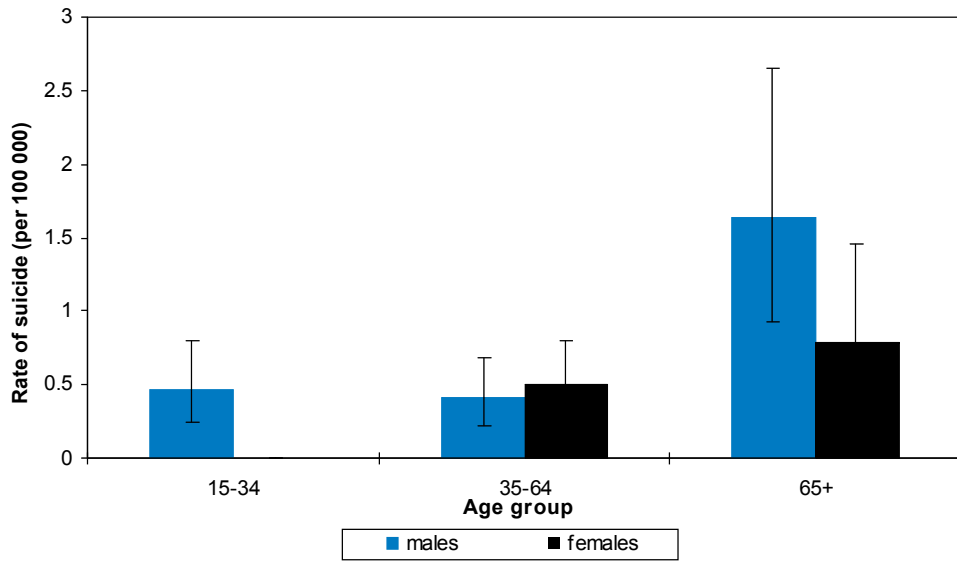
**Figure 31: Suicide by hanging and other suffocation by age group and gender, Australia 1997**



It should be noted that this category, as defined by the International Classification of Diseases 9, mostly relates to hanging, however, an unspecified minority of these deaths relate to other suffocations. The elderly are prone to using suffocation by plastic bags.

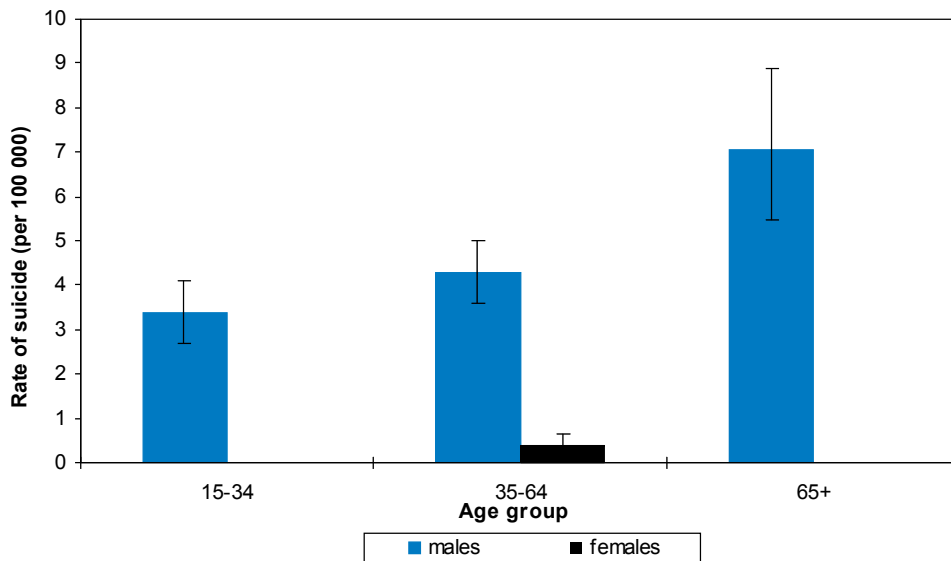
Hanging rates in males were significantly higher than females across all age groups. The male 15 to 34 year group had significantly greater rates than the male 35 to 64 and 65+ age groups.

**Figure 32:** *Suicide by drowning by age group and gender, Australia 1997*



The number of suicides by this method was small so findings must be interpreted with caution. The 65+ males displayed a significantly greater rate of suicide by drowning than males in the 15 to 34 and 35 to 64 age groups. There were no significant differences between genders in each age group.

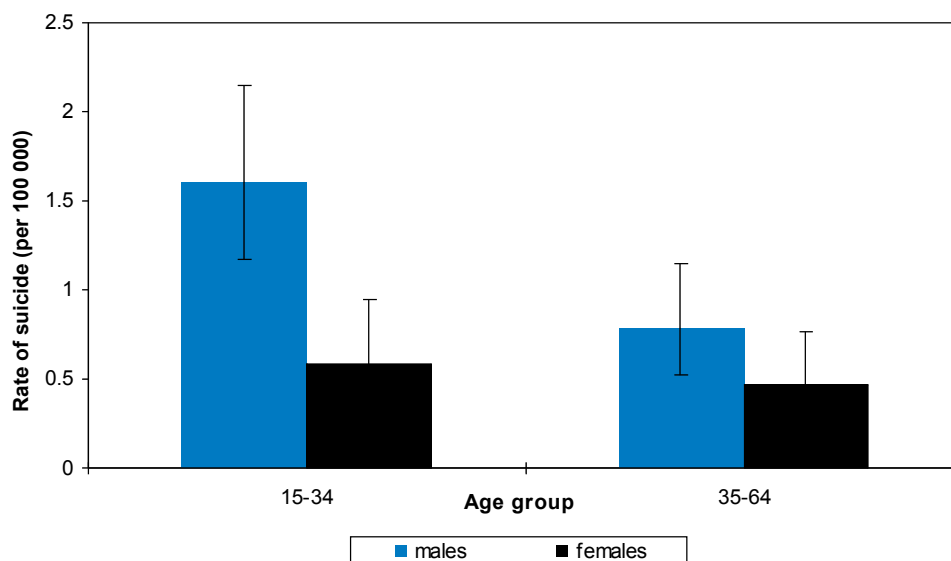
**Figure 33:** *Suicide by firearms by age group and gender, Australia 1997*



The male 65+ age group had a significantly greater rate of suicide by firearms than the male 15 to 34 and 35 to 64 age groups. Male 35 to 64 year olds had significantly higher rates of firearm suicide than females of the same age group. Whereas Australian female firearm suicide rates are very low, they are substantial in the United States. This probably reflects high handgun ownership in the United States (and low ownership in Australia).

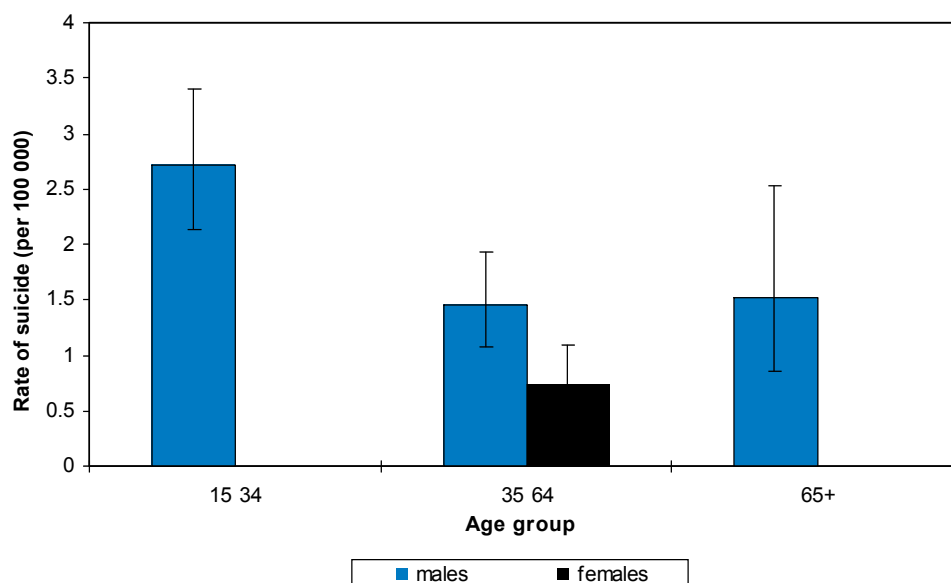
Due to low numbers in the suicide method of cutting and piercing, a graph was not produced for this method, as comparisons would be unreliable. Rates were calculated for the male age groups, 15 to 34 and 35 to 64 (see Table 6), and no significant differences were found.

**Figure 34: Suicide by jumping by age group and gender, Australia 1997**



The male 15 to 34 year group had significantly greater rates of suicide by jumping than males in the 35 to 64 age group and females in the 15 to 34 age group.

**Figure 35: Suicide by other methods by age group and gender, Australia 1997**



Males in the 15 to 34 year old age group had a significantly greater rate of suicide by other methods than the 35 to 64 male age group.



## Attempted suicide methods used in Australia

The following data has been taken from the National Injury Surveillance Unit that collects hospital morbidity data. The only data available for analysis was attempted suicide data for 1996-97. Each State and Territory is responsible for the official collection of attempted suicide data (previously the Australian Bureau of Statistics was responsible). Data collection procedures and reliability vary across the States and Territories with one advising that suicide attempts presenting to Accident and Emergency Departments would not generally be recorded as such unless they were admitted to a mental health facility (Cantor et al, 1999b).

Even where a State or Territory may have a relatively reliable system in operation it is a misnomer to refer to these events as 'attempted suicides'. They are in fact attempted suicides 'admitted' to hospitals. Data reliant on hospital samples can be unreliable due to inconsistent recordings and changes in definitions and methods of recording attempted suicides, which make longitudinal studies very difficult. Further, hospital data is biased towards those attempted suicides involved with self-poisonings and lacerations. Finally, only those people who present to hospitals are recorded, which omits the people who see a general practitioner or who do not seek any medical assistance (Cantor et al, 1999b).

A number of Australian community self-report surveys suggest that self destructive or suicidal behaviour is likely to be far more common than official data may suggest (Keys Young, 1997; Schweitzer et al, 1995; Patton et al, 1997), with one estimate suggesting 50 per cent to 80 per cent of attempted suicides do not receive medical attention (Sayer et al, 1996).

These major impediments to reliable data are reflected internationally where similar problems are the rule. A study of 50 states in the United States (CDC, 1991) and one of the Netherlands (Diekstra and Van de Loo, 1978) both found that only 24 per cent of people who had attempted suicide had contacted health services. To address this problem of under reporting, the Regional Office for Europe of the World Health Organization coordinated a multicentre study of attempted suicide. Sixteen centres in 13 European countries participated (Kerkhof et al, 1994).

The percentage and number of attempted suicides per age group and male:female ratio for 1996-97 are illustrated in Table 7.

**Table 7:** *Percentage, number (in brackets) and ratio of suicide attempts by gender and age group, Australia 1996-97*

	Males	Females	Male:Female
<15	1% (73)	3% (302)	1:4.1
15-34	58% (4 021)	57% (5 912)	1:1.5
35-64	38% (2 626)	37% (3 819)	1:1.5
65+	3% (245)	3% (277)	1:1.1
All ages	100% (6 965)	100% (10 310)	1:1.5

Unlike completed suicides, females have greater numbers in each of the age groups and overall, with ratios being almost similar. The exception to this, is with the under 15 year old group, where the data suggests that females are four times more likely to attempt suicide than males. It should be noted that although males have lower numbers than females, this

may be due to the problems associated with data obtained from hospital admissions, as it has been found that females are more likely to produce help-seeking behaviours than males and are more likely to present to health facilities and thus they may be over represented in attempted suicide data.

**Table 8:** *Ratio of attempted (1996-97) to completed (1997) suicides by gender and age group, Australia*

	<b>Males</b>	<b>Females</b>
<15	9.1:1	43.1:1
15-34	4.2:1	28.4:1
35-64	2.9:1	13.9:1
65+	0.9:1	3.1:1
All ages	3.2:1	17.9:1

Table 8 compares the attempted and completed suicide numbers for each age group by gender. Some caution must be used when observing these ratios, as use of financial rather than calendar year for attempted suicides was used and thus not directly comparable to the 1997 data for completed suicides. Ratios are much greater between females, due to the low numbers of completed suicides coupled with the greater number of attempted suicides. For both genders, ratios are greater in younger age groups and become narrower as age groups increase. Of special note, is the ratio of male elderly (65+). Completed suicide numbers are greater (albeit marginally) than attempted suicides, suggesting that a suicidal act is more likely to end in death than not, for elderly males.

Several reasons may be put forward to explain the narrowing of the attempted to completed suicide ratio as age increases. Firstly, younger people may be more resilient and physically healthy and thus more likely to be resuscitated or survive an attempt by poisoning or cutting/piercing (the methods most used in the majority of attempted suicides presenting to hospitals). Secondly, the type of method may vary with age, with more lethal methods used as age increases and thus the likelihood of survival lessens.

In order to examine the concept that method may vary with age, charts were constructed to compare percentages of method between age and gender.

**Figure 36: Percentage of suicide attempts by method for males and females all ages, Australia 1996-97**

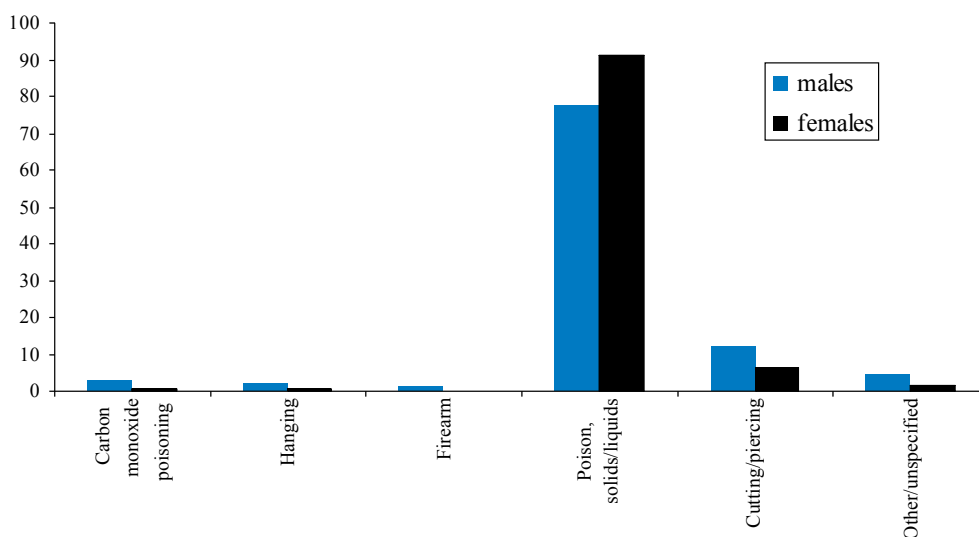


Figure 36 shows the overall percentages of methods by gender, with poisoning by solids or liquids constituting the greatest proportion of attempts, accounting for 77 per cent for males and 91 per cent for females. Cutting and piercing was the next most used method for both males and females, with 12 per cent and 6 per cent respectively. The major methods of completed suicides for males and females, hanging, carbon monoxide poisoning and firearms, only contributed to 6 per cent of attempted suicides for males and less than 1 per cent for females.

**Figure 37: Percentage of suicide attempts by method for males and females aged 15-34, Australia 1996-97**

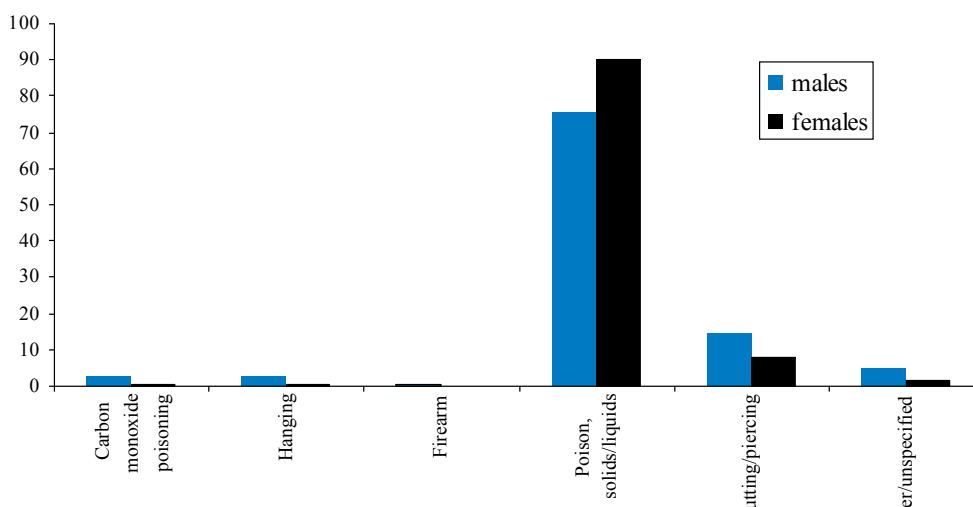
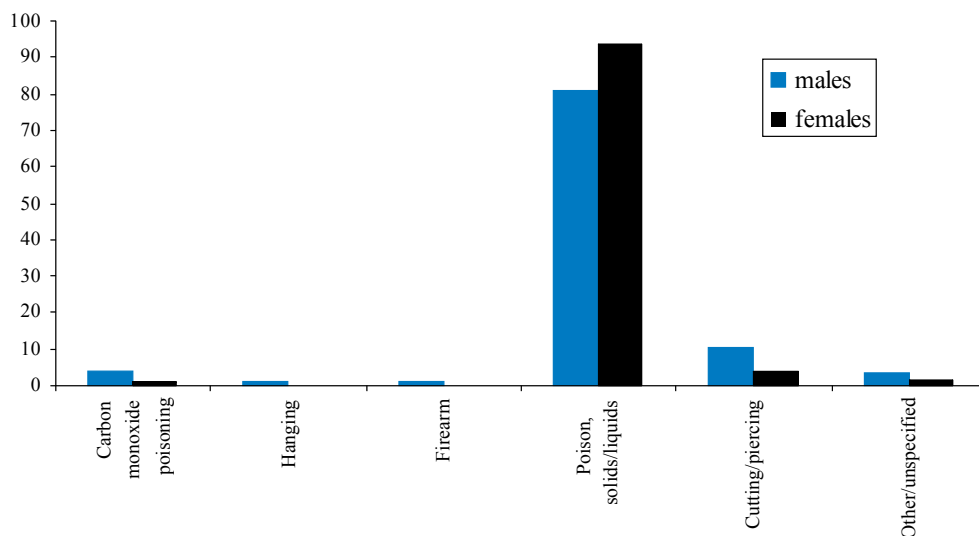


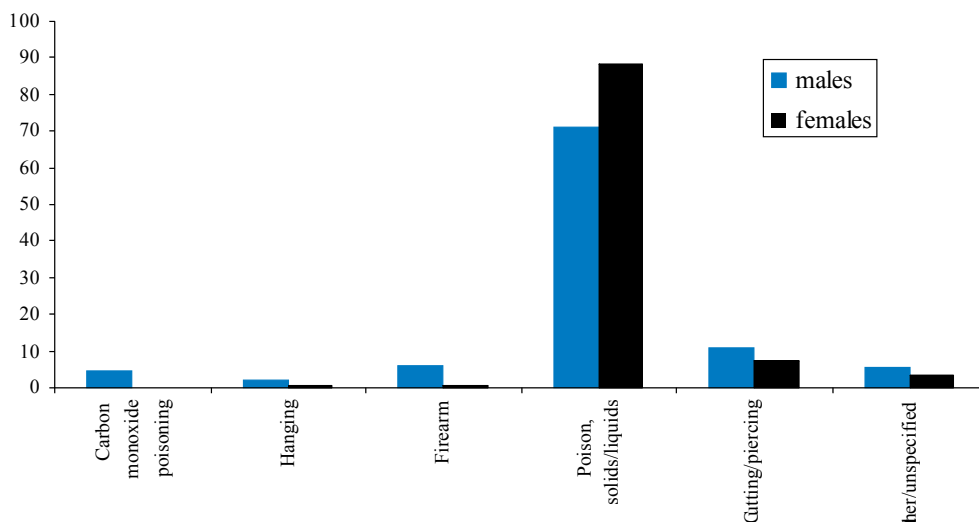
Figure 37 and Figures 38 and 39 illustrate the percentage of methods for 15 to 34, 35 to 64 and 65+ year olds. Although differences in the two major methods were not noticeable between the two younger age groups these differences were more evident between males aged 15 to 24 and 65+. For 15 to 24 year olds, 89 per cent of the total attempted suicides were by poisoning and cutting/piercing, whilst for the 65+ group this had decreased to 82

per cent. The more lethal methods of suicide, firearms and carbon monoxide poisoning, had increased more substantially between these two age groups for males, with firearms for the younger age group being less than 1 per cent and more than 6 per cent for the 65+ group and carbon monoxide poisoning increasing from 2 per cent to 4 per cent.

**Figure 38:** *Percentage of suicide attempts by method for males and females aged 35-64, Australia 1996-97*



**Figure 39:** *Percentage of suicide attempts by method for males and females aged 65+, Australia 1996-97*

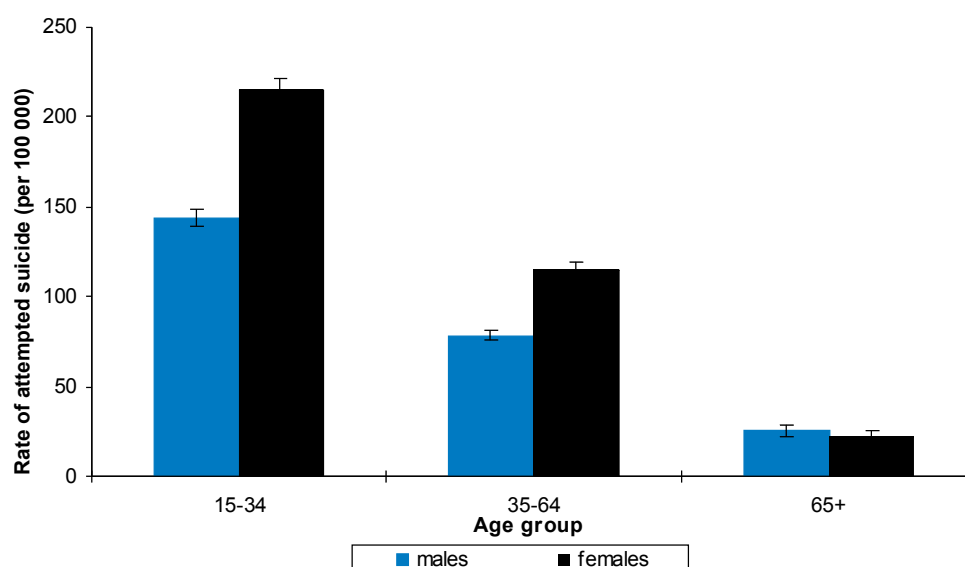


In order to make more statistically useful comparisons between methods of attempted suicide, gender and age, rates of attempted suicide were calculated. Due to the problem of having only financial year data, the 1996 population (ABS by request) was used to calculate rates (see Table 7). For groups which contained less than 10 attempted suicides, rates were not calculated, as these figures would not be considered reliable.

**Table 9:** Rates of attempted suicide (per 100 000) by method, gender and age groups, Australia 1996-97

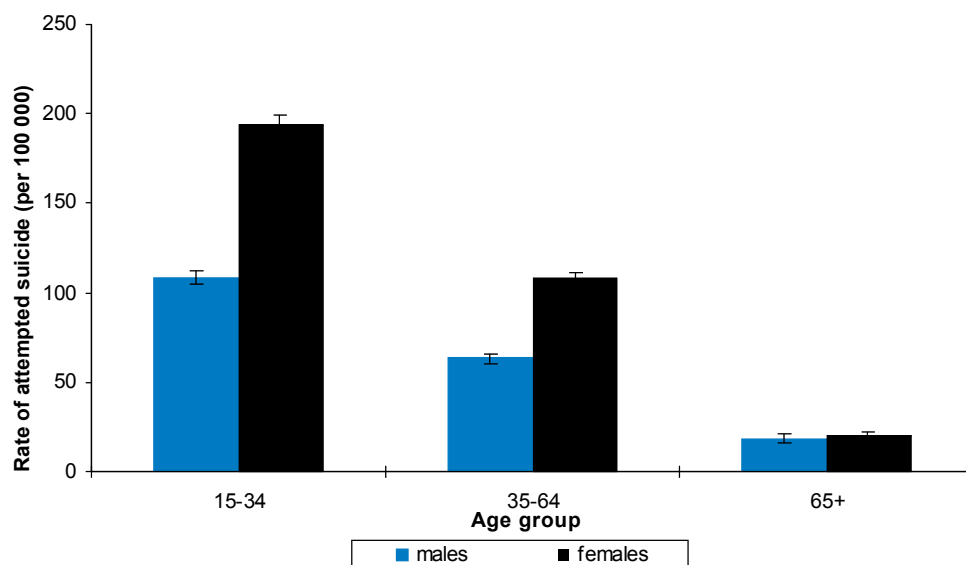
	Males			Females		
	15-34	35-64	65+	15-34	35-64	65+
Poisoning by solids/liquids	108.5	63.3	18.1	194.1	107.9	19.6
Carbon monoxide poisoning	3.3	3.1	1.1	0.6	0.9	-
Hanging	3.4	0.7	-	1.0	-	-
Firearms	1.0	0.7	1.6	-	-	-
Cutting/piercing	20.4	7.9	2.8	16.6	4.8	1.7
Other	7.3	2.6	1.4	3.2	1.6	0.8
All methods	143.8	78.4	25.5	215.5	115.4	22.3

**Figure 40:** Total attempted suicide rates by age group and gender, Australia 1996-97



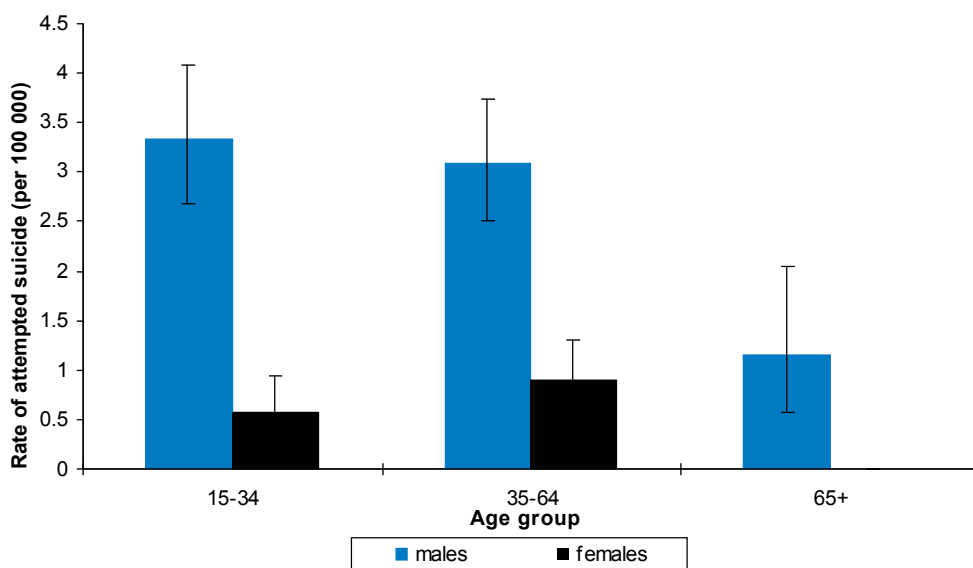
As noted above, for all methods, females were more likely to attempt suicide than males in both younger age groups, these differences were found to be significantly different (see Figure 40). For the elderly, the rates were similar with no significant differences between the genders. Rates were also significantly greater in 15 to 24 year olds than in 35 to 64 year olds, which were in turn, significantly greater than the 65+ group. This was seen in both genders, although the differences were much more pronounced in females.

**Figure 41: Attempted suicide by solids/liquids poisoning by age group and gender, Australia 1996-97**



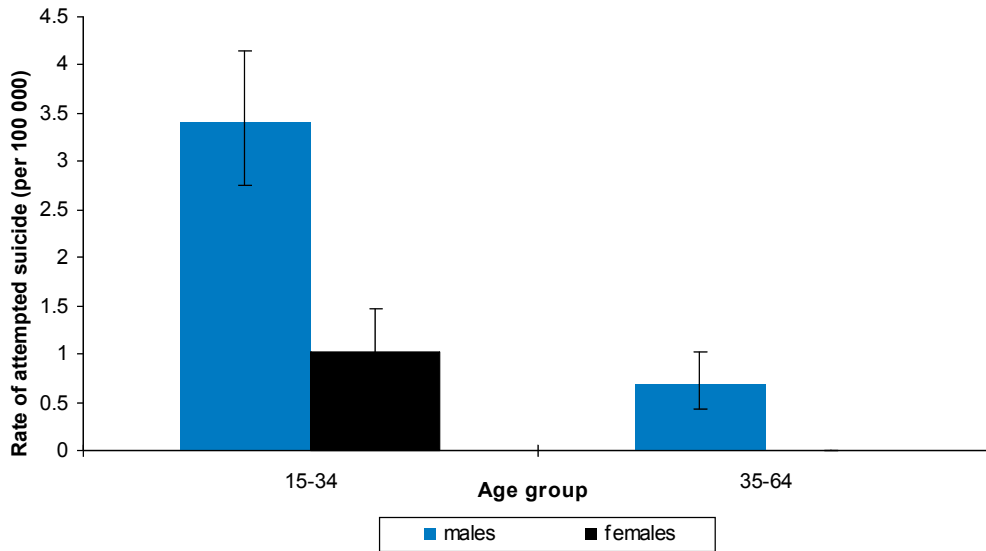
Across both genders the 15 to 34 age group displayed significantly higher rates of attempted suicide than the 35 to 64 age group, however, the 35 to 64 age group had significantly higher rates than the 65+ age group. Females had significantly higher rates of attempted suicide than males in the youth and middle adult age groups.

**Figure 42: Attempted suicide by carbon monoxide poisoning by age group and gender, Australia 1996-97**



Males aged 15 to 34 and 35 to 64 had significantly greater rates of attempted suicide by carbon monoxide poisoning than 65+ males. Males had greater attempted suicide rates than females in both the 15 to 34 and 35 to 64 age groups.

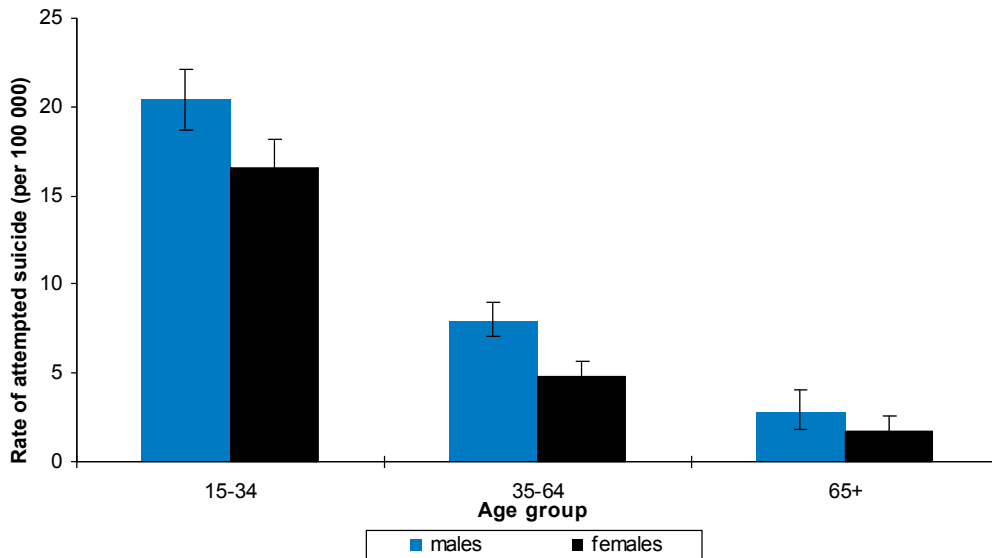
**Figure 43: Attempted suicide by hanging by age group and gender, Australia 1996-97**



The male 15 to 34 year group had significantly greater hanging rates than the male 35 to 64 age group and the female 15 to 34 year group.

Numbers were too small in all female age groups to calculate attempted suicide rates for firearms and consequently a graph was not produced. Comparisons of attempted suicide rates for males revealed no significant differences between the three age groups.

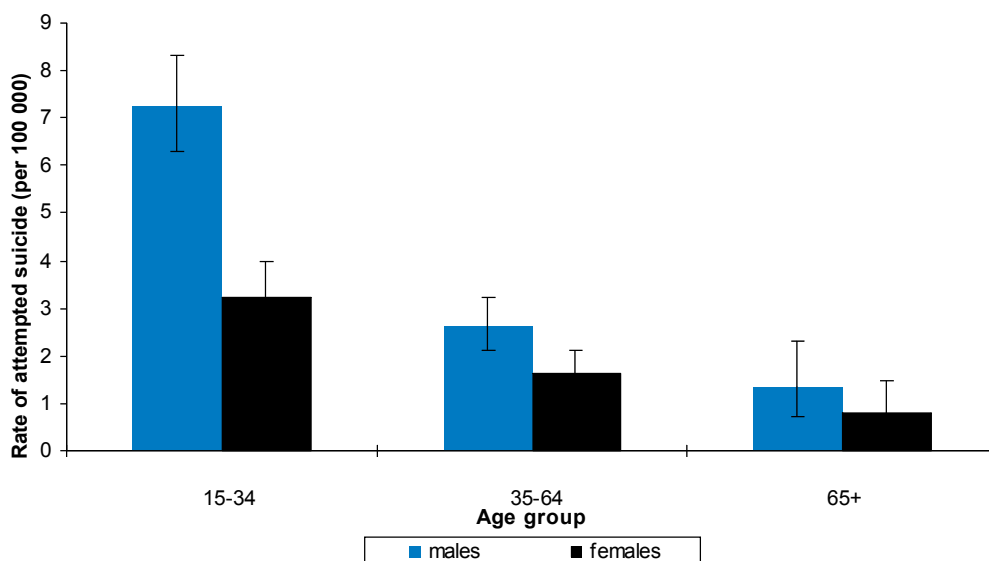
**Figure 44: Attempted suicide by cutting and piercing by age group and gender, Australia 1996-97**



Across both genders the 15 to 34 age group displayed a significantly higher rate of attempted suicide than the 35 to 64 age group, however, the 35 to 64 age group displayed a significantly higher rate than the 65+ age group. Males displayed a significantly higher rate

of attempted suicide by this method than females in the 15 to 34 and 35 to 64 year old age groups.

**Figure 45: Attempted suicide by other methods by age group and gender, Australia 1996-97**



Across both genders 15 to 34 year olds had significantly greater rate of attempted suicide by other methods than the 35 to 64 and 65+ age groups. Males displayed a significantly higher rate than females in the 15 to 34 year age group.

## Summary

The distribution of methods for suicide and attempted suicide are vastly different. In completed suicides, the three major methods of suicide are hanging, firearms and carbon monoxide poisoning, which comprise 76 per cent of all male suicides, whereas these three methods only contribute to 6 per cent in male attempted suicides. For females, these same three methods constitute 53 per cent of completed suicides and less than 1 per cent of attempts. However, poisoning by solids and liquids, which only contribute to 9 per cent of male suicides and 27 per cent of female suicides, constitute 77 per cent of male and 91 per cent of female attempted suicides. These distributions are similarly seen across the three age groups.

The main reasons for this observation of different method selection in completed versus attempted suicides, is the lethality of method and the data gathering for attempted suicides. With advancing medical technology, it is easier to resuscitate a person who has taken an overdose or cut themselves, thus a greater number of attempted suicides do not lead to death. Furthermore, a person is more likely to present to hospital for medical treatment for an overdose, than for an attempted suicide by carbon monoxide poisoning. Consequently, suicide attempt data, which is collected from hospitals is going to reflect this trend.

# Psychosocial risk factors for suicide in the ageing and middle-aged person

None of the risk factors for manifestations of suicidality proposed by suicidological literature have yet found adequate empirical confirmation, although some do seem to play a very important role. Few studies specifically examine the correlates of suicidal behaviours in the elderly in comparison with the young. Nevertheless, in old age, these behaviours do seem to have distinctive characteristics.

Social influences on suicidal behaviour were the well-known subject of a classical study by Durkheim (1897), who stressed the subjective significance of each factor and its potential influence on behaviour. Social variables clearly have very different meanings from one person to the next and account may be taken of this aspect in predicting future behaviour. The extent and nature of psychosocial factors and life events in the elderly with suicidal behaviour and ideation have not yet been systematically explored, but some considerations deserve closer examination.

## Isolation

Living alone in middle adulthood has been associated with a higher risk of suicide only for females (Charlton, 1995). In line with Durkheim's theory (1897) and Gibbs and Martin's (1964) Status Interaction Theory more impact appears to be had by the familial situation. Both an intact marital status and children demonstrate a protective influence on middle aged adults of both genders (Smith et al, 1988).

Living alone has often been indicated as an important variable in suicidal behaviour in old age. Sainsbury (1955) was the first to report a higher correlation between suicide and living alone in the old than in the young population. The elderly suicides in a sample studied by Barraclough (1971) too, more frequently lived alone than the general community from which they were drawn. The author, however, did stress that suicides had different histories of living alone. In some, isolation was recent, following bereavements, losses, etc., while in others it was not of particular consequence and suicide only occurred as a result of an intervening physical or psychiatric disorder.

Heikkinen and colleagues (1995) did not find evidence of increased isolation among elderly compared with younger suicide victims on psychological autopsy. According to Draper (1996) between 24 per cent and 60 per cent of elderly people who commit suicide live alone and the percentage of elderly suicide attempters who live alone increases with age (Merrill and Owens, 1990; Nowers, 1993). This increase, particularly in males, was higher than reported in age/gender matched census data (Nowers, 1993).

Since it has been estimated that 40 per cent of elderly people are lonely (Weeks, 1994), the relationship with suicidal behaviour is likely to involve its interaction with other risk factors (Draper, 1996). In contrast with popular belief, social isolation and diminished opportunity for social interaction does not therefore seem common among elderly suicides (Clark, 1993; Conwell et al, 1990). Thus living alone is not necessarily synonymous with social isolation. Interpersonal networks may be composed of friends, relatives, peers or affiliates of churches, groups, etc., thereby overcoming 'isolation', which can only be deduced from place of residence.

The relationship between a rapid transformation in the organisation of society and the change in suicide rates makes Durkheim's observations on social integration still appropriate. Watanabe and colleagues (1995), for example, suggested that the rapid change in family organisation, from the traditional three-generation family to the nuclear unit in a rural region of Higashikubiki in Japan, could account for the disproportionate suicide rates between that region and Kawasaki.

## Losses

Losses inherent to mid adult life, for example, declining physical health, financial difficulties, reduced career opportunities, bereavement, marital breakdowns and general interpersonal losses, are also some of the most serious risk factors for suicidal behaviour.

Although loss is common in mid adult life, what differentiates a suicidal reaction from a non-suicidal reaction to the loss is the frequency and timing of the losses experienced (Slater and Depue, 1981). The essential factor is the inability to resolve grief before experiencing another loss.

In a study by Charlton (1995), males who were single, widowed or divorced were significantly more at risk of suicide. In support of Stillion et al's (1989) hypothesis that interpersonal losses are more harmful than general losses, Charlton (1995) found that men with general losses, such as loss of employment and single living status, were not at greater risk of suicide when compared to those with interpersonal losses.

Similarly, multiple real losses (death of the spouse, other family members or friends) or 'phantasmatic' ones (relational breakdowns, retirement, transfer to institutions for the elderly) are relatively frequent among the elderly and may lead to isolation by lack of the social skills required for adequate reintegration.

Unresolved grief has been identified in 13 per cent to 44 per cent of cases of attempted suicide, chiefly owing to death of the spouse (Updhyaya et al, 1989; Draper, 1994; Schmid et al, 1994). Only rarely was suicide a consequence of acute grief and occasionally the death of a pet was implicated (Osgood et al, 1991; Draper, 1994). Other losses associated with late-life suicidal behaviour (suicide, attempted suicide and suicidal ideation) are retirement (Sainsbury, 1955), loss of autonomy, such as the threat of living in a nursing home or hostel, and functional disability (Draper, 1994; Loebel et al, 1991; Jorm et al, 1995; Forsell et al, 1997). Comparison of suicide ideators and attempters has, however, shown that the elderly living in nursing homes are far less likely to be attempters but to have high levels of suicidal ideation (Schmid et al, 1994).

## Physical illness

Physical illness has frequently been singled out in the literature as a stressor in suicides (Sainsbury, 1955; Dorpat and Ripley, 1960; Whitlock, 1970; Heikkinen and Lonnqvist, 1995), attempted suicides (Hawton and Fagg, 1988; Stenager and Stenager, 1998;) and suicidal ideation (Skoog et al, 1996; Scocco et al, 2001a) at all ages, but particularly among the elderly.

With regard to suicide, an excess of severe somatic illness among elderly men compared to elderly women suggests gender differences in coping with this age-normative stressor (Heikkinen et al, 1995). Physical health does not, however, appear to account for lower rates of suicide mortality among older women (Canetto, 1995).

Life events in suicide behaviour are age specific and reflect the variation in experiences in the general population. Excluding physical illness, life events were relatively infrequent among elderly victims (Heikkinen et al, 1995). Physically ill subjects, aged 65 and over, who made a suicide attempt, did not achieve significantly different scores on the scales measuring various psychopathological dimensions from those reported by their peers with no physical illness (De Leo et al, 1999). The extent to which physical illness is a risk factor for suicidal behaviour in late life is therefore unclear and the influence of other factors, principally depressive pathologies, may relegate physical illness to the place of a secondary contributing factor. Comorbid depressive and somatic syndromes have in fact been found in most elderly suicidal people, be they characterised by suicide ideation, suicide attempt or suicide (Henriksson et al, 1995; Skoog et al, 1996; De Leo et al, 1999).

In their conclusion to a meta-analysis on mortality data derived from 'well-conducted follow-up studies', Harris and Barraclough (1994) suggested that most physical illnesses presenting an increased risk of suicide were associated with mental disorder, substance abuse or both and that these factors may be a link between medical disorder and suicide.

The weight that subjects attribute to physical pathology in precipitating suicide attempts seems to increase with age and it is perceived as a more important factor by depressed subjects (De Leo et al, 1999). The presence of a physical disorder may therefore assume a different subjective meaning when it affects lifestyle, requires multiple medication (Frierson, 1991) or is accompanied by pain (Pierce, 1987; Draper, 1994).

## **Psychiatric pathology**

Nearly all mental disorders have an increased risk of suicide, except mental retardation and Alzheimer's dementia (Harris and Barraclough, 1994; De Leo, 1996) and the psychiatric diagnoses associated with suicide change with age. Personality disorders or schizophrenia have more frequently been encountered in young suicidal individuals, while mood disorders peak in later life (Dorpat and Ripley, 1960; Rich et al, 1986; Henriksson et al, 1995). A similar variation in age-related distribution in diagnosis has also been observed among those who attempted suicide (Scocco et al, 1999). To our knowledge, however, no studies of this kind have been conducted with regard to suicidal ideation.

The risk of suicide in adult psychopathology closely resembles that of the general population with affective disorders and schizophrenias demonstrating a high risk of suicide. Particularly for adult suicidal behaviour, alcohol abuse is a major risk factor especially when it is a comorbid factor. In an extensive review of adult suicides, Barraclough (1974) found a high incidence of alcoholism, particularly in men. A study by Dorpat and Ripley (1960) evidenced little differences in the quality or quantity of negative life events prior to the suicidal act between alcoholic and non-alcoholic people.

In psychological autopsy studies of elderly suicides, the vast majority of victims suffered from diagnosable mental disorders (Barraclough, 1971; Conwell et al, 1991; Henriksson et al, 1995). Apart from one study relying on diagnoses made in a casualty department (Nowers, 1993), only 0 to 13 per cent of older adults who attempted suicide had no formal diagnosis (Draper, 1996). Elderly subjects reporting suicidal ideation more frequently suffered from psychiatric symptoms or disorders (Jorm et al, 1995; Skoog et al, 1996; Forsell et al, 1997; Rao et al, 1997). Thus, suicidal manifestations in elderly people in good mental health seem to be a very rare event.

## Mood disorders

The psychiatric pathologies of most interest to the field of suicidology are undoubtedly mood disorders. These pathologies seem to play a fundamental role in the elderly suicidal population. From the meta-analysis by Harris and Barraclough (1994), it emerged that the mean suicide risk in subjects affected by Major Depressive Disorder or Dysthymia was respectively 20 and 12 times higher than expected, in relation to the general population. An excess risk persists into old age, during which time the combined suicide risk is 35 times higher than expected (Harris and Barraclough, 1994). The authors do, however, recognise that the population examined in their review comprised treated patients, mainly in a hospital setting and therefore included the more severely ill or those vulnerable in other ways. Other works involving elderly suicides and elderly with suicide ideation or attempts, confirm the findings of the depression follow-up studies analysed by Harris and Barraclough. Most elderly who suicided suffered from major depression: 67 per cent of suicides were aged 50 or over in the study by Conwell and colleagues (1991), 83 per cent in those aged 65 and over in the study by Clark and Clark (1993) and 44 per cent of the over-sixties in the research by Henriksson et al (1995). Even using age as a continuous variable, rather than arbitrarily defining groups, Conwell et al (1996) indicated how mood disorder diagnoses were significantly more common among more elderly suicides.

The 85 year-old age group examined by Skoog et al (1996) expressed some form of suicidal ideation in 6 per cent of patients when a psychiatric pathology was present, but in 47 per cent of those suffering from a depressive disorder.

In the period following an attempted suicide, a mood disorder diagnosis has been formulated for a percentage ranging from 69 per cent (Scoocco et al, 1999) to 80 per cent (Lyness et al, 1992) of subjects aged 60 and over. The majority of elderly suicides, however, died in the midst of their first episode of major unipolar depression, which is typically an illness of mild to moderate severity, uncomplicated as a rule by comorbid substance use or premorbid character pathology. They die with affective disorders that would ordinarily be associated with good response to therapy (Barraclough, 1971; Conwell, 1994).

The predominant role of mood disorders in increasing the risk of a serious suicide attempt suggests that elimination of affective disorders could reduce the incidence of serious suicide attempts by up to 80 per cent, particularly among older adults (60 years and over), where the associations between mood disorder and suicide attempts is stronger (Beautrais et al, 1996).

However, identification of a depressive syndrome in old age may be obscured by the frequent lack of a depressed mood (one of the most recognisable symptoms) in the clinical presentation. It has been reported that 40 per cent to 50 per cent of elderly depressed subjects may not present this characteristic feature (Shulman, 1999). And this may clearly undermine recognition of the disorder, especially at the primary health care level.

## Other correlates

An excess of generalised hostility has been described in suicide attempters, irrespective of age and associated depression (Weissman et al, 1974), which is higher than other psychiatric patients or healthy subjects (Paykel et al, 1974). Hopelessness, anhedonia, antisocial traits and anger are temperamental traits that seem to characterise suicidal subjects (Nordstrom et al, 1995). A higher depression and hostility score on the Brief Symptoms Inventory independently characterised the elderly with or without suicidal ideation (Scoocco et al, 2001b). The possibility, however, that these data can be used for preventive purposes is still quite remote.

## Prevention practices

Suicide, like attempted suicide and suicidal ideation, is a multi-determined behaviour; consequently, its prevention requires a multi-dimensional approach. An approach to suicide prevention requires: prevention (on three levels, including universal, selective and indicated), early intervention and treatment, and supporting those who are bereaved. Prevention activities should be universally directed at whole population or selectively targeted at high-risk groups known to share vulnerability to factors that increase suicide risk. Prevention overlaps with early intervention approaches, which focus on people showing early evidence of suicide risk, that is, where screening or assessment has indicated that there are signs of risk for a particular individual (Commonwealth of Australia, 2000).

Suicidal behaviours may be located along a continuum (suicidal ideation > suicide attempt > suicide), however, the relationship between these behaviours is not linear - not all suicides have a history of attempted suicide. The same applies to suicidal ideation. Older adult suicides are less likely than younger ones to have a history of attempted suicide, despite a previous attempt being a predictive factor for subsequent completed suicide (Hawton and Fagg, 1988; Nordentoft et al, 1993). Elderly subjects are those who make suicide attempts with the highest suicidal intent scores (Pierce, 1977), the act is less impulsive, methods tend to be violent and there is less opportunity for rescue.

The fact that most older adult suicides do not have a history of suicide attempts implies a possibility that they may require different preventative strategies than ones that target our youth. Suicide prevention strategies that focus on elderly who attempt suicide are likely to act on a proportionately smaller population than would be the case with younger age groups. Therefore, preventative interventions should emphasise identification and management of subjects with suicidal ideation.

### Universal and selective prevention

These forms of prevention should act on people who are not manifesting or feeling suicidal tendencies, with a view to decreasing the likelihood that such a tendency will afflict them in the future. Protective factors play a vital role in this level of prevention, although virtually no research has focused on those specifically relevant to geriatrics (De Leo, 1998a).

Concern for children, religion and fear of pain were the most common reasons for not attempting suicide in a sample composed of suicidal and non-suicidal psychiatric patients and from 'street samples' of non-psychiatric subjects (Linehan et al, 1983). These factors, however, have demonstrated limited operational interest, in general, since they are only moderately manipulable.

Of the macro protective factors, variations in older adults' economic status seem to be associated with suicide rates. Farber (1965) suggested that introduction of the Social Security Program has reduced the likelihood of suicide among the elderly by relieving economic distress. Improved income status, including age-specific unemployment and the level of the Social Security benefits, was negatively correlated with suicide rates for elderly white males (Marshall, 1978).

By its very nature, which is generally structural, universal and selective prevention involves large-scale intervention and requires a long time, since it demands changes in society or behavioural models for broad population bands. These considerations may also indirectly attract more attention to aspects such as correct socioeconomic planning for retirement

(confirmed by the fact that unexpected changes in said plans often have devastating effects on the individual), systematic monitoring of physical health (especially with advancing age) and reinforcement of the social support network. Adult populations are likely to benefit from general community prevention strategies, providing their focus is not too specifically on youth or other target groups which exclude adults.

## **Early intervention and treatment**

These kind of actions presuppose that the various factors that influence suicidal behaviour can be identified and treated. Appropriate actions on adult and elderly suicide should require separate and different approaches.

We have seen that suicidal intention in the elderly is more frequently resolute, employs violent methods and is less frequently preceded by attempted suicide. Identifying suicidal ideation in elderly people therefore becomes a fundamental preventive goal.

Spontaneous complaints of suicidal ideation seem to represent an indicator of high but not very specific suicidal risk, nor seem to be the principal determinant in managing emergency psychiatric service users (Hawley et al, 1991). The elderly may not communicate suicidal intention or it may be masked, allusive or in any event underestimated; old people at risk of suicide seem unable to recognise their need or seek out appropriate help (Scott, 1996).

Only a small proportion of callers to agencies such as the Samaritans are elderly and are under represented in the clientele of suicide prevention programs and general mental health facilities (McIntosh et al, 1994). In contrast, old people may be more familiar with suicide-facilitating groups (Lindesay, 1986). The reason for such low use of existing services by the elderly are numerous and range from poor information on their existence, conviction that these services are not meant for the elderly or are costly, to the low credit given by latter-day older adults to all types of agency or institution (McIntosh et al, 1994).

Isolation and poor social support, so common among the elderly, lowers the opportunity for expressing or communicating any suicidal ideation. Therefore, strategies that facilitate communication of feelings and intentions are warranted. Telecommunications, on which most crises services are based, are the most popular form of human contact among the younger generations, but not necessarily among the elderly. One attempt to overcome elderly people's reticence to contact centres involved development of the 'Tele-Help/Tele-Check Service' (De Leo et al, 1995). Tele-Help is a portable device that lets users send alarm signals activating a pre-established network of assistance and help. In Tele-Check, trained staff members at the centre contact each client on an average of twice a week to monitor the client's condition through a short, informal interview and to offer emotional support. The client may also contact the centre at any time for any need. Clients are enrolled in the service on the request of social workers or general practitioners in the local health service, who identify elderly individuals needing additional home help. Eleven years after the introduction of the service to a population of 20 000 elderly people living at home, it continues to be associated with a statistically significant fall in the number of expected deaths by suicide (De Leo et al, submitted).

Motto (1976) and Motto et al (1981, 1991) studied a group of people who attempted suicide who sought no treatment after their attempts and randomly assigned them to groups of contact and no-contact. The contact group was followed up at regular intervals for five years, and demonstrated a significant decrease in suicide rates compared to the no-contact group until 14 years after their attempt where the suicide rates synchronised with the general

population. Morgan et al (1993) provided subjects who attempted suicide with a green card with explicit instructions to contact personnel at their local hospital if they felt suicidal. When compared to the control group the green card subjects had less repeated suicide attempts, which approached statistical significance.

Other existing services that have been adapted in favour of potential elderly users are the 'Centre for Elderly Suicide Prevention and Grief Related Service' and the 'Gatekeepers Program and Elderly Service'. The former consists of a Friendship Line providing 24-hour crisis intervention, as well as referral and information for elderly people who call or for those who call on their behalf, in addition to ongoing home visits and telephone contact with isolated or homebound elderly (McIntosh et al, 1994).

One approach to elderly suicide adopted by the Gatekeepers Program is collaboration with businesses and other organisations whose employees are in frequent contact with older adults, especially isolated ones. These employees are given special training to recognise signs and symptoms associated with a need for help and to refer cases to elderly services (McIntosh et al, 1994).

Educational programs targeted at more narrow populations, such as professionals who encounter the elderly in a whole variety of settings, should consider the importance of:

- altering mistaken myths which develop around suicidal behaviours;
- providing information on risk factors;
- providing training on recognition of signs indicating suicidal intention;
- illustrating locally available resources to contact where necessary; and
- increasing knowledge on the various types of self-destructive behaviour, including the ones that characterise suicidal erosion (McIntosh, 1995; De Leo and Diekstra, 1990).

It has been extensively reported that most suicidal subjects contact their general practitioner in the weeks prior to their death (Barraclough, 1971; De Leo and Diekstra, 1990). Educational programs addressed to general practitioners should therefore cover all the above aspects, with the focus on medical-psychiatric risk factors, ie psychiatric and somatic pathologies.

The ability to recognise the elderly with suicidal ideation is an important step. The next is getting these subjects to contact facilities able to deal with their problems. Since we have seen how the elderly tend to make less use of mental health care providers, one preventive goal might be to encourage use of mental health services by elderly people, considering that such intervention seems to have a positive effect on suicide mortality (De Leo and Diekstra, 1990). Walk (1967), for example, showed a decline in suicide rates among the elderly after the introduction, in 1958, of the community psychiatric service.

Developing awareness of the problem may have various targets: the general population, therefore including the elderly as well as their families, friends, and family doctors. This could be achieved by publicity campaigns which could teach the audience to listen more carefully to signs communicated by older people (suicidal communication, depressive symptoms), be attentive to their behaviour, and active when necessary (Kerkhof et al, 1991). The public should be informed of the existence of facilities or schemes through which to receive further information, support and treatment.

Most patients who share the demographic and clinical characteristics of the high-risk group will in fact not attempt suicide, raising the question as to the practicality of treatment for a large number of 'false positives'. From a clinical point of view, however, the problem of false

positives in this case is irrelevant because these people require treatment in any event and such treatment may prevent some suicides (Murphy, 1971). In fact, 'every communication of suicidal ideation or intent should be regarded as evidence of serious pathology, although not necessarily of suicidal risk. Among seriously suicidal persons, communication is usually by more than one means and to more than one person. It occurs more than once and is frequently of recent onset' (Murphy and Robins, 1994).

## **Supporting the bereaved**

It is imperative to provide support to suicide survivors, that is, partners, family members, relatives, and friends who have suffered a loss by suicide. Individuals affected by the suicide of a relative experience emotional stress requiring special attention, as they too are at high risk for suicide (Dunne et al, 1987). Since each suicide involves at least six survivors (Shneidman, 1969), the extent of the problem is clearly vast.

Higher global distress and higher intensity of symptoms were found on comparison of suicide survivors' responses with existing norms for standardised measure (McIntosh et al, 1994). In addition, many similarities, but also many differences, emerged on direct comparison between survivors of suicide and other causes of death. Widows expressed more guilt and resentment, and close relatives and intimate friends greater anger toward the deceased by suicide than survivors of accidental or natural deaths (Demi, 1984; Vargas et al, 1989). The most important differences in the grief experience of suicide survivors is the associated stigma and its ramifications: feelings of guilt, blame, embarrassment, shame, loneliness and social isolation (Silverman, 1972).

There is a paucity of literature on the reactions to suicide by survivors of elderly suicide, the characteristics that differentiate them from other survivors and particularly younger survivors. Farberow and colleagues (1992) showed how, compared to survivors of natural deaths and non-bereaved controls, suicide survivors received less social support for their grief and depressive feelings.

Survivors of older adult suicides can be divided into two groups:

- adult, child and associated kin (daughters-, brothers- and sisters-in-law, grandchildren, etc.) who often belong to another family unit and are therefore involved in effective social and other relations which might exert a protective effect in working through the grief process or consequences of the latter; and
- spouse, siblings and friends who are often contemporaries and therefore more vulnerable to the consequences and changes resulting from the bereavement: solitude, financial difficulties, life changes, adjustment and adaptation to a new lifestyle.

Supportive intervention provided by tertiary prevention facilities should therefore pay special attention to the elderly, be they survivors of peer suicides or younger individuals (children, grandchildren, etc.), bearing in mind, as stressed above, that older adults rarely take advantage of formal crisis intervention and support facilities.

A particularly important role in identifying needs and organising the feasibility of such intervention could be played by general practitioners, who are often the only contact elderly people actively seek, or at the request of health and social services.

## **Other issues in prevention**

According to Gunnell and Frankel (1994), no single intervention has been demonstrated in a well conducted randomised controlled trial to reduce suicide. Their study demonstrated one of the most significant problems in suicide prevention/intervention - the ability to assess their efficacy. There are two forms of evidence concerning the reduction in completed suicide. Firstly, research based on evaluation of specific interventions and secondly, research into the influence of possibly modifiable factors on suicide (Gunnell and Frankel, 1994). The use of longitudinal studies allows us to implement and evaluate intervention and prevention strategies as well as identifying risk factors that are instrumental in suicidal behaviour. However, the critical limitation of longitudinal studies in suicide research is the huge number of subjects required. Because of the low base rate of suicide, using random control trials to assess efficacy requires the sampling of a population of nearly impossible size in order to achieve statistical validity and reliability. The number of subjects needed is a function of both the expected rate of repetition in the control group and the size of the difference (with the smaller the difference the greater the number of participants needed).

One way of alleviating this limitation is to focus interventions on smaller 'high risk' populations that, although small, represent a demonstrative proportion of all suicides. Longitudinal intervention strategies focusing on high-risk groups need to involve a smaller population that is still extremely large but slightly more manageable. Hawton et al (1998) commented, in their systematic review of treatment efficacy studies on people who repeat a suicide attempt, that the main problem with nearly all trials (N=20) in his study was that they included far too few subjects to have the statistical power to detect clinically meaningful differences in rates of repetition between control and treatment groups.

Although the base rates of suicide makes mounting the statistically valid control group comparison nearly impossible, other innovative longitudinal studies using different evaluation methodologies have demonstrated promising efficacy (Goldney, 1998). Goldney (1998) identified the three studies mentioned above by Motto (1976) and Motto et al (1981, 1991), Morgan et al (1993) and De Leo et al (1995) as being good examples of well evaluated longitudinal studies.



# Role of the World Health Organization and new international cooperative studies

In 1984 the European Member States of the World Health Organization decided to adopt a common health policy to attain the broader WHO aim 'Health for all by the Year 2000', articulated in 38 targets. Considering suicide and attempted suicide as a major cause of mortality and morbidity affecting an increasing number of European countries, they stated as their Target 12:

By the year 2000 there should be a sustained and continuing reduction in the prevalence of mental disorders, an improvement in the quality of life of all people with such disorders, and a reversal of the rising trends in suicide and attempted suicide.

In 1986, in York, the European Office of WHO held a Working Group on Preventive Practices in Suicide and Attempted Suicide. The aim of the meeting was to consider strategies appropriate to achieving Target 12. In that context an international European cooperative study on suicidal behaviour was suggested as the most meaningful and effective way to ameliorate knowledge and increase awareness in the field of suicide prevention.

The investigation, 'WHO/EURO Multicentre Study on Parasuicide', was motivated by the rising trends in suicide and attempted suicide and by the need to obtain more insight from transcultural comparison. In fact, between 1972 and 1984, the median male suicide rate in 24 European countries rose by 42 per cent from 23.4 to 33.2, while corresponding rates among women were 8.9 and 12.1 respectively, with an increase of 36 per cent (Bille-Brahe et al, 1994b). This large cooperative research started in the field on 1 January 1989 and involved, at the beginning, 16 centres from 13 European countries (Berne/Switzerland, Bordeaux/France, Emilia-Romagna/Italy, Guipuzcoa/Spain, Helsinki, Finland; Innsbruck, Austria; Leiden, Netherlands; Odense, Denmark; Oxford, England; Padua, Italy; Pontoise, France; Stockholm, Sweden; Szeged, Hungary; Sor-Trondelag, Norway; Umea, Sweden; and Wuerzburg, Germany).

The study was essentially organised into two parts:

1. monitoring of trends in the epidemiology of attempted suicide, including identification of risk factors (the Monitoring Study); and
2. follow-up studies of attempted suicide populations as a special high-risk group for further suicidal behaviour, with a view to identifying social and personal characteristics predictive of future suicidal behaviour (the Repetition-Prediction Study).

The European Multi-Centre Study on Parasuicide is still going on, and now it comprises 25 centres from the European region including a number of Eastern European countries.

In 1998, the Geneva Headquarters of WHO launched a new project aimed at the international prevention of suicide and suicidal behaviours: the Global Network for Suicide Prevention. This enterprise was initiated in conjunction with experts and government representatives of non-government organizations and of the private sector that had active suicide prevention programs. The terms of references were:

- to advise WHO about policies and strategies for the prevention of suicide;
- to identify countries where suicide prevention strategies could be developed; and
- to monitor and evaluate WHO's efforts to reduce mortality and morbidity respectively associated with suicide and attempted suicide.

The basic activities envisaged in the context of the Global Network were:

1. awareness-raising about the dimension, nature, determinants and possibilities of the prevention of suicide;
2. support and treatment of populations at risk - adolescents, the elderly and people with depression;
3. support to developing and strengthening networks of survivors of suicide (self-help groups);
4. training of workers in primary health care and other sectors (eg social workers, police, media, etc); and
5. reduction of availability of means of suicide (Bertolote, 1999).

The Global Network initiative intended to provide an answer to the increasing rate of suicide throughout the world (as demonstrated by Figure 2 previously mentioned). The Global Network also provided the grounds for a larger Cabinet initiative, again from WHO in Geneva, called SUPRE (SUicide PREvention). This represents a further step ahead in the WHO involvement in the fight against suicide, being classified for the first time in the history of the United Nations as an absolute priority, together with malaria and tobacco consumption. This new large project involves several meetings in five of the six regions of WHO, with the participation of representatives from governments chosen on the basis of their country's high suicide mortality rate. Table 10 reports the location and the countries attending these meetings.

**Table 10: SUPRE-WHO Workshops on Suicide Prevention - 1999-2000**

Region	Countries	Place	Date
AFRO	Mauritius, Seychelles, South Africa, Zimbabwe	Port Louis	13-15 Oct 1999
AMRO	Cuba, El Salvador, Uruguay, Guyanay, Suriname, Trinidad and Tobago	Montevideo	28-30 March 2000
		Port of Spain	25-27 Oct 1999
	Canada, USA	Kingston, Ont.	28-30 Oct 1999
EURO	Estonia, Finland, Latvia, Lithuania, Russian Federation	Tallin	25-27 Aug 1999
SEARO	India, Indonesia, Sri Lanka, Thailand	Colombo	6-8 Sep 1999
WPRO	Australia, Fiji, Japan, Marshall Islands, New Zealand, Samoa	Brisbane	30 Sep-2 Oct 1999
		China	Beijing

In the context of the new SUPRE initiative is the Five Continents Study, officially acknowledged as SUPRE-MISS (Suicide Prevention-Multi-site Intervention Study on Suicide) which represents a new cooperative action aimed to stimulate better intervention with subjects at risk or suicide attempters. It involves economy-in-transition countries such as Cuba, Estonia, Sri Lanka and representatives of established market economies such as

Australia, Sweden, France, Switzerland and the United States. This initiative has been promoted by the International Academy of Suicide Research and has more recently been endorsed by the International Association for Suicide Prevention.

The centres involved (a larger number of countries are expected to join the study at a later stage) will participate in at least the intervention component of the study. The intervention studies will organise subjects into randomised groups of different treatments and is aimed to stimulate deeper attention and more intense and effective care for suicidal subjects around the world. A second aspect of the study includes a monitoring and longitudinal evaluation of suicide attempters and ideators (with an updated and ameliorated version of the instruments used in the European Study).

A community survey will be performed on the same catchment area in which the monitoring is conducted and a biological investigation will be undertaken based on the study of the DNA of attempters, ideators, people who have died by suicide and normal matched controls (samples obtained from blood donors bank).

In addition, the International Psychogeriatric Association is officially launching an international cooperative project in cooperation with WHO aimed to prevent suicidal behaviour in the elderly. This enterprise, which is in its very early stages of organisation, is called 'Initiative on Suicide', and is coordinated by Professor Eric Caine, Rochester, United States of America.



## References

- Barraclough B.M. 1971, 'Suicide in the elderly', in D.W.K. Kay and A. Walk (eds), *Recent Developments in Psychogeriatrics*, Headley Bros, Ashford, Kent.
- Barraclough B, Bunch J, Nelson B, Sainsbury P. 1974, A hundred cases of suicide: clinical aspects, *British Journal of Psychiatry*, 125: 355-373.
- Beautrais A.L., Joyce P.R., Mulder R.T., Fergusson D.M., Deavoll B.J. and Nightingale S.K. 1996, 'Prevalence and comorbidity of mental disorders in persons making serious attempts: a case-control study', *American Journal of Psychiatry*, 153: 1009-14.
- Bertolote J.M. 1999, *Working documents prepared for the meeting WHO/Lundbeck on prevention of suicide*, Paris 28-29 January.
- Bille-Brahe U., Jensen B. and Jessen G. 1994a, 'Suicide among the Danish elderly: Now and in years to come', *Crisis*, 15:37-43.
- Bille-Brahe U., Schmidtke, A., Kerkhof, A.J.F.M., De Leo, D., Lönnqvist, J. and Platt, S. 1994b, 'Background and introduction to the study', in A.J.F.M. Kerkhof, A. Schmidtke, U. Bille-Brahe, D. De Leo and J. Lönnqvist (eds), *Attempted Suicide in Europe*, DSWO Press, Leiden.
- Canetto, S.S. 1995, 'Elderly women and suicidal behaviour', in S.S. Canetto and D. Lester (eds), *Women and Suicidal Behaviour*, Springer Publishing Company, New York.
- Cantor, C.H., Leenaars, A.A., Lester, D., Slater, P.J., Wolanowski, A.M. and O'Toole, B. 1996, 'Suicide trends in eight predominantly English-speaking countries 1960-89', *Social Psychiatry and Psychiatric Epidemiology*, 31: 364-73.
- Cantor C.H., Neulinger K. and De Leo D. 1999a, 'Australian suicide trends 1964-97: Youth and beyond?', *Medical Journal of Australia*, 171: 137-41.
- Cantor, C.H., Neulinger, K., Roth, J. and Spinks, D. 1999b, *The Epidemiology of Suicide and Attempted Suicide Among Young Australians*, Australian Institute for Suicide Research and Prevention.
- CDC - Centers for Disease Control 1991, 'Attempted suicide among high school students - United States, 1991, leads from the morbidity and mortality weekly report', *Journal of the American Medical Association*, 266: 14, 911.
- Charlton, J. 1995, 'Trends and patterns in suicide in England and Wales', *International Journal of Epidemiology*, 24:45-52.
- Clark, D.C. 1993, 'Narcissistic crisis of aging and suicidal despair', *Suicide and Life Threatening Behaviour*, 23:21-6.
- Clark, D.C. and Clark, S.H. 1993, 'Suicide among the elderly', in K. Bohme, R. Freytag, K. Watchter and H. Wedler (eds), *Suicidal behaviour: The state of the art*, Proceedings of the XVI Congress of the International Association for Suicide Prevention (11-164), S. Roderer Verlag, Regensburg.
- Commonwealth of Australia. 2000. *LIFE - Living is for everyone. A framework for prevention of suicide and self-harm in Australia- Areas for action*. Commonwealth Department of Health and Aged Care, Canberra.
- Conwell, Y. 1992, 'Suicide in the elderly', *Crisis*, 13:6-8.

- Conwell, Y. 1994, 'Suicide in elderly patients', in L.S. Schneider, C.F. Reynolds, B.D. Lebowitz and A.J. Friedhoff (eds) *Diagnosis and Treatment of Depression in Late Life*, American Psychiatric Press, Washington DC, 397-418.
- Conwell, Y., Duberstein, P.R., Cox, C. et al 1996, 'Relationships of age and axis I diagnosis in victims of completed suicide: A psychological autopsy study', *American Journal of Psychiatry*, 153:1001-8.
- Conwell, Y., Olsen, K., Caine, E.D. and Flannery, C. 1991, 'Suicide in later life: Psychological autopsy findings', *International Psychogeriatrics*, 3:59-66.
- Conwell, Y., Rotenberg, M. and Caine, E.D. 1990, 'Completed suicide at age 50 and over', *Journal of American Geriatrics Society*, 38:640-44.
- De Leo D. 1996, 'Dementia, insight and suicidal behaviour', *Crisis*, 17:147-48.
- De Leo D. 1998a, 'Is suicide prediction in old age really easier?', *Crisis*, 19:60-1.
- De Leo D. 1998b, 'Reasons for living and the paradox of suicide in old age', *Crisis*, 19: 147-151.
- De Leo D. 1999, 'Cultural issues in suicide and old age', *Crisis*, 20:53-5.
- De Leo D. and Diekstra R.F.W. 1990, *Depression and suicide in late life*, Hogrefe & Huber Publishers, Toronto.
- De Leo D., Carollo G. and Dello Buono M. 1995, 'Lower suicide rates associated with a Tele-Help/Tele-Check service for the elderly at home', *American Journal of Psychiatry*, 152: 632-34.
- De Leo D., Dello Buono M., Harnett P. (submitted for publication), 'Prevention of suicide in the elderly: Eleven-year experience with TeleHelp/TeleCheck'.
- De Leo D., Padoani W., Scocco P., et al 2001, 'Attempted and completed suicide in older subjects: Results from the WHO/EURO Multicentre Study of Suicidal Behaviour', *International Journal of Geriatric Psychiatry*, 16: 300-10.
- De Leo D., Scocco P., & Marietta P., et al 1999. 'Physical illness and parasuicide: Evidence from the European Parasuicide Study Interview Schedule', *International Journal of Psychiatry in Medicine*, 29: 149-163
- Demi, A.S. 1984, 'Social adjustment of widows after sudden death: Suicide and non-suicide survivors compared', *Death Education*, 8:91-111.
- Diekstra R.F.W. 1994, 'Epidemiology of suicide: Aspects of definition, classification and preventive policies', in A.D.J.F. Kerkhof et al (eds) *Suicidal Behavior in Europe*, DSWO Press, Leiden.
- Diekstra R.F.W. and Gulbinat W 1993, 'The epidemiology of suicidal Behaviour: A review of three continents', *WHO Statistical Quarterly*, 46:52-68.
- Diekstra, R.F.W. and Van De Loo, K.J.M. 1978, 'Attitudes towards suicide and incidence of suicidal behaviour in a general population', in H.Z. Winnick and L. Miller (eds) *Aspects of Suicide in Modern Civilisation*, Jerusalem Academic Press, Jerusalem.
- Dorpat, T. and Ripley, H. 1960, 'A study of suicide in the Seattle area', *Comprehensive Psychiatry*, 1:349-59.
- Draper, B. 1996, 'Attempted suicide in old age', *International Journal of Geriatric Psychiatry*, 11:577-87.

- Draper, B. 1994, 'Suicidal behaviour in the elderly', *International Journal of Geriatric Psychiatry*, 8:655-61.
- Durkheim, E. 1897, *Le Suicide*, Alcan, Paris.
- Dunne E.J., McIntosh J.L. and Dunne-Maxim K. 1987, *Suicide and its Aftermath: Understanding and Counseling the Survivors*, Norton, New York.
- Farber M.L. 1965, 'Suicide and Welfare State', *Mental Hygiene*, 49: 371-73.
- Farberow, N.L., Gallagher-Thompson, D., Gilewski, M. and Thompson, L. 1992, 'Changes in grief and mental health of bereaved spouses of older suicides', *Journal of Gerontology*, 47:357-66.
- Frierson, R.L. 1991, 'Suicide attempts by the old and the very old', *Archives of Internal Medicine*, 151:141-44.
- Forsell Y., Jorm A.F. and Winblad B. 1997, 'Suicidal thoughts and associated factors in an elderly population', *Acta Psychiatrica Scandinavica*, 95: 108-11.
- Gibbs, J. and Martin, W. 1964, *Status integration and suicide*, University of Oregon Press, Eugene.
- Goldney, R.D. 1998, 'Suicide Prevention is possible: A review of recent studies', *Archives of Suicide Research*, 4, 329-39.
- Goldney, R.D. and Harrison, J. 1998, Suicide in the elderly: Some good news, *Australasian Journal on Ageing*, 17: 54-55.
- Gulbinat W. 1995, 'The epidemiology of suicide in old age', in R.F.W. Diekstra, W. Gulbinat, I. Kienhorts and D. De Leo (eds), *Preventive Strategies on Suicide*, Co-publication WHO-Geneva/E J Brill, Leiden-New York-Koln.
- Gunnell, D. and Frankel, S. 1994, 'Prevention of suicide: aspirations and evidence', *British Medical Journal*, 308: 1227-33.
- Harris, E.C. and Barraclough, B.M. 1994, 'Suicide as an outcome for medical disorders', *Medicine*, 73:281-98.
- Hawton, K., Arensman, E. and Townsend, E. et al 1998, 'Deliberate self harm: Systematic review of efficacy of psychosocial and pharmacological treatments in preventing repetition', *British Medical Journal*, 317: 441-47.
- Hawton, K. and Fagg, J. 1988, 'Suicide and other causes of death following attempted suicide', *British Journal of Psychiatry*, 152: 359-66.
- Hawley, C.J., James D.V., Birkett P.L. et al 1991, 'Suicidal ideation as a presenting complaint: associated diagnosed and characteristics in a casualty population', *British Journal of Psychiatry*, 159: 232-38.
- Heikkinen M.E., Isometsa E.T., Aro H.M. et al 1995, 'Age-related variation in recent life events preceding suicide', *Journal of Nervous and Mental Disease* 183:325-31.
- Heikkinen, M.E. and Lonnqvist, J.K. 1995, 'Recent life events in elderly suicide: A nationwide study in Finland', *International Psychogeriatrics*, 7:275-86.
- Henriksson, M.M., Marttunen M.J., Isometsa, E.T. et al 1995, 'Mental disorders in elderly suicide', *International Psychogeriatrics*, 7:275-86.
- Jorm A.F., Henderson A.S., Scott R., et al 1995, 'Factors associated with the wish to die in elderly people', *Age and Ageing*, 24:389-92.

- Kerkhof, A.J.F.M., Schmidtke, A., Bille-Brahe, U., De Leo, D. and Lonnqvist, J. 1994, *Attempted Suicide in Europe. Findings From the Multicentre Study on Parasuicide by the WHO Regional Office for Europe*, DSWO Press, Leiden.
- Kerkhof, A.J.F.M., Visser, A., Diekstra, R.F.W. and Hirschhorn, P.M. 1991, 'The prevention of suicide among older people in the Netherlands: intervention in community mental health care', *Crisis*, 12: 59-72.
- Keys Young 1997, *Research and Consultation Among Young People on Mental Health Issues. Final Report*, Commonwealth Department of Health and Family Services, Canberra.
- Lindesay, J. 1986, 'Suicide and attempted suicide in old age', in E. Murphy (ed.), *Affective Disorders in the Elderly*, Churchill Livingstone.
- Linehan M.M., Goodstein J.L., Nielsen S.L., et al 1983, Reasons for staying alive when you are thinking of killing yourself: The Reasons for Living Inventory, *Journal of Consulting and Clinical Psychology*, 51: 276-286.
- Loebel, J.P., Loebel, J.S., Dager, S.R. et al 1991, 'Anticipation of nursing home placement may be a precipitant of suicide among the elderly', *Journal of the American Geriatric Society*, 39:407-8.
- Lyness, J.M., Conwell, Y. and Nelson, J.C. 1992, 'Suicide attempts in elderly psychiatric inpatients', *Journal of the American Geriatrics Society*, 40: 320-24.
- Makinen, I.H. and Wasserman, D. 1997, 'Suicide prevention and cultural resistance: stability in European countries' suicide ranking, 1970-88', *Italian Journal of Suicidology*, 7: 73-85.
- Mariotto, A., De Leo, D., Dello Buono, M., et al 1999, 'Will elderly patients stand aside for younger patients in the queue for cardiac services?', *Lancet*, 354:467-70.
- Marshall, J.R. 1978, 'Changes in aged white male suicide', *Journal of Gerontology*, 33:763-68.
- McIntosh J.L. 1992, 'Suicide of the elderly', in B. Bongar (ed.), *Suicide: Guidelines for Assessment, Management and Treatment*, Oxford University Press, New York.
- McIntosh, J.L., Santos J.F., Hubbard R.W. and Overholser J.C. 1994, 'Elder suicide research, theory and treatment', American Psychological Association, Washington, DC.
- McIntosh, J.L. 1995, 'Suicide prevention in the elderly (age 65-99)', *Suicide Life Threatening Behaviour*, 25:180-92.
- Merrill, J. and Owens, J. 1990, 'Age and attempted suicide', *Acta Psychiatrica Scandinavia*, 82:385-88.
- Morgan, H.G., Jones, E.M. and Owen, J.H. 1993, 'Secondary prevention of non-fatal deliberate self harm', *British Journal of Psychiatry*, 163:111-12.
- Motto, J. 1976, 'Suicide prevention for high-risk persons who refuse treatment', *Suicide and Life Threatening Behaviour*, 6:223-30.
- Motto, J. and Boston, A.G. 1991, *Post-crisis suicide without therapy*, paper presented at the International Association for Suicide Prevention Conference, Hamburg.
- Motto, J., Heilbron, D., Juster, R. and Bostrom, A. 1981, 'Communication as a suicide prevention programme', in J.P. Soubrier and J. Vedrinne (eds) *Depression et suicide* Pergamon Press, Paris (pp. 148-54).
- Murphy, G.E. 1971, 'Clinical identification of suicidal risk', *Archives of General Psychiatry*, 27:356-59.

- Murphy, G.E. and Robins, E. 1994, 'The communication of suicidal ideas', in H.L.P. Resnik (ed.) *Suicidal Behaviours, diagnosis and management*, Jason Aronson Inc, New Jersey.
- Murray C.J.L. and Lopez A.D. 1996, *Global Burden of Disease and Injury Series*, Vol. 1, Harvard University Press, Boston.
- Nordentoft, M., Breum, L., Munc, LK. et al 1993, 'High mortality by natural and unnatural causes: a ten-year follow-up study of patients admitted to a poisoning treatment centre after suicide attempts', *British Medical Journal*, 306:1637-40.
- Nordstrom, P., Asberg M., Aberg-Wistedt A., Nordin C 1995, 'Attempted suicide predicts suicide in mood disorders', *Acta Psychiatrica Scandinavia*, 92:345-50.
- Nowers, M. 1993, 'Deliberate self-harm in the elderly: A survey of one London borough', *International Journal of Geriatric Psychiatry*, 8:609-14.
- Osgood, N.J., Brant, B.A. and Lipman, A. 1991, *Suicide Among the Elderly in Long-Term Care Facilities*, Greenwood Press, New York.
- Patton, G.C., Harris, R., Carlin, J.B., Hibbert, M.E., Coffey, C., Schwartz, M. and Bowes, G. 1997, 'Adolescent suicidal behaviours: A population-based study of risk', *Psychological Medicine*, 27:715-24.
- Paykel, E.S., Myers, J.K., Lindenthal, J.J. and Tanner, B. 1974, 'Suicidal feelings in the general population: A prevalence study' *British Journal of Psychiatry*, 124:460-69.
- Pierce, D.W. 1977, 'Suicidal intent in self-injury', *British Journal of Psychiatry*, 130:377-85.
- Pierce, D.W. 1987, 'Deliberate self-harm in the elderly', *International Journal of Geriatric Psychiatry*, 2:105-10.
- Rao, R., Dening, T., Brayne, C. and Huppert, F.A. 1997, 'Suicidal thinking in community residents over eighty' *International Journal of Geriatric Psychiatry*, 12:337-43.
- Rich, C.L., Young, D. and Fowler, R.C. 1986, 'San Diego Suicide Study', *Archives of General Psychiatry*, 43:577-82.
- Sainsbury, P. 1955, *Suicide in London*, Maudsley Monographs N1, Chapman Hill, London.
- Sartorius, N. 1996, 'Recent changes in suicide rates in selected Eastern European and other European countries', in J.L. Pearson and Y. Conwell (eds) *Suicide and Aging*, Springer, New York.
- Sayer, G., Stewart, G. and Chipps, J. 1996, 'Suicide attempts in NSW: Associated mortality and morbidity', *Public Health Bulletin*, 7:55-63.
- Schmid, H., Manjee, K. and Shah, T. 1994, 'On the distinction of suicide ideation versus attempt in elderly psychiatric inpatients', *Gerontologist*, 34:332-39.
- Schweitzer, R., Klayich, M. and McLean, J. 1995, 'Suicidal ideation and behaviours among university students in Australia', *Australian and New Zealand Journal of Psychiatry*, 29:473-79.
- Scocco P., De Leo D., Marietta P., et al. 1999, 'Mood disorders and parasuicide', *Italian Journal of Psychiatry and Behavioural Sciences*, 7: 43-49.
- Scocco P., Meneghel G., Caon, F., Dello Buono M., De Leo D. 2001a. 'Death ideation and its correlated: Survey of an over-65-year-old population', *Journal of Nervous and Mental Disease*, 189: 210-8.

- Scocco P., Meneghel G., Dello Buono M., Urciuoli O., De Leo D. 2001b. 'Hostility as a feature of elderly suicidal ideators', *Psychological Reports*, 88: 863-8.
- Scott, V. 1996, 'Reaching the suicidal: the volunteer's role in preventing suicide', *Crisis*, 17:102-4.
- Shneidman, E.S. 1969, 'Prologue: fifty-eight years', in E.S. Shneidman (ed.) *On the nature of suicide*, Jossey-Bass, San Francisco.
- Shulman, K. 1999, 'Depression in old age', *Biannual Congress of the International Psychogeriatric Association*, pre-conference lecture, 14 August, Vancouver.
- Silverman, P. 1972, 'Intervention with the widow of a suicide', in A. Cain (ed.) *Survivors of Suicide*, Charles C Thomas, Springfield Illinois.
- Skoog, I., Aevansson, O., Beskow, J. et al. 1996, 'Suicidal feelings in a population sample of nondemented 85-years-olds', *American Journal of Psychiatry*, 153:1015-20.
- Slater, J. and Depue, R. 1981, 'The contribution of environmental events and social support to serious suicide attempts in primary depressive disorder', *Journal of Abnormal Psychology*, 40:275-85.
- Smith, J., Mercy, J. and Conn, J. 1988, 'Marital status and the risk of suicide', *American Journal of Public Health*, 78:78-80.
- Stenager, E.N. and Stenager, E. 1998, *Disease, pain, and suicidal behaviour*, Hamworth Medical Press, New York, London.
- Stillion, J., McDowell, E. and May, J. 1989, *Suicide Across the Lifespan: Premature Exits*, Hemisphere Publishing Corporation, New York.
- Trabucchi M. 1994, 'L'invecchiamento, tra demografia e democrazia' [Ageing, between demography and democracy], in D. De Leo and A. Stella, *Manuale di Psichiatria dell'Anziano [Handbook of Psychiatry in Old Age]*, Piccin, Padova.
- Upadhyaya, A.K., Warburton, H. and Jenkins, J.C. 1989, 'Psychiatric correlates of non-fatal deliberate self-harm in the elderly: A pilot study', *Journal of Clinical Experimental Gerontology*, 11:131-43.
- Vargas, L.A., Loya, F. and Hodde-Vargas, J. 1989, 'Exploring the multidimensional aspects of grief reactions', *American Journal of Psychiatry*, 146:1484-1488.
- Walk, D. 1967, 'Suicide and community care', *British Journal of Psychiatry*, 113:1381-91.
- Watanabe, N., Hasegawa, K. and Yoshinaga, Y. 1995, 'Suicide in later life in Japan: urban and rural differences', *International Psychogeriatrics*, 7:253-61.
- Weeks, D.J. 1994, 'A review of loneliness concepts, with particular reference to old age', *International Journal of Geriatric Psychiatry*, 9:345-55.
- Weissman, M.M. 1974, 'The epidemiology of suicide attempts', *Archives of General Psychiatry*, 30:737-46.
- Whitlock, F.A. 1970, 'Migration and suicide', *Medical Journal of Australia*, 2:840-48.
- World Health Organization 1998, *World Health Report*, WHO Press, Geneva.
- World Health Organisation 1999, *Figures and Facts about Suicide*, Technical Report, Department of Mental Health, World Health Organisation, Geneva.