

AN APPROACH TO RURAL SUICIDE

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Abstract

Suicide rates have been relatively constant in Australia for over a hundred years, albeit peaking in 1997 and since returning towards historically average levels. Suicide now represents the commonest cause of violent deaths and exceeds deaths from motor vehicle accidents and armed conflict. There have been a number of national programs following the lead of Finland in the 1980s. Modern research has clearly demonstrated many of the risk factors, but they lack specificity in terms of prediction, and therefore the numbers needed to demonstrate the effectiveness of any intervention are particularly daunting. This makes research problematic and it is probably impossible to ever get Level 1 evidence because of the large numbers and expense required. Therefore many research studies are either epidemiologically oriented or directed to crisis care and treatment algorithms.

Rural suicide presents particular challenges because of the increasing numbers of young and elderly men who take their lives, the lack of services available locally and the paucity of research in rural societies, with it usually being confined to examining risk factors and comparing them with urban populations.

This thesis describes an approach to rural suicide which, whilst cognisant of the broad range of risk factors, was more directed to tackling poor mental health on a community

basis, utilising local resources. It used four main approaches: educating the community to enhance mental health literacy by appreciating the causes of poor mental health; building the social capital or community capacity of existing resources; emphasising early identification and intervention of problems; and the establishment of a community child and adolescent program based in the local school, but with close liaison with the local medical practitioners.

The educative approach to mental health literacy was to engage the whole community as widely as possible with special programs for general practitioners, nurses, and teachers; community capacity and social capital were increased by teaching the community warning signs, techniques to engage and refer to known entry points into the system; early identification was undertaken by screening for poor mental health within the doctors' office, the hospital and the school; and a child and adolescent program was devised to detect dysfunctional students, formulate an assessment and management plan, and then evaluate the outcome.

The most important results were a statistically significant reduction of suicides from twelve in ten years to one in the following decade, as well as a statistically significant reduction in the number of suicide attempts. In addition there was the establishment of a primary mental health service within the community which was independent of specific government finance and resources.

Declarations

This work contains no material which has been accepted for the award of any other degree or diploma in any University or other tertiary institution and, to the best of my knowledge and belief it contains no material previously published written by another person, except where due reference has been made in the text

I give consent to this copy of my thesis, when deposited in the University library, being made available in all forms of media, now or hereafter known.

Signed:

THE AIM

The fundamental aim of this thesis was to determine whether suicidal behaviour in the Tumby Bay district could be reduced by enhancing and utilising community resources.

CHAPTER 1 INTRODUCTION

1. A. International Suicide

Suicide is an international phenomenon and in the western world has been reasonably stable over the last 100 years. An increase in suicide rates from the 1950s of 10.1 to 16 per 100,000 in 1995 needs to be treated with caution, as far more countries are reporting in 1995, particularly following the dissolution of the Soviet Republic.

The World Health Organisation predicted that over a million people would die annually from suicide in the twenty-first century (Bertolote, 1999). This represents more people dying from suicide than from armed conflicts around the world, and in many countries suicide deaths exceed deaths from road traffic accidents. In the fifteen to thirty-five year age group it is one of the three leading cause of deaths.

Generally there is a higher male to female ratio of about 3.5: 1, except in China where the male to female ratio is 1:2.8 (Zhao et al., 2002). In the past (until 1950s) suicide was more of a problem with elderly men, but by 1995 57% of suicides globally were people 15-44 years of age (Bertolote, 1999). National suicide prevention programs

emerged in the 1980s with Finland commencing in 1986, and other countries followed as shown below.

Table 1.1
National Suicide Programs

1986	Finland
1993	Sweden
1994	Norway
1995 & 1998	Australia (Nation Youth Suicide Prevention Strategy 1995 -1999 , National Suicide Prevention Strategy (LIFE) from 2000
1998	New Zealand
1999	United States of America
2002	England

However, initially they appeared have had little impact on the suicide rates (Adelman et al., 1997) but recently there has been a general decrease (Goldney, 2005).

1. B. Australian Suicide

Australian suicide rates have been kept for over 100 years and have shown a relatively constant rate of between 11-13 per 100,000, with a peak of 14.7 per 100,000 in 1997 (Laukkanen et al., 2002), following which there has been a slow decrease. Prior to this there had been two large fluctuations, with a marked increase in suicides at the time of the great depression during the 1930s, and a decrease during the war years of 1939 to 1945 (Aaraas et al., 2000).

The relative overall constancy has obscured the fact that there have been marked changes within different age groups. Thus the rates for older persons have decreased and younger persons have increased, particularly for young males, as indicated in the table below.

Table 1.2
Male suicide rates/100,000 for age and time

	Period 1921-1925	1996-1998
Aged 15-24	8.6	27.7
Aged 65-74	48.2	22.6
Aged 75+	47.8	31.13

The suicide rate of males is about four times that of females and this may reflect males' predilection for more lethal means, as the rate of female attempted suicide is significantly higher than male attempted suicide (Harrison et al., 1997).

Death by suicide is uncommon, accounting for only 1.6% of deaths in 2004, representing 2098 deaths. However, for persons aged 15 to 34, suicides are responsible for over 20% of male deaths and 10% of female deaths. Although deaths due to motor vehicles accidents and other injuries have significantly declined over the last thirty years, deaths due to suicide have increased. The methods of suicides have changed, with the use of firearms decreasing, whereas deaths from hanging have increased (National Injury Surveillance Unit, 2000; Australian Bureau of Statistics, 2004).

Table 1.3
Suicides by method 1994 and 2004

	1994	2004
Hanging	639	998
Firearms	420	169
Gases	497	402
Drugs	330	229

National Mental Health Programs began in Australia in 1995-1999 with a National Youth Suicide Prevention Strategy (Australian Institute of Family Studies, 2006). In 2000 Australia widened this to a National Suicide Prevention Strategy for all age groups (LIFE) which was administered by the Australian Government Department of Health and Ageing (Australian Government, 2006). Notwithstanding the focus on mental health by the Federal Government in the early 1990s, there was little government support for suicide prevention or even the provision of mental health services in rural areas such as Tumby Bay from either the State or Federal Governments. The following represents the evolution of major federal government position statements, and programs for mental health which comprised the National Mental Health Strategy:

- *Mental Health Statement of Rights and Responsibilities (1991).*
- *National Mental Health Policy (1992).*
- *National Youth Suicide Prevention Plan (1995-1999).*
- *National Mental Health Policy (1998).*
- *National Suicide Prevention Strategy (2000).*

Although significant resources were expended in the roll out of these plans, policies and strategies, little of this trickled past urban areas, although they did accurately identify some of the problems in rural areas, namely the lack of resources, the high suicide rates and increased mental health morbidity.

1.C. Rural Suicide

Not only are there variable suicide rates between nations, but there are variations within individual countries indicating cultural and environmental contributions to suicide. In most Western Countries the male suicide rate tends to be higher in rural and remote areas. Conversely however, looking at the most populated nation China, suicide is greater in women, particularly in rural areas (Jianlin, 2000; Zhao et al., 1994). In Spain the rural/urban divide is reversed, where suicide rates are greater in urban areas than rural areas (Gutierrez Garcia, 1998). In Greece where suicide patterns are low, 5.86 per 100,000 for males and 1.89 per 100,000 for females, the high rural male suicide is the norm and increases with age, whereas in other Western Nations suicide is predominately in young or very old rural men.

Looking specifically at Australia, there again is variation between the states. For example, in Queensland no statistical difference in suicide rates between urban and rural males rates was found by Cantor and Coory (1993). However there was a significant increase in suicide rates of young men in towns less than 4000 compared to those in more urban areas in New South Wales (Dudley et al., 1992).

Overall the Australian national suicide rates for young men and elderly men show a significant difference between rural and urban rates, with rates being higher in rural areas (Morrell et al., 1999). In spite of this variation in suicide rates with locality, the work of Judd et al. (2002) failed to demonstrate significant differences in mental health status between rural and urban populations, although they did find a slighter higher risk of anxiety problems which was not statistically significant. Caldwell et al. (2004)

examined mental health problems and suicide variation between urban, rural and remote areas and, although suicide was greater in young men aged 20-29 in the remote areas and in women aged 30-34, they found only a small proportion of men in rural area accessed mental health support or treatment. Caldwell et al. (2004) also reviewed suicide statistics between 1997 and 2000 and found remote young men had a suicide rate of 51.7 per 100,000, compared to rural (populations greater than 10,000) 44.7 per 100,000 and metropolitan males 31.8 per 100,000.

1. D. Tumby Bay Suicide

Tumby Bay is a small remote rural seaside centre in a district of 2700 square kilometers, 600km by road from Adelaide with a population of 3000 people (See Appendices 1&2). Its economy is reliant on primary industry and to a lesser extent retirement. There were few dedicated psychiatric services available to that community. Each month a psychiatrist visited Pt Lincoln, 50Km away, and from 1995 for several years there was a resident psychiatrist. A psychologist also visited Pt Lincoln on a monthly basis, but at a cost for the patients. Psychiatric services were available in the state capital, Adelaide, a six and half hour drive by car, a ten-hour bus journey, or an hour's plane flight at prohibitive cost. Thus Tumby Bay was geographically and financially isolated from most forms of dedicated psychiatric service, except that provided by the three general medical practitioners serving the community.

At the commencement of this study in 1995 there had been ten suicides in the previous decade. Details of these deaths are provided in Table 1.4 and vignettes of victims are provided in appendix 3. It can be seen that the male: female ratio reflected the national

data. There were more deaths by firearms, no doubt related to the almost universal availability of firearms in the Tumby Bay region.

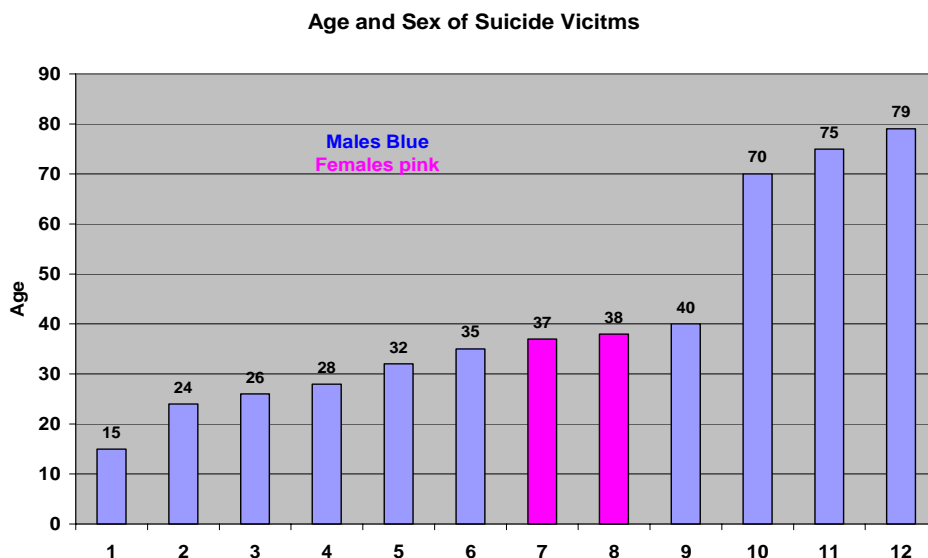
Table 1.4

Suicides by date and sex

No	Date	Age	Sex	Mode	Reason
1	Jul-86	15	M	Hanging	Depression
2	Feb-87	79	M	Hanging	Depression
3	Apr-87	32	M	Firearm	Schizophrenia
4	Jun-89	70	M	Firearm	Bipolar
5	Aug-89	26	M	Firearm	Schizophrenia
6	Apr-88	35	M	Overdose	Situation crisis/depression
7	Nov-90	38	F	Overdose	Personality Disorder
8	Oct-92	37	F	Gas	Situation crisis/depression
9	Apr-93	40	M	Gas	Depression
10	Jun-94	28	M	Firearm	Schizophrenia
11	Jul-94	75	M	Firearm	Depression
12	Sep-95	24	M	Hanging	Depression

The age distribution of local suicide was comparable with national figures, showing that suicide was a problem of young or elderly men as indicated in the graph below:-

Figure 1.1



Only five had sought treatment for any emotional distress prior to their death. Two of this group suffered schizophrenia and they were non-compliant with medication and consultations. Notwithstanding the difficulties of establishing a retrospective diagnosis by psychological autopsy (Shah and De, 1998), eight of the twelve were considered to have significant depressive conditions, a finding consistent with the literature (Lonnqvist, 2000). Other diagnoses included schizophrenia, personality disorder, and situational crisis.

The impact

Each suicide is a devastating event that promotes a sense of utter despair and helplessness for those associated with the event. There is the perception that grief as a result of suicide in small rural towns is more overwhelming than other forms of death, although research with its limitations has so far failed to confirm this, with there being more similarity than differences (Clark and Goldney, 2000). However, it has been reported that recovery may be slower in the first two years after suicide (Farberow et al.

1992) and that was certainly the Tumbby Bay experience following the suicide of a young person.

There were two suicides in particular that caused an overwhelming sense of community distress. The first was that of a fifteen-year-old male in 1986. It was an event the community could not understand and did not want repeated. The second was the death of a popular school teacher in 1993, which galvanised a more intensive approach. It appeared that a contributing factor to his death was a number of dysfunctional students for whom no services were available, thus increasing levels of stress in the classroom. An approach to government departments for services, educational material, direction or support was met with only a limited response, with a counselor being sent to the school from government sources for one day following the death of the teacher, for support for other staff members or students who thought they may need counseling.

The consequences of the teacher's suicide were particularly devastating. He had made a large community contribution in the town and this exacerbated the sense of loss. The number of people emotionally traumatized was large and the only counseling resource was the three local general medical practitioners. However, the teacher's wife was a receptionist at the general medical practitioners' rooms. Furthermore, the teacher's family had had a close friendship with two of the general medical practitioners, who were themselves traumatized by the event, because of their perception of missing the warning signs and their failure to resuscitate the teacher.

The situation was particularly challenging for the medical practice, as attempts to gain government mental health services to Tumbby Bay had been unsuccessful and national

suicide strategies had yet to be introduced. Furthermore, support services and educational programs were not available and it was difficult to know what local resources could be used. In the early 1990s Tumby Bay was like many rural areas in the midst of a rural downturn; economically depressed with a high unemployment rate and affected by suicide.

Literature Search and Risk Factors Identified

Initial literature searches for possible solutions at that time offered no specific advice regarding suicide prevention in rural communities. However, research had shown that clinical depression was present in 60 - 80 % of suicides (Lonnqvist, 2000); and at least 50% had seen their general medical practitioner in the six months prior to the event (Barraclough, 1971; Whitlock, 1977; Michel et al. 1997; Goldney, 1979). A multitude of risk factors for suicide was also found, but the dilemma was that most lacked specificity. Those risk factors recognised at that time are summarized in Table 1.5 below

Table 1.5
Risk factors for suicide (Goldney, 1991)

NOTE: This table is included on page 19-20 of the print copy of the thesis held in the University of Adelaide Library.
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The relative importance of various risk factors can be estimated. For example, Dudley (2005) used the Odds Ratio statistic to demonstrate the importance of the following factors compared to their absence, with the risk of suicide being raised 18.6 times for previous suicide attempts, 14.3 times for previous psychiatric care, 11.1 times for mood disorders, 6.6 times for substance abuse, 9.1 times for co-morbidity/multiple diagnosis, 7.7 times for low social economic status, 5.7 times childhood abuse, and 2.5 times for a family history of suicide behaviour. He noted that while odds ratios were higher for mental health factors, they were less frequent than the more common social problems. An alternative method of illustrating the relative importance of risk factors is the Population Attributable Risk (PAR) statistic, which gives an estimate of the proportion of a condition which could be prevented by eliminating different risks. For example, in regard to suicidal ideation Goldney et al. (2000) calculated PARs of 11.7% for being aged 35-54; 3.0% for male gender; 8.3% for work status of home duties/retired/student; 14.9% for income \$20,000-\$40,000 3.5% for being a pensioner; 5.8% for alcohol abuse. Of note was that clinical depression was 47.4%; and, although traumatic and psychological events were not statistically significant, the summation of traumatic and psychosocial events had PARs of 48.3% and 36.2% respectively for suicidal ideation.

It is important to note that socio-economic conditions tend to deteriorate progressively from urban to rural and remote areas (Keleher and Ellis, 1996; Turrell and Oldenberg, 2004; Wilkinson and Ryan, 2001). Therefore risk factors for suicide are amplified as communities become more rural and remote. Of these the following socio-economic factors are pertinent for The Tumby Bay area and the suicide victims.

Isolation

Marriage is known to be protective against suicide attempts, presumably because a partner can discuss and help solve problems or arrange support services if deemed necessary. Women in particular appear to have better mental health literacy than males and may have a heightened awareness about mental health issues (Caldwell et al., 2004). A lack of connectedness to usual supports of family and friends and the reduced opportunity for social interaction may also be a contributing factor in rural areas.

Isolation from mental health services is also a contributing factor as few psychiatrists reside outside metropolitan areas. Furthermore, mental health nurses and support services in most rural and remote areas are rudimentary and fragmented, with no after-hours components. The geographic and financial hurdles for residents in rural and remote areas make psychiatric services difficult to access, even if they are sought after. However, as Caldwell et al. (2004) have pointed out, rural men appear reluctant to seek professional supports. Migration is also significant where the isolation is not only geographic but may be related to language.

Victims 2, 5 and 12 were geographically isolated which increased their risk and 3 and 10 felt isolated as a victim of their illness. Victim 9 was not isolated but as his wife worked at the local medical practice it would have been difficult for him to talk to the medical practitioners about marriage problems.

Stigma

There has been reluctance generally in the community to recognise or understand mental illness. Consequently, there has been unwillingness, particularly amongst rural males, to admit problems or seek professional help. The very independence and

innovation which has allowed them to survive in the more remote areas of the country has encouraged individuals to find their own solutions. There are further problems where the only form of support for example general practitioners, may be personal friends to whom they do not want to discuss personal problems. Finally there is a problem of confidentiality, where secrets or personal information is notoriously difficult to hide in the more remote areas. Victims 2, 5, 10 and 11. were probably susceptible, the elderly male victims lived at a time when mental illness was not mentioned and not recognised.

Ill health

Poor health, particularly if chronic, is another risk factor for suicide in rural areas, where medical support services and medical specialties are usually limited to the service general practitioners can provide. Medical imaging is restricted. For example there are no MRI scanners outside metropolitan areas. Morbidity figures for all illnesses are generally worse in rural areas than metropolitan areas. The two elderly men had chronic ill health with little hope for improvement.

Economic Uncertainty and Unemployment

Most rural and almost all remote communities are dependent to a significant level on the farming community. Farming is dependent on seasons and commodity prices which are generally unpredictable and frequently rely on selling their produce on international markets where they have little control. Generally, but particularly in crop production the farmers are required to make large initial investment of tens of thousands of dollars with no promise of return. When seasons are good or commodity prices high it is a matter of toiling and waiting many months for financial return. On the other hand poor

seasons equal economic disaster with relief supports slow. This usually amounts to carry-on finance along with low interest loans. Farmers are left with debts to pay and no income for day to day expenses. This rapidly escalates from anxiety to extreme frustration, poor self esteem and a sense of hopelessness. Employment prospects for rural residents are limited and for those with little prospect of regular employment a sense of failure, low self esteem and a sense of hopelessness. Only victim 11 was subject to periods of unemployment, but he usually managed to find reasonably regular work. However, his income would have been low, as was victim 13 whose wages were poor at the level of an apprentice.

Low income, poor social status and poor education status were also risk factors.

Mental Illness

Depression and schizophrenia are well known risk factors for suicidal behaviour and, as stated above, treatments for these problems are often less available in the more remote areas than in urban or metropolitan centres. Often in rural areas these are “treated” with alcohol or cannabis, which in the long term are counterproductive. In retrospect, 10 victims showed signs of mental illness either by prior treatment or in post mortem analysis. Victims 6 and 8 were not sufficiently well known to make a diagnosis

In the Tumby Bay list of suicides, 9 out of the 12 victims were single, separated or suffering marital disharmonies at the time. Only two of the patients were unemployed and one of those was about to start a new job. All the elderly male patients were in poor health at the time, with illness such as blindness, debilitating stroke and arthritis, which affected their quality of life, rather than being life threatening. However, they may well have perceived the lives to be in a terminal phase through illness. All the

elderly men were retired farmers and it was common for them to shoot stock when no longer productive or perceived to be suffering. Two of those three committed suicide by firearms, the other by hanging.

Low income did not seem to be contributing factors, except perhaps in one unemployed person with schizophrenia.

Substance abuse was possible in 6 of the 12. The main drugs were cannabis and alcohol, but how much was social use and how much was abuse is subject to conjecture in retrospective assessment of their personal use.

Psychiatric illness was diagnosed prior to suicide in all but three. However, retrospective assessment clearly painted a history of chronic dysthymia, if not frank depression, in two of those cases. The final case had no recent medical history or evidence of psychiatric illness, although marital disharmony and substance abuse was evident. There were three cases of schizophrenia which has a high association with suicide and six to eight victims with preceding dysthymia or depression.

In rural areas and the Tumby Bay district there are two other possible factors. There is often a sense of loss of “connectedness,” particularly if victims have moved from urban areas and live in isolated areas where it is difficult to access the usual supports. Similarly, local residents can become isolated when close friends or relatives have moved away. This was possible in at least four of the victims who in crisis appeared to be socially isolated. Similarly, two further patients with schizophrenia may not have been physically isolated, but by their very thought disorder they would have felt isolated.

The strong male bias to suicide is obvious here. On the other hand, attempted suicide is usually more common in women (Dudley, 2005). There has been a reduction since a lower use of sedatives, but females still tend to favour drug overdoses where there is time to change one's mind or a chance to be discovered. The move away from tricyclic antidepressant may have been helpful, consistent with the reduction when barbiturate access was reduced (Oliver and Hetzel, 1973). Many drug overdoses probably are not recorded as they recover spontaneously and the victims are too embarrassed to mention the attempt and subsequent failure, and the history only transpires in history taking from subsequent events. In our area apart from social drug abuse most drug overdoses intentionally suicidal or otherwise are usually perpetrated by women. On the other hand men use more violent methods of suicide whereby there is no time for a change of mind and are irrevocably fatal. In the local experience this was illustrated where firearms were used in five events, hanging in three and gas in two. The two women chose drug overdoses, one using cyanide, (her husband was a goldsmith and kept cyanide in his safe) which was rapidly fatal. Tumby Bay is a rural community and most farmers possess several guns on their properties. Indeed until recent firearm laws, most rural males would have had a firearm in their possession for sporting or farming pursuits. All shootings in Tumby Bay but one used their own firearms, although the two elderly males had no theoretical use for having firearms. However, in rural areas it is very easy to gain access to firearms when friends borrow them for putting down domestic pets or for "spot-lighting" or other forms of hunting. Furthermore, country youths not only have greater access to firearms, but they generally possess a greater knowledge of equipment such as ropes, and tubing to use in car exhausts.

All the suicides that occurred in Tumby Bay had been resident for at least two years, save one, No 8. Only four had been treated for mental health problems, and two had been referred to tertiary centres for threatening suicide and one of those two had had several previous attempts. Of those two, one had worked away intermittently and had not had follow up and came home to commit the act. The second finally suicided after several high lethality attempts. It was hard to see how it could have been prevented, except by a long period of detention in a secure ward. Unfortunately, every time the latter patient had been hospitalised under detention on prior occasions, she was rapidly sent home saying her condition had improved.

As far as the researcher can discern, no other residents of Tumby Bay in the period 1986 to 2003 committed suicide in another area.

Overall, looking at causes of possible suicide in Tumby Bay, many common factors were apparent. However, when used as predictors for suicide, their low specificity limited their usefulness in the individual person (Goldney, 2000). Notwithstanding the inability of any specific risk factor to delineate an individual at imminent risk of suicide, it was recognised that the more risk factors present, the more likely suicide would occur. Suicide usually occurs in association with profound hopelessness and the mistaken belief that suicide is the only option available. Determined individuals, with this sense of hopelessness, with ready access to highly lethal means of suicide, are particularly at risk.

1. E. Possible Solutions Identified

Although, in the early 1990's there was no definitive article on how to prevent suicide in rural areas, there appeared to be certain avenues of approach that were worth pursuing. Initially, it was decided to find ways to educate the community about depression, the condition most strongly associated with suicide. In essence this was to enhance what has now been termed "Mental Health Literacy" (Jorm et al., 1997), which has since been defined as the "*knowledge and beliefs about mental disorders which aid their recognition, management or prevention. It includes the ability to recognise specific disorders; knowing how to seek mental health information; knowledge of risk factors and means of self treatments, and of professional help available; and attitudes that promote recognition and appropriate help-seeking.*" Community groups were persuaded to include a talk about depression, its causes, symptoms and treatment in their annual programs. However, suicides were continuing to occur in spite of a concerted effort to identify and treat depression, and in 1995 a new strategy was developed which incorporated the following principles.

1. It was impossible to predict where and when the next suicide would occur

In the local situation there appeared to be no connection or correlation between the victims of rural suicide, except two elderly males who were brothers in-law. None were close friends; none had any direct association with the rural farming crisis, and although three were retired farmers, they did not rely on farm incomes and they did not have financial insecurity. Nor were their families apparently in any crisis with the rural downturn at the time. It seemed each victim was overwhelmed by his or her own personal situation, including bio-psychosocial, environmental and social

circumstances. It was apparent that eight out of 12 suicides had an associated depressive illness, but other factors were also occurring. In all cases mental illness or poor mental health appeared to be a major contributing factor. Alcohol abuse was involved in at least 50% of suicides. Overall even with the best evidence available suicide is still unpredictable in the individual person (Goldney, 2000).

*2. The emphasis would change from only attempting to deal with major depression to extend to deal with poor mental health. After due consideration with community leaders it was emphasised that “**mental health occurs when members of the community live happily in a safe, supporting environment and are able to make a contribution.**”*

Depression appeared to be a very common illness, but even for those who seemed to have very intrusive suicidal ideation, suicide occurred relatively rarely (Hawton and van Heeringen, 2000). It was also clear that not only people with depression committed suicide, even though it is possible that some degree of depression may have been present. Thus there appeared to be situational crises, drug and alcohol abuse and other frank mental illness such as schizophrenia. Therefore it seemed appropriate to broaden the scope of community education to include as many of the common causes of poor mental health as possible.

3. The level of mental health literacy would be focused on with particular emphasis on the skill and level of training of all members of the community, especially those with special skills.

This had to occur at two levels. First, education at the community level, the scope was broadened from depression alone to mental health (wellbeing) and second, professionals were trained for wider roles than they previously held.

4. As it was obvious no government help would be available and there was no likelihood of other source of external resources, it was mandatory to increase the mental health capacity of different members according to their training and experience.

Most importantly they needed to be locally available and hopefully at minimal or no cost. This meant that professionals would need further training to be prepared for new responsibilities. For example, nurses could more easily understand and know how to manage more difficult patients or confront emotional problems. Teachers, on the other hand, would more easily recognise struggling students and they were able to manage behavioural problems within their class rooms. Retired professional people who were utilised were almost all enthusiastic about having a professional aspect restored to their lives. These people were also useful in maintaining the programs in high community profile.

5. A child and adolescent mental health program would be commenced in the local area school from year 1 to year 12

Although the youngest suicide was only fifteen it was apparent his symptoms dated much earlier. It was evident that many adults could track their illnesses back to their

childhood. Indeed, it was clear that mental illness could be found within the student population at all year levels.

Using the school would also have an added bonus of giving the whole program a higher and more important community profile. It would involve parents, grandparents and their friends and associates throughout the community. Rural communities rally about issues they consider of utmost importance to their community's wellbeing, such as the local hospital, local school and sport. Subsequently many authoritative sources have cited schools as a very important sites for suicide prevention activities (De Leo and Evans, 2004; Kaufmann, 1990; Lamb et al., 1998; Rahman et al., 1998; World Health Organization, 1986; Yeo and Sawyer, 2003).

6. The whole community would be embraced from schoolchildren to senior citizens and early intervention would occur at all levels wherever possible.

Looking at suicides alone it seemed the emphasis should be on younger men fifteen to forty and men over seventy, with some attention to women. On the other hand, it was our experience that more women than men presented with mental health issues, particularly with attempted suicide. There are many explanations for this. One is that rural males avoid health issues and certainly do not like admitting mental health problems. If they do they were unlikely to talk to their general practitioner, who may also be an acquaintance. They were more likely to discuss their issues at the local hotel or drink their problems away at home. Women on the other hand had many other reasons to visit their general practitioner, such as pregnancy and

antenatal care, women's health problems such as contraception, pap smears or bringing their children for immunizations or when the latter were sick. They were more confident with doctors and would often discuss emotional issues as a side issue to some other problem. Nevertheless, depression and mental health issues were common amongst women and needed to be included in the mental health net.

7. Finally, to ensure the community was aware of the pathways for assistance and those pathways were simple, direct, and not only always available but functional.

It is not only a matter of identifying and dealing with poor mental health, but also of endeavouring to ensure the pathways to help and support are well known in the community (Judd et al., 2002). It was critically important that those sources of help were always available and always effective. This occurred by improving triage arrangements with the local medical practice, the hospital and to a lesser extent the senior teachers of the school.

Resources identified were teachers, many of whom had some understanding of psychology and were adept at discriminating changes of behaviour. Nurses were another resource with a basic understanding of mental illness, and another resource was retired professionals, who could be educated for a new role such as counseling. Finally a community "reference" group was created to find new resources, provide support and identify gaps in the service.

The overall hypothesis was that if problems could be identified early and intervention occurred at that time, the emergence of more severe symptoms could be prevented, with problems being resolved within the local community with local services.

Although the decision was made to broaden the approach in late 1993, it was not until 1995 that programs were in place. It seemed that initiating such a widespread program in the community, particularly in the school could provoke uncertainty, complaint and opposition. It seemed important that the aims and methodology should be understood at the highest level. It took time to educate community members and to seek approval from the State Ministers for Education and Health. Fortunately, generally the community was pleased to see that some action was being taken.

1.F Strategies to be Utilised

1.F a. Community Education and Improving Mental Health Literacy

The general plan was to educate the general community as widely as possible about depression and other mental disorders associated with suicide. Depression is the mental disorder most associated with suicide, but there is widespread community misunderstanding and stigma attached to it (Mechanic, 2002; Pinfold et al., 2003). Furthermore, Rost et al. (1993) found there was greater stigma attached to mental illness in rural areas than in more urban areas, possibly associated with issues of privacy in small communities. Education about depression focused on its identification, its causes, and the treatments available, with reassurance that with treatment and follow up the majority of persons recovered. Subsequently this was expanded to a more

comprehensive program involving the causes and treatments of other mental illnesses, and also what constituted good mental health.

1.F b. *Community Capacity Building: Optimising Community Resources.*

There were clearly mental health problems in the district that the general practitioners were struggling with and suicide was only the most serious outcome. Another big challenge was that of dysfunctional adolescents, which had often resulted in many unsatisfactory episodes of crisis counselling. Anxiety about this was heightened by the knowledge of the previous suicide of the fifteen year old schoolboy. However, the only sustainable solution was to find answers from within existing resources. Retraining existing community members seemed to be the only solution, and more innovative and collaborative interventions were planned at a number of levels, including the General Medical Practitioners, Nursing Staff, Teachers, Retired Professionals, and the General Community with guidance from a Community Reference Group.

1.F c. *Early Identification and Intervention*

Early intervention was central to the goal of suicide prevention, as it increased the likelihood that the problems so identified could be resolved locally and therefore not need intensive or specialist help, which were resources which were not available and not likely to become available.

There was little assistance as to how to institute early intervention strategies and even in 2000, Davies et al. (2000) wrote "*At present there is little available literature about the training of personnel and broadening the focus of services to include early*

intervention. Nevertheless, by enhancing what has become known as mental health literacy, the Tumby Bay project endeavoured to educate as many people as possible, with the overall thrust being teaching all members of the community to recognise the early warning symptoms of mental disorders, particularly depression, with the goal of early intervention.

1.F d. Establishment of school based child and adolescent mental health program

The local school represented a captive population where problems were common, albeit often undetected and untreated, thus leading to problems later in life. The strategy was for those students with disability to have remedial programs put in place. Close liaison with the local general practitioners' rooms allowed additional input for those students and their families identified as needing more detailed assessment and possible treatment.

The overall outcome of these four broad strategies was to recognise members of the community with emotional problems, so that early treatment could be offered.

1.G. Ethical Considerations

In the absence of clear guidelines, a prime concern was that any intervention which subsequently was considered to be inappropriate could be counterproductive and lead to further deterioration of self esteem and exacerbate suicide risk. Thus, increased awareness could aggravate stigma attached to mental illness and increase the associated stress, particularly when there were no obvious solutions or supports. Furthermore there could be an increased demand for services which could not be met, putting more strain on existing resources, bringing about their collapse or demise.

Specific problems also arose with child and adolescent mental health regarding consent, “labeling” and confidentiality. Verbal consent was less of an issue than written consent. Younger children of primary school age are not used to signing consent forms and they are likely to be more perplexed by the concept, rather than appreciating the protection that might offer. Furthermore, for the angry dysfunctional teenager, refusal to sign would be an easy way to ambush attempts to provide assistance. Obviously cooperation was the key and frequent consultation and verbal explanation to parents and students were more likely to succeed. It also was the case that in the Tumby Bay community written consent from minors for operations, such as setting fractures or suturing, had never been obtained, and there appeared to be no reason to begin with these interventions.

It was also apparent that labeling a child with a psychiatric diagnosis could stigmatise the child. Therefore the blanket term “*possibly dysfunctional*” was the only descriptor to be used, sometimes with an added description of symptoms.

Confidentiality is always a problem in small towns and management and consultation with a child was always done as part of a normal consulting session in the doctor’s office or in the principal’s office at school.

Ethical approval was not sought from any specific authority, as it was considered that the interventions, whilst innovative, were an enhancement of clinical practice. However, the project was approved by the University of Adelaide in being accepted as an appropriate study for the pursuit of a higher degree.

Chapter 2

SPECIFIC INTERVENTIONS

Initially the interventions were based on recognizing and managing depression but it became obvious this approach was not broad enough so after the first seven years this was broadened to include all causes of poor mental health. In addition a child and adolescent program was introduced as a part of a community wide strategy of increased early intervention. The following are strategies utilized.

2. A. COMMUNITY EDUCATION

Community Concepts of the Causes of Poor Mental Health

Initially, with the use of local hospital funds, a group of nurse educators from Adelaide was funded to provide a community mental health promotion and education program. Sadly, there was never finance to repeat this. A number of community groups were canvassed to promote mental health in their calendar of events, and arrangements were made for a local meeting to focus solely on mental health issues. Community groups included service clubs such as Rotary and Lions; church groups included guilds and fellowships; and rural groups included the Country Women's Association and local Agricultural Bureaus. The aim of these sessions was to demystify and de-stigmatise mental illness and promote mental health, but the main emphasis was on the recognition and management of depression. Subsequently this was extended to address the causes and management of other mental disorders, although depression was still a major focus.

Emphasis was placed on the distinction between general emotional distress with poor mental health and mental disorders. The former may derive from relationship disharmony, social drug abuse; financial worries etc., whereas the latter were noted to be distinct recognisable mental disorders. It was emphasised that all required counseling and support, but some more severe mental disorders may need medication as well.

A model of six common causes of poor mental health was promoted so community members could link common groups of symptoms with particular causes. The aim was to help community members not only to have some grasp of the causes, but to recognise warning signs of dysfunction and to be able to refer those in trouble for appropriate help.

The following broad categories were utilised based on my experience of the conditions seen in the Tumby Bay community. Whilst they could be seen as simplistic, they appeared to be concepts the community could readily grasp, understand and recognise, and hopefully encourage access to support services for themselves or others.

The common causes were described as :-

1. The “Worriers.”

This included the anxiety disorders, which could vary from mild nervousness to phobias, and panic attacks.

2. The Mood Disorders

Depression, in its various forms, was taught as a common form of emotional distress and mental disorder, with special reference made to its causes,

symptoms and management, utilising the model referred to in the appendices (4a,4b & 4c). Emphasis was placed on generally favourable results achieved with modern treatment. Bipolar disorders were also explained, with discussion about mania and the difficulties in persuading patients to seek treatment.

3. The Schizoid Disorders

This group included those people who have delusions, hallucinations or thought disorder. It was particularly salient as it included the more severe forms of mental disorders such as schizophrenia, where it was emphasised that early identification and treatment were associated with better outcomes

4. The Personality Disorders

This group may not represent frank mental disorder per se, but persons with personality disorders have learnt to react and interact with other people and life's challenges inappropriately. It was also noted that there could be associated co-morbidity with frank mental disorders.

5. Substance Abuse and Dependence

This includes alcohol abuse and dependence, as well as other substance use. In rural communities alcohol has a serious adverse effect on young people, where underage drinking is in epidemic proportions, affecting young persons at a critical time in their development.

6. Grief Reactions

Whilst usually related to loss of any sort, particularly the death of a close associate, it was also noted that they could be related to moving house, or loss

of employment and health etc. It was explained that grief reactions could mimic or lead to frank depression.

The causes, symptoms and treatments were discussed, with emphasis on consequential secondary behaviours, of which suicide was the most dramatic. It was emphasised in these sessions that most forms of mental disorder were reversible and with early intervention they could be managed locally, resulting in earlier resolution of symptoms. The need for early referral, particularly in rural areas, was re-iterated and entry points into the health care system and crisis resources were clearly described.

Sessions were modified in presentation to other professional groups such as nurses and teachers. For example, for nurses emphasis was placed on the more subtle presentations such as somatisation, and the importance and possibility of depression occurring with physical illness. As nurses were often the first points of triage, they were trained to assess presenting symptoms and assess urgency and safety issues with regard to potential suicidality. A planned protocol of questions to ask (appendix 6) was devised to assist the nurses and to ensure appropriate follow-up. For teachers there was a greater emphasis on psychological principles and learning disorders, as well as the slightly modified presentations of mental disorders in children. They were taught the main foci of assessment such as behaviour, progress in learning, psychiatric symptoms and social milieu. Examples of the comparison between depressive symptoms of adults and children and signs of possible dysfunction are found in appendices 4c and 5. An understanding of personality and personality development was also discussed, with

emphasis on normal personality development, and a model (appendix 8) was developed to teach this concept.

After each session a questionnaire was completed, both to ensure that the recipients felt they had gained from their attendance and for the presenters to receive feedback about their presentations.

Overall the community was taught to recognise poor mental health in their family and neighbours and a plea was made for early referral to well known entry points. The concept was continually reinforced at men's and women's health nights arranged by local community groups.

2. B. COMMUNITY CAPACITY BUILDING: OPTIMISING COMMUNITY RESOURCES.

A number of specific groups were targeted, as well as the general population

My role as general medical practitioner.

Screening for mental illness became part of normal consultation practice by asking most patients about sleep, energy, motivation and mood. A positive response to any of these questions invoked a more comprehensive list of questions to delineate mental disorder. A suggestion that depression may have been present was either dealt with immediately or the patient was offered a further, more extensive consultation. Concern about safety was treated as an emergency similar to myocardial infarction or epileptic fit, where normal consulting goes on hold until the crisis is dealt with appropriately. For after-hours consultations, a checklist (appendix 5) was prepared so comprehensive

assessments could be made appropriately by nursing staff, and appropriate follow-up arrangements were emphasised.

I also made regular visits at the school, where a heightened awareness of problems of students developed and new methods of management were discussed at regular meetings with the principal and school counselor. Also introduced was the “Keep Yourself Alive” program which enhanced the confidence and skills of teachers in dealing with mental disorders, particularly with reference to adolescents. This program was designed to educate general practitioners and health professionals as part of the national strategy aimed at reducing youth suicide rates in Australia. It was funded under the Commonwealth Here for Life Youth Suicide Prevention Initiative and its goals were *“to provide a comprehensive introductory guide to the management of suicide behaviours and completed suicide and to raise awareness of professionals with regard to the seriousness of suicidal behaviours in Australia, to improve crisis therapy and post-vention skills for working in this challenging area”*. The program was aimed at “train the trainer,” and consisted of a training weekend accompanied by four videotapes, two audiotapes and a manual. In addition national meetings on mental health issues were attended regularly.

Table 2.1

Conferences Attended

Meeting	City	Year
Australian Conference of Mental Health	Adelaide	1994
National Rural Health Conference	Perth	1997
International Association for Suicide	Adelaide	1997

Prevention Conference		
Annual Scientific Meeting RACGP	Melbourne	1998
'Out of the Blues' Depression in Young People Agenda for the Future	Adelaide	1998
Suicide Prevention Australia	Melbourne	1999
National Health Alliance	Canberra	2001
National Suicide Prevention Conference	Sydney	2001
Australian College of Psychological Medicine Conference	Adelaide	2003

Finally, I also enhanced my skills by working as a registrar in the intensive care units of both adult and adolescent psychiatric admission centers for a period of six weeks.

Nursing Staff

Intervention at this level was considered important for three reasons. First, acute and emergency presentations were likely to occur at two sites, the doctors' rooms and the accident and emergency department of the local hospital, particularly after hours. Nursing staff were the usual initial triage personnel and they needed to be competent, confident and comfortable about delineating mental health problems and knowing appropriate strategies for immediate management. They were expected to discern the severity of the distress, the need for immediate, early or subsequent intervention, and above all assess risk for self-harm. Second, poor mental health and frank mental

disorders are common co-morbidities of other illnesses, and nursing staff were well placed to recognize them. Recognition and treatment of mental health issues improves overall outcomes, so it was important for early recognition and treatment. Third, it was to be expected that there would be an increase in admissions of patients with a mental illness diagnosis and so the nurses needed to be competent, confident and comfortable in managing these patients. A consequence of this increased skill level was that patients with more severe mental illness could be managed locally, without the need for referral to a tertiary centre.

Teachers

Teachers were identified as valuable community resources with respect to community mental health for two reasons. Thus most have some exposure to psychology during their training, and they also have skills in detecting subtle changes in a student's behaviour. By arrangement with the principal, teachers underwent a ninety minute training session regarding mental health as part of their professional development. The content was similar to the general educational program, but with emphasis on behavioral changes considered to be possible warning signs (appendix 5), with an emphasis on childhood and adolescent depression (appendix 4c). A further hour of instruction on learning difficulties was presented by a senior educational psychologist.

Retired Professionals

Retired professionals (e.g. retired school teachers, nurses, social workers, counselors) and other professionals working in the community such as pastors with counseling skills were persuaded to seek further training. This included post graduate courses in

mental health and counselling. Four registered nurses and a retired school teacher completed a post graduate course in counselling and the teacher also completed a graduate certificate in community mental health. Several retired teachers assisted with reading recovery and helping students with learning difficulties improve their skills under the instructions of an educational psychologist.

General Community

As part of the education program provided to community groups, as described previously, it was strongly recommended that each individual should consider him or herself as “their brother’s keeper” for family and friends. It was suggested that those whom they found to be distressed in the community should be encouraged to seek support and treatment at known access points. They were also provided with strategies for bringing reluctant patients for assessment, such as using a common friend who had recovered from a similar illness, or watching a video or reading a pamphlet on the suspected disorder.

Reference Groups (for mental health)

I elected to establish a reference group of individuals whom I considered to be influential in the community. This group consisted of a general medical practitioner, the director of nursing or representative, a carer and user of the system, a minister of religion, a school counsellor, a community counsellor and a medical administrator.

The purpose of this group was to promote local mental health issues. They sought resources for mental health services from wherever possible and acted as advocates for patients and carers in identifying gaps in the existing system.

2. C. EARLY IDENTIFICATION and INTERVENTION

This was the third prong of the approach of endeavouring to provide a community mental health service. The overall thrust of the programs introduced was to endeavour to identify potential problems early. It was hoped that if problems were identified at a much earlier stage, there would be an increased likelihood that the problems could be managed locally. Therefore there would be a smaller risk of the development of maladaptive secondary behaviours which often complicate treatment strategies. This meant that in all levels in the local community there needed to be an increased awareness of symptoms and signs of poor mental health. However, it was just as important that the community clearly knew the entry sites into support services, and that these were always user friendly and available. It was equally important that proper assessment and referral occurred when these services were accessed.

The Community

The central aim was to educate the community to have a basic understanding of mental illness and mental health. This was not only to demystify and destigmatise problems with mental health, but the community would act as “their brother’s keeper.” In all education sessions, emphasis was placed on directing people suspected of poor mental health for assessment. As part of this educative program, points of entry into receiving help were stressed. At the same time every effort was made to ensure that these points of entry were reliable and effective, and that an efficient system for assessment and

management was in place. This meant ensuring that triaging that occurred in both the doctors' rooms and the hospital was coordinated and appropriate.

Special arrangements were made with the local chemist about medication quantities, although lethal drugs are readily available at supermarkets. The media was frequently used to promote mental health issues and careful reporting of suicides.

The School

The involvement of the local school occurred in order to utilise the skills of the teachers in both providing further mental health information for students and in detecting students at risk. As discussed previously, the suicide of a popular schoolteacher found numerous children and adolescents in crisis without support services. It was obvious that the only way they were going to be managed locally was by early intervention. After discussion with the school principal, the director of nursing and the general practitioner, teachers were alert for any evidence of dysfunction within a student.

The Hospital

In the hospital, it was realised that somatisation was common in patients with poor mental health, and nurses looked for signs of poor mental health or frank mental illness in all patients, particularly those whose symptoms appeared vague or nebulous or constantly changing. The detection of co-morbid emotional symptoms with physical illnesses was also encouraged.

The Doctor's Consulting Room

Poor mental health presents in the consulting room in many different guises and disguises. Sometimes it is open with complaints of stress, anxiety or mood disturbance. Frequently, however, patients just feel inexplicably unwell or present their symptoms in a somatic or bodily manner. This somatisation can be as obvious as a bizarre group of symptoms, but more often there are more subtle symptoms which require patience, reassurance and sometimes some exclusive investigations after suggesting the symptoms may be related to “stressors.” However, for any patient presenting, there are a number of screening questions, which may suggest the need for a more comprehensive search for mental illness. These include “Does your illness make you tired?” followed by “How well do you sleep at night?” and “Has your illness made you a little grumpy?” This can be followed up by questions about motivation, drive, concentration, memory, appetite, libido, socialisation and self esteem, all within a few minutes. A positive reply to any of these questions suggests a more comprehensive review is required, if not immediately, at an appropriate time to be scheduled.

2. D. Child & Adolescent Mental Health Program

The need

In addition to suicidal behaviour per se it was evident that there were other emotional behaviours such as conduct disorder, school refusal and truancy in the community, which needed urgent attention, although there were no resources. Much adult depression and poor mental health has its origins in childhood and early adolescence, as they are the formative years for the development of a resilient personality structure. As

there were no specialist resources available locally, it was important that an early identification and intervention approach be used so that interventions could be found from within local resources.

Methodology

The school principal, the director of nursing from the local hospital, and myself initially determined methodology and reviewed progress. The school was from reception to year twelve and the principal had a large number of problem students. The plan was a team approach using the school principal or his delegate, the school counselor and the general practitioner as the team.

It was initially difficult to know what to look for. There was little rural research to help and no evidence based strategies that met our needs, and we were limited to local resources. The plan formulated was to look for students with emotional problems or poor mental health, so initially the concept of '*possibly dysfunctional*' was used. It was agreed that the initial guidelines to define a student as dysfunctional were if :

- *The student was more than one academic year behind his/her peers*
- *The behaviour of a student was abnormal for that student*
- *The behaviour of a student was considered abnormal compared to their peers*

The term '*possibly dysfunctional*' was used to avoid labeling the student, and the term only suggested that the child should be reviewed or assessed if a problem was suspected. During the last ten years no reason to change that definition has been found. Students who were repeatedly suspended or about to be expelled were encouraged to seek formal assessment from the team. However, generally students were observed for

a variable time monitoring their performance and behaviour and when considered appropriate arrangements were made for a formal assessment.

Assessment Phase

The assessment consisted of

- General medical history to exclude illness such as e.g. sinusitis, thyroid disease etc.
- General behaviour at home, at school and with peers
- General academic progress
- Psychiatric signs (soft signs [appendix 5] and hard signs from DSM IV)
- Social milieu

Once it was considered that the student may benefit from a formal assessment, the parents and the student were contacted either by the school or the general medical practitioner, who sought consent for a formal assessment. The decision as to who would approach the parents was usually determined by the nature of the problem. For example, learning problems were more of a school issue, whereas illnesses were more the province of the general medical practice. In small towns however it is not uncommon for there to be special relationships between families and often this determined who approached the parents. Part of the assessment may have required referral to other agencies, in particular to an educational psychologist or a child and adolescent psychiatrist. The psychiatrist was resident in Adelaide, but arrangements were made for bulk billing by the psychiatrist and support for traveling costs was found from the regional health board. Any student considered to have any form of learning

problem had a comprehensive assessment by an experienced senior educational psychologist. Similarly any student who was thought to have any frank psychiatric symptoms was formally assessed by a senior child and adolescent psychiatrist

Management Phase

Part of the initial management phase included seeking advice from other health professionals, as part of the comprehensive assessment. An important part of the management phase was to review/evaluate the progress of students already incorporated in the project at two to four weekly intervals until resolution of the problems or new management strategies were determined. In fact the general practitioner had a formal meeting with the school principal and the school counsellor, initially on a weekly and later two weekly basis for an hour at lunchtime.

2. E. OUTCOME MEASURES

The best level of evidence is based on the randomised controlled trial of large enough numbers to exclude false negative and positive results. Similarly, meta-analysis of such trials is included in these level 1 “levels of evidence.” Double blind cross over trials thus give excellent assurance of the efficacy of any particular treatment plan. However, there are problems with these trials for suicide research. Firstly, there is the ethical dilemma of denying patients with mental health problems treatment. There is also a statistical problem of requiring vast populations to demonstrate a reduction in suicide. Thus suicide has a low base rate and the number of suicides prevented is difficult if not impossible to record. Gunnell and Frankel (1994) have calculated it would take tens of

thousands of subjects to demonstrate statistically significant reduction in suicide, and Adelman et al. (1997) estimated that thirteen million subjects would be the sample size needed to show a fifteen percent reduction in suicide in England and Wales. Thus clearly the population of the Tumbly Bay region was too small to contemplate a random controlled study, but it was hoped that the numbers of suicides and attempted suicides would decrease.

It was also considered that any trend could be statistically enhanced by five year averaging (World Health Organization, 1999), using long periods of time. Thus trends over a ten year period would be more likely to show definite results.

Suicide was delineated on the basis of coronial enquiry. It is appreciated that defining attempted suicide can be problematic. The definition chosen was “a deliberate act of self harm in which the intention was to die (suicide) but with a non-fatal outcome either because of rescue intervention or failure of means used.” The assessment was made by the local general practitioners. The number of persons attempting suicide was utilised rather than the overall number of suicide attempts, as this could give skewed results due to a small number of persons making multiple attempts.

Although the reduction of suicide and attempted suicide was the overall aim, an important focus was also the better identification and management of depression and other mental disorders. These outcomes were to be measured on the number of hospital admissions.

The drive to improve mental health literacy would be expected to show that community members had a better understanding of mental disorders and their management. Surveys following educational meetings were conducted to assess this. Questionnaires

were devised in order to tap various aspects of presentation. The questionnaires were modified for the community and for teachers and are presented in appendix 6.

Improved community mental health capacity is challenging to measure, but may be examined on the basis of the number of patients both presenting to hospital and needing referral on for specialist care.

The school's program expectation was that dysfunctional students would be identified and managed locally. This was done by surveying the frequency of behavioural disturbance, psychiatric symptoms, learning and social problems and examining the association between them.

2. F. STATISTICAL ANALYSIS

a. Suicides

Data was collected from 1986 to 2005 of suicides in the Tumby Bay district as determined by the coroner. Usually, the circumstances regarding the suicide were well known by the author but where this was not the case a retrospective psychological analysis was performed by the author. The age, gender, means of death and associated mental disorders were recorded in the results. The social circumstances were recorded in appendix 3. These results were subjected to a statistical analysis by the senior statistician, Dr John Petkof, at the University of South Australia and the analysis can be found in appendix 10.

b. Attempted Suicides

Attempted suicides were recorded as admissions to the Tumby Bay Hospital where they fulfilled the definition and assessment by the general practitioner. Statistical analysis (appendix 10) was made on the number of patients attempting suicide per year by senior statistician Dr John Petkof .

c. Hospital Admissions

Similarly data was collected from the hospital of admissions for all mental disorders and admissions for affective disorder and psychosis were separated and similarly recorded and analysed.

d. Child and Adolescent Disorders.

Data was collected on students who were described as dysfunctional, their age and gender and associated problems were collated and relationship between them was examined.

Finally response to management of the problem was collated by the therapists, teachers and students both with regard to changes in behaviour and learning over an eighteen month period.

e. Educational Sessions

Questionnaires were used for the general community meetings and teachers' meeting to assess their response to the programs and response was analysed.

CHAPTER 3

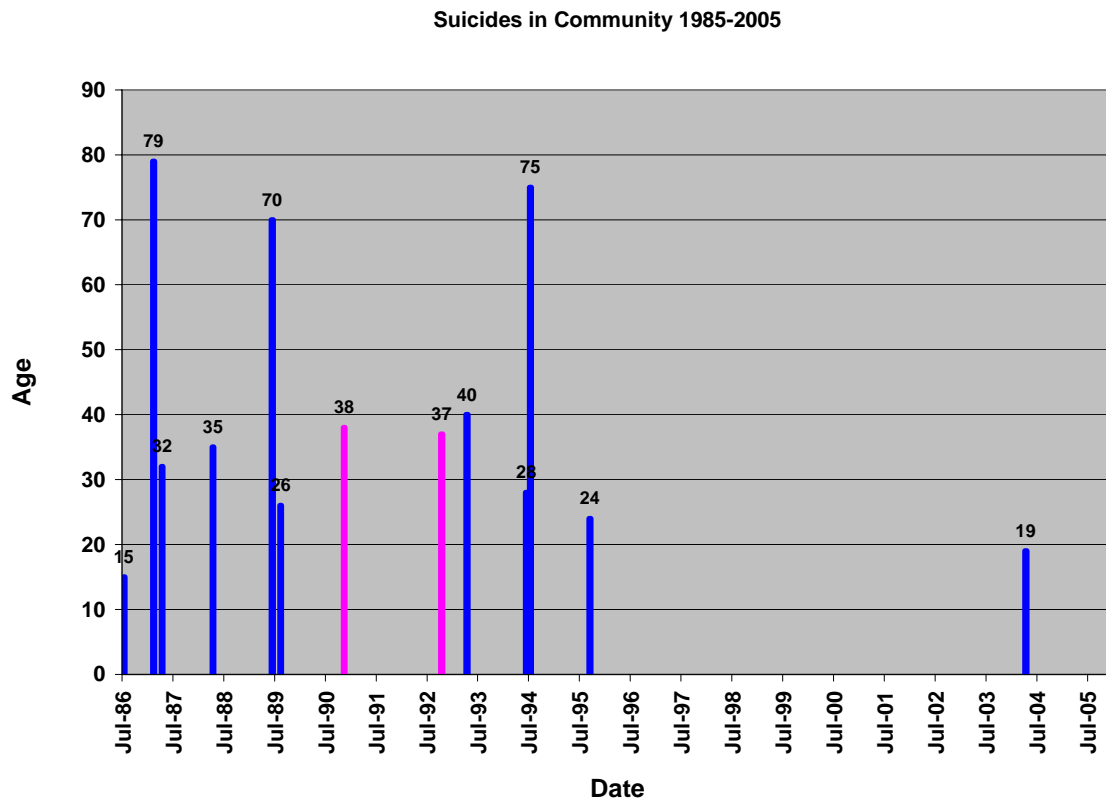
RESULTS

3. A. Reduction of suicides

Reduction of suicides

The most important focus of the program was the number of suicides and attempted suicides. Figure 3.1 indicates that there was only one suicide in the ten years since the comprehensive program commenced in 1995.

Figure 3.1

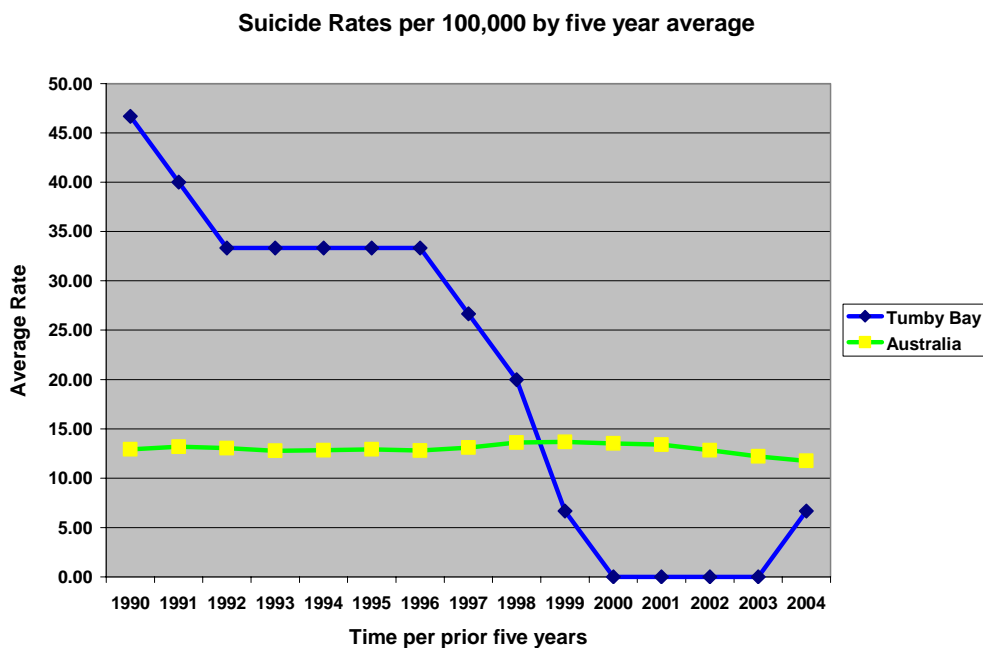


The thirteenth suicide in 2004 was a nineteen year old youth who after a night of drinking alcohol and an unhappy communication with a past girlfriend was found in the

morning hanging in his parent's garage. It appeared to be an impulsive act with no evidence of prior planning or history of psychiatric or emotional symptoms.

It is possible that interventions may take five to ten years to show benefits (De Leo and Evans, 2003). Figure 3.2 demonstrates the five year moving average such that the 1990 figure represents an average of 1986 to 1990 numbers, with the greater numbers of suicides providing a better trend line. The Tumby figures have been compared to the national figures. In Tumby Bay there was a marked decrease in deaths from suicide: twelve in the ten years 1986 to 1995 to one between 1996 and 2005

Figure 3.2



The five year averaging was subjected to a statistical evaluation by the senior statistician at the University of South Australia and is demonstrated below:

We will model the rate of suicide by the use of Analysis of Covariance (ANCOVA)

A regression is run using the suicide rate as the dependent variable. Time (1-15) and area (1=Tumby Bay and 2 = National) as the two groups.

Regression analysis

Response variate: Rate

Fitted terms: Constant + Time + Area + Time.Area

Summary of analysis

Source	d.f.	s.s.	m.s.	v.r.	F pr.
Regression	3	3945.9	1315.31	66.44	<.001
Residual	26	514.7	19.80		
Total	29	4460.7	153.82		
Change	-1	-1708.6	1708.60	86.31	<.001

Percentage variance accounted for 87.1

Standard error of observations is estimated to be 4.45.

The variance explained is large (87.1%)

The regression is highly significant overall.

Estimates of parameters

Parameter	estimate	s.e.	t(26)	t pr.
Constant	49.08	2.42	20.30	<.001
Time	-3.524	0.266	-13.25	<.001
Area National	-35.86	3.42	-10.49	<.001
Time.Area National	3.493	0.376	9.29	<.001

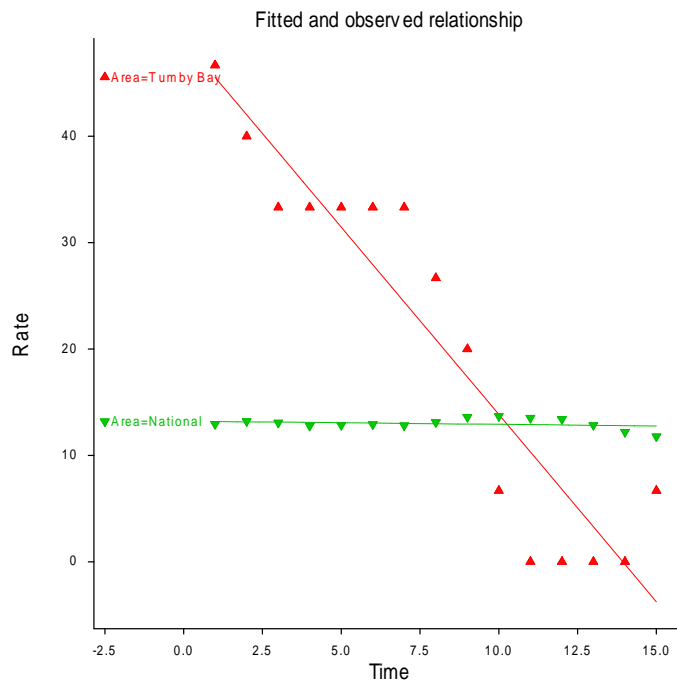
Parameters for factors are differences compared with the reference level:

Factor	Reference level
Area	Tumby Bay

Note the following: (estimates)

- **Time is significant and negative-the rates are falling overall**
- **National figures are significant and negative-this is obvious and not of interest to us**
- **The interaction Time by Area (national) is significant and positive. This tells us that as time progresses the national rate is larger than the rate at Tumby Bay.**

Suicide Rate per 100,000 for Tumby Bay and National



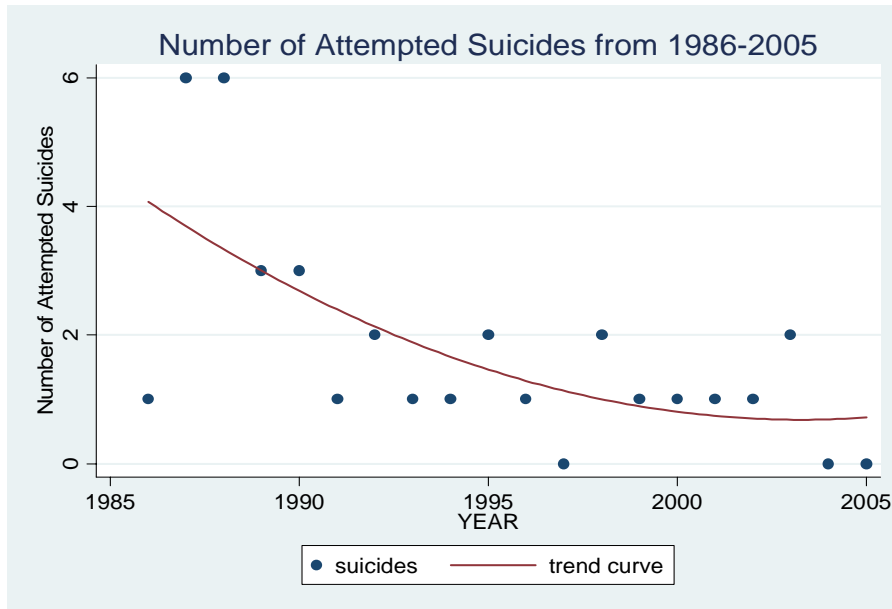
The fitted plot confirms the analysis above.

Therefore it can be said there is a significant reduction overall in suicides in the Tumby Bay area. Secondly, there is also a significant reduction over the same time interval for national suicides. However, when the decrease in national rate is compared to the Tumby Bay rate, the Tumby Bay rate is falling at a significantly greater rate than the national rate (appendix 9). This represents a 3B Level of Evidence, according to the Oxford Scale (Appendix 11). Again, it must be noted that the local numbers are small and only a few extra suicides would substantially alter the picture, even though the reduction appeared to be sustained over a period of years.

3. B. Suicide Attempts

These are represented in Figure 3.3. These graphs demonstrate that although the numbers are small, there was a significant reduction in suicide attempts. The statistical analysis follows:

Figure 3.3



The data is count data and consequently we fit a Poisson Regression to this data.

```
poisson suicides year, robust
```

```
Iteration 0: log pseudolikelihood = -28.778332
Iteration 1: log pseudolikelihood = -28.778316
Iteration 2: log pseudolikelihood = -28.778316
```

```
Poisson regression
```

```
Number of obs = 20
Wald chi2(1) = 9.55
Prob > chi2 = 0.0020
Pseudo R2 = 0.1761
```

```
Log pseudolikelihood = -28.778316
```

suicides	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]
year	-.1086832	.0351693	-3.09	0.002	-.1776138 - .0397527
_cons	217.2478	70.13212	3.10	0.002	79.79142 354.7043

The regression is highly significant and shows that the number of attempted suicides was decreasing from 1986-2005 (the coefficient of year is negative indicating a decrease)

The incidence ratio is 0.897 (yellow). This tells us that the incidence of attempted suicide in any one year is 0.897 of the previous year.

3. C. Improvement of Mental Health Literacy

3.c.i. The community

Although no measure was made of community awareness before the meetings, immediately following the meetings questionnaires were completed and the following are aggregated results of eight community meetings. The results of each meeting were similar and this indicated that the community found the educative programs helpful and interesting.

The following eight questions were asked:-

1. How would you rate the quality of presentation?

Excellent	Good	Fair	Poor
55	50	4	-

2. Did you find the information interesting?

Yes, Definitely	Yes, Generally	No, not really	No definitely
80	29	0	1

3. Has this information increased your understanding of mental illness?

Considerably	More than I expected	Somewhat	In between
55	41	11	2

4. Do you think the community will benefit from the presentation?

Yes	No	Unsure
104	2	4

5. *Will the knowledge and skills you have learnt help you to understand children and adolescents who suffer from learning and behaviour problems*

Yes, very helpful to me	Not me but yes will help others	No won't help me	Unsure
83	18	4	4

6. *How clearly was the information presented?*

Extremely clear	Clear	Faintly clear	Not at all clear
58	37	14	0

7. *Was there sufficient time for questions and discussion?*

Yes	No	Unsure
95	11	4

8. *Do you think the length of the presentation to be?*

Just Right	Too Long	Too short	In between
90	2	14	2

3.c.ii. Hospital and Nurses

The following graphs show an increase in mental health admissions for any cause and also for depression, which was generally the most frequent reason for admission for mental health issues.

Figure 3.4

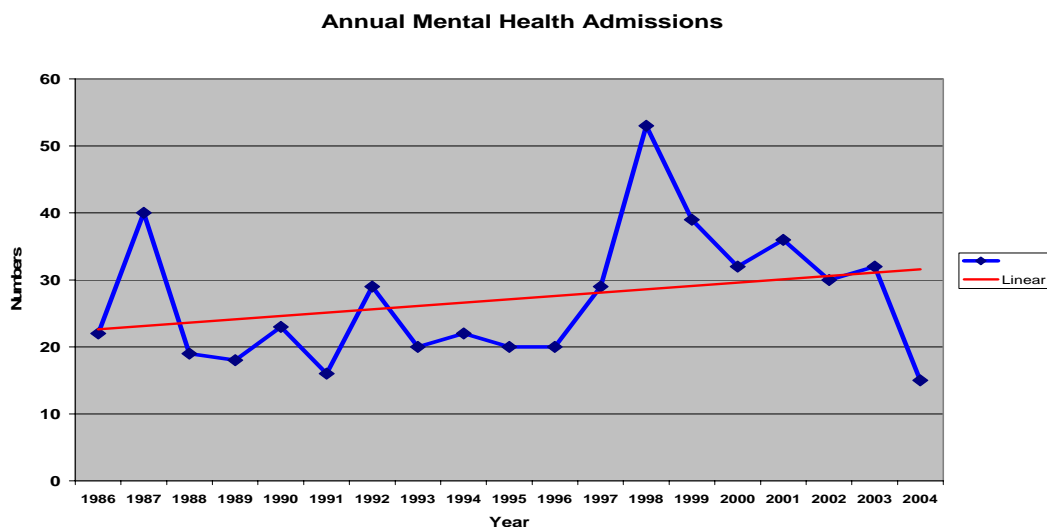
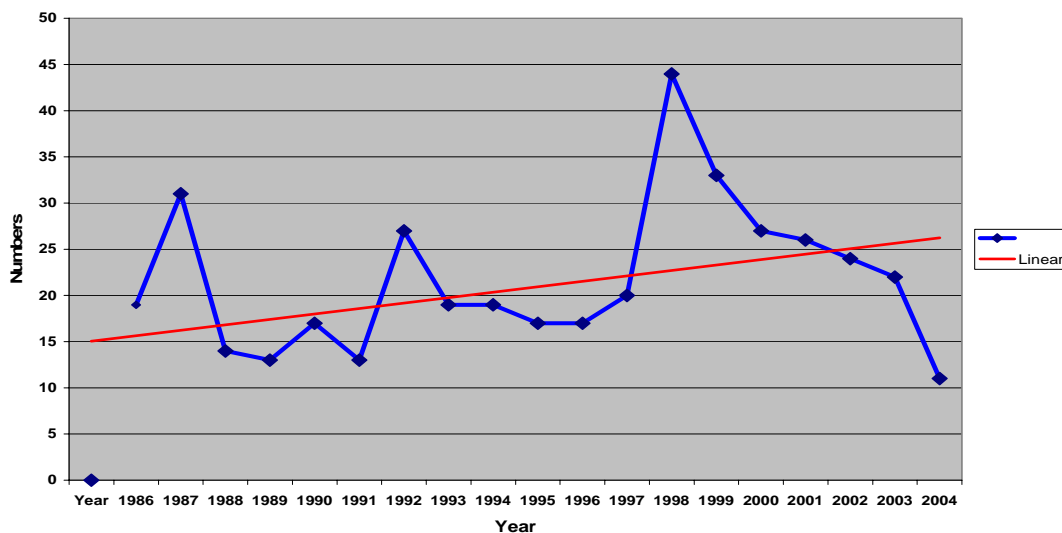


Figure 3.5

Admissions Numbers for Depression 1986-2003



Overall there was a slight increase in admissions (see graph 3.4) for reasons of poor mental health, suggesting that patients were perhaps presenting early with an increased recognition of mental health problems and earlier referral. This may well reflect an increase in mental health literacy (Jorm et al., 1997) of the general community, indicating that community members were more aware of mental health issues including depression and presenting for treatment earlier.

3.c.iii. Improvement of Teacher's Mental Health Literacy

The teachers' responses to mental health promotion were similar to the community. The differences between community meetings and teacher meetings were that teacher meetings were of 90 minutes duration at the end of a working day. The following summary of questionnaires at the end of the teaching sessions shows the presentations were well received overall.

The following results were achieved

1. How would you rate the quality of presentation?

Excellent	Good	Fair	Poor
55	77	7	0

2. Did you find the information interesting?

Yes, Definitely	Yes, Generally	No, not really	No definitely
94	44	1	0

3. Has this information increased your understanding of mental illness?

Considerably	More than I expected	Somewhat
80	44	15

4. Do you think the community will benefit from the presentation?

Yes	No	Unsure
125	1	13

5. Will the knowledge and skills you have learnt help you to understand children and adolescents who suffer from learning and behaviour problems

Yes, very helpful to me	Not me but yes will help others	No won't help me	Unsure
83	40	8	3

6. How clearly was the information presented?

Extremely clear	Clear	Faintly clear	Not at all clear
60	75	15	1

7. Was there sufficient time for questions and discussion ?

Yes	No	Unsure
119	4	16

8. Do you think the length of the presentation to be?

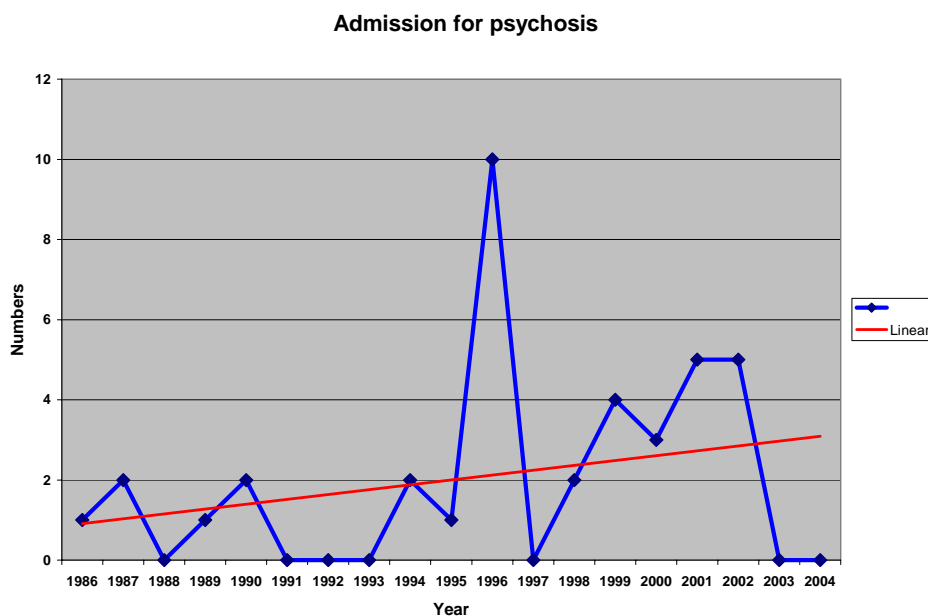
Just Right	Too Long	Too short	In between
103	12	22	2

3. D. Increased Community Capacity

3.d.i. Nurses

As well as coping with larger numbers of mental health patients in the hospital there was also an overall increase in the number of patients with severe mental disorder who were now being treated locally as nurses were more confident and competent in managing patients with psychotic episodes, whereas previously they had been transferred to tertiary centres. This may also indicate that psychotic patients were presenting earlier with less florid exacerbation of their illness

Figure 3.6



3.D.ii. Teachers

There was also an increased capacity of teachers to improve learning skills and behaviour which will be discussed in the results of the child and adolescent program.

3. E. Early Identification and intervention

Although there is little direct statistical data there was an increase in patients presenting to hospital for treatment of mental illness (see graphs 3.4, 3.5, 3.6), moreover there was a definite change of community members requesting assistance with perceived mental health issues and becoming more accepting of an emotional component to their symptoms. There was certainly less crisis counselling and, as discussed later, fewer suicides.

2. F. Child and Adolescent Mental Health Program

From a school population of 350 students from reception to year twelve, fifty-one students (one in 7) were regarded as dysfunctional by academic performance or behaviour, and the team considered would benefit from a formal assessment. Two students were refused permission for assessment. One by a parent with a family history of severe mental illness who was afraid the child may become irreversibly stigmatised and another child who was in government care. The latter child was severely dysfunctional and the Department of Education offered no reason for their refusal. The diagnosis was unknown, although the child had a one to one relationship with a teacher the whole time the student was at this school. The Department of Education's management plan was to move the student from school to school as each school became overwhelmed by the problems caused.

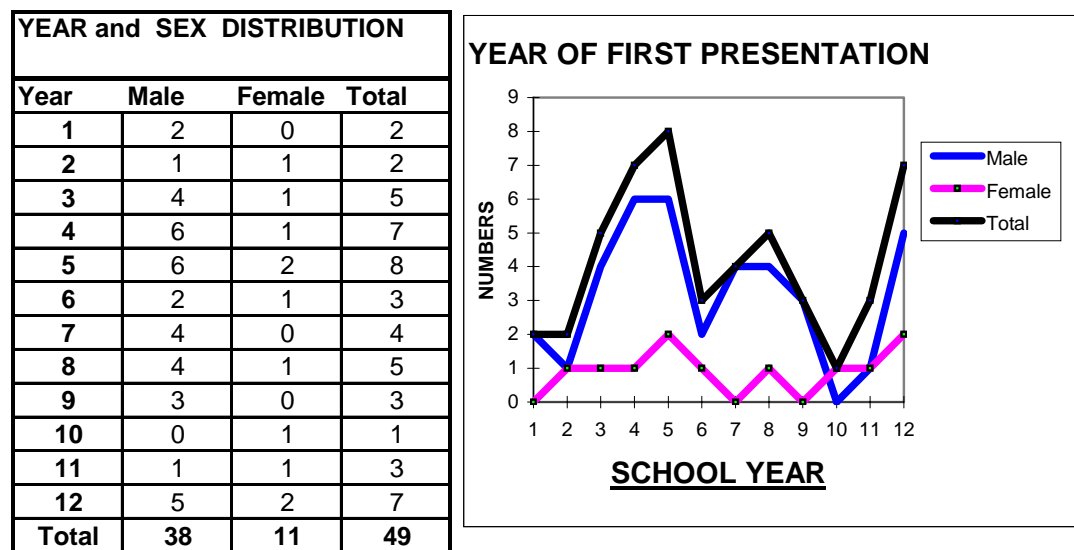
Formal assessment was made of the remaining 49 students by reviewing academic performance, social milieu, general behaviour and evidence of poor mental health or mental illness.

3. F. i. Distribution

The age, sex and school year of those 49 students are represented in the tables and charts below

Figure 3.7

Distribution of “dysfunctional students”



The teachers and general practitioner initially made the assessment with the assistance of the parents for the particular student under review. Forty-nine students were initially assessed in an eighteen-month period between 1995 and 1996. It was found that:

- 35 Students had behavioural problems
- 26 Students had psychiatric problems
- 20 Students had significant learning problems
- 20 Students had social problems

And co-morbidity was noted in many students.

This provided a “snapshot” of existing problems. Although there had been a prior behaviour modification program for problem students, administered by individual teachers in association with the principal, no formal assessment had been made of students previously.

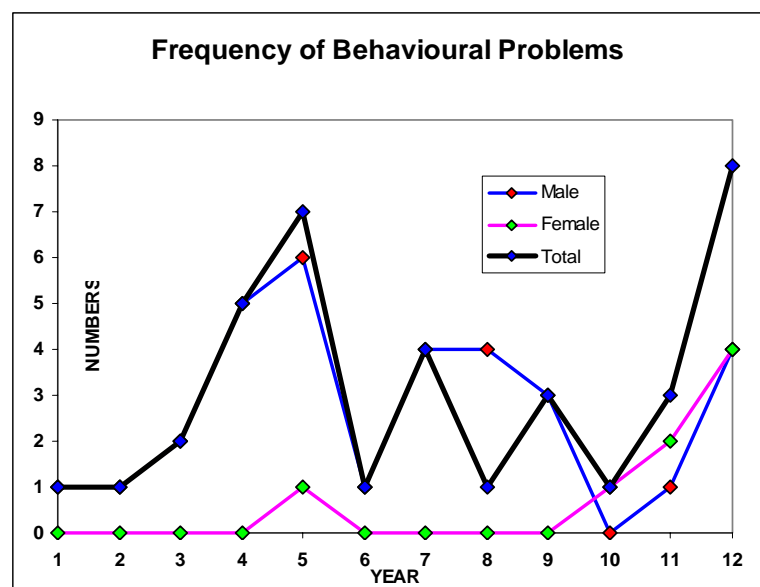
3.F ii. Behavioural Problems

This was the commonest presenting problem area and is not surprising as the selection criteria were heavily based on noticing behavioural changes in students. Thirty five students were assessed as having behavioural problems. Their numbers and school-year are demonstrated below. The co-morbidities associated with depression are almost equally distributed between, psychiatric, learning and social problems.

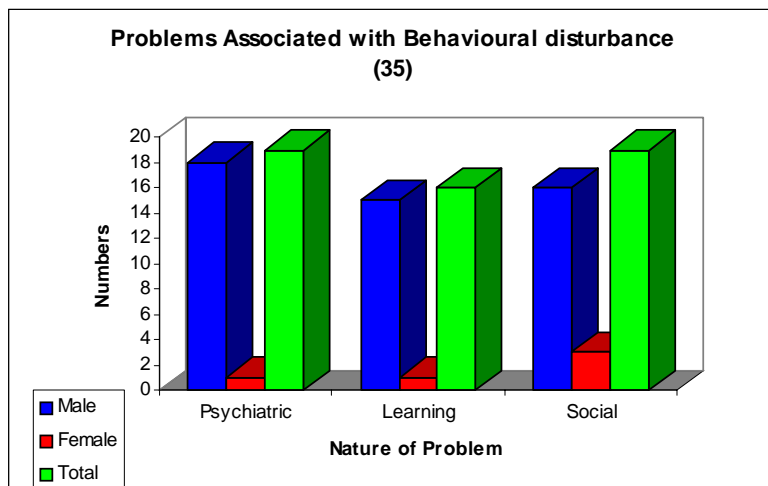
Figure 3.8

Distribution of students with behavioural problems

YEAR and SEX DISTRIBUTION For Behavioural Problems (35)			
Year	Male	Female	Total
1	1	0	1
2	1	0	1
3	2	0	2
4	5	0	5
5	6	1	7
6	1	0	1
7	4	0	4
8	4	0	4
9	3	0	3
10	0	1	1
11	1	2	3
12	4	4	8
Total	32	3	35



Problems associated with BEHAVIOURAL DISTURBANCE			
	Male	Female	Total
Psychiatric	18	1	19
Learning	15	1	16
Social	16	3	19



3.F. iii Psychiatric problems

The second most common disorder was psychiatric symptoms. All of the twenty-six students with psychiatric problems were reviewed by a senior child and adolescent psychiatrist who confirmed a significant psychiatric illness in twenty of those students. The remainder had psychiatric symptoms, but not enough to fulfill the criteria of DSM IV. Their school grades, sex and frequency are demonstrated in the following tables and problems associated with psychiatric symptoms are demonstrated below

Figure 3.9

Distribution of Psychiatric Problems

YEAR, AGE, SEX DISTRIBUTION			
For Psychiatric Problems (26)			
Year	Male	Female	Total
1	0	0	0
2	0	0	0
3	1	0	1
4	3	1	4
5	4	1	5
6	1	1	2
7	2	0	2
8	3	1	4
9	1	0	1
10	0	1	1
11	0	0	0
12	4	2	6
Total	19	7	26

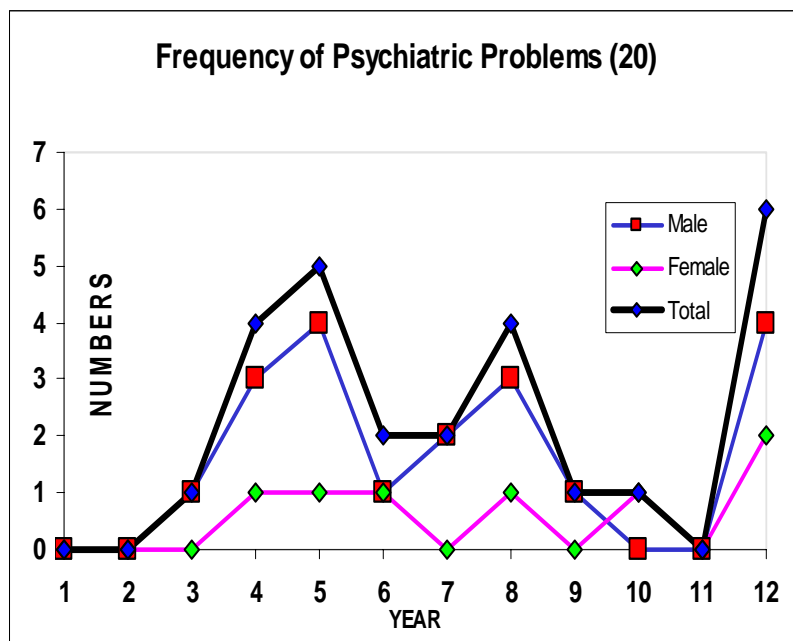
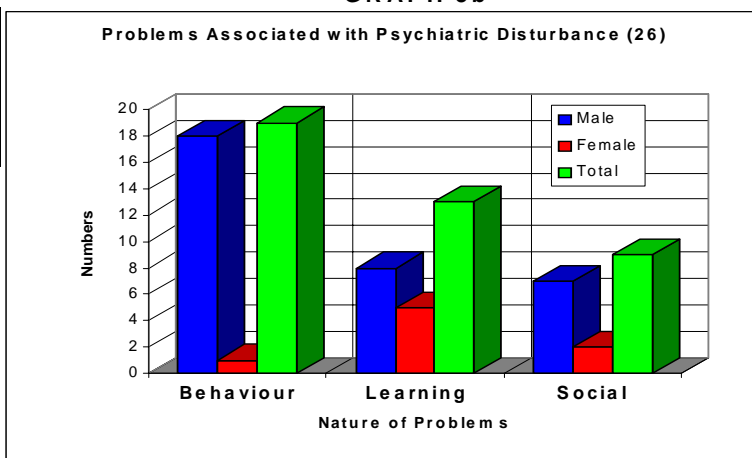


TABLE 3b

Problems associated with PSYCHIATRIC DISTURBANCE			
	Male	Female	Total
Behaviour	18	1	19
Learning	8	5	13
Social	7	2	9

GRAPH 3b



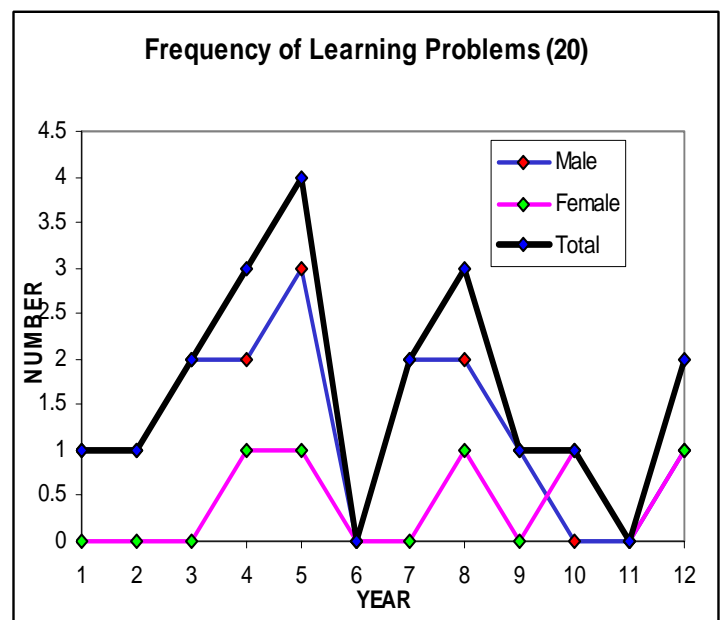
3. F. iv Learning Problems

There were twenty students identified with learning problems in the assessment phase and all were reviewed by a senior educational psychologist who confirmed significant learning problems in nineteen of them. The remaining student was several years behind because of frequent school moves in the first three years of his school life. The school year, sex and frequency of presentations is represented in the graph below.

Figure 3.10

Distribution of Learning Problems

YEAR, AGE, SEX DISTRIBUTION			
For Learning Problems (20)			
Year	Male	Female	Total
1	1	0	1
2	1	0	1
3	2	0	2
4	2	1	3
5	3	1	4
6	0	0	0
7	2	0	2
8	2	1	3
9	1	0	1
10	0	1	1
11	0	0	0
12	1	1	2
Total	15	5	20

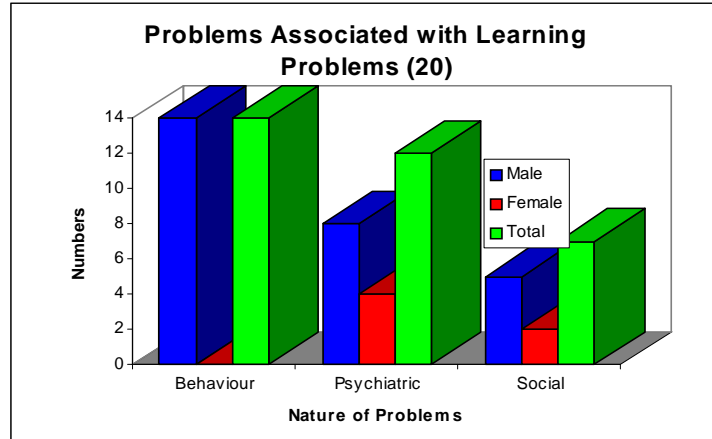


The common association between learning problems are behavioural problems and to a lesser extent with psychiatric problems with a poor correlation with social problems.

TABLE 4b

Problems associated with LEARNING			
	Male	Female	Total
Behaviour	14	0	14
Psychiatric	8	4	12
Social	5	2	7

GRAPH 4b



3.F.v.Social Problems

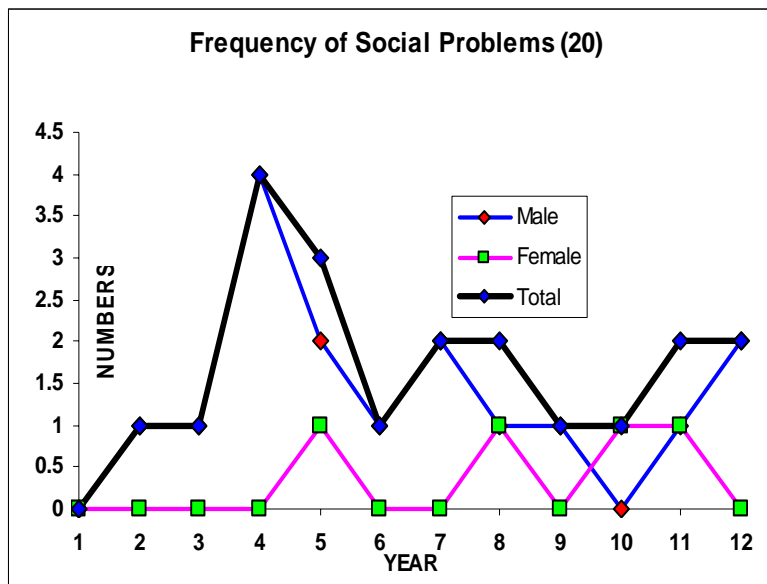
There were 20 students identified with social problems. This really meant the team felt there was some form of dysfunction or disadvantage in their social environment. It may have meant social isolation in a one-parent family or may have been marked family trauma.

Behavioural problems were the only real association with social problems, as indicated in the table and graph below.

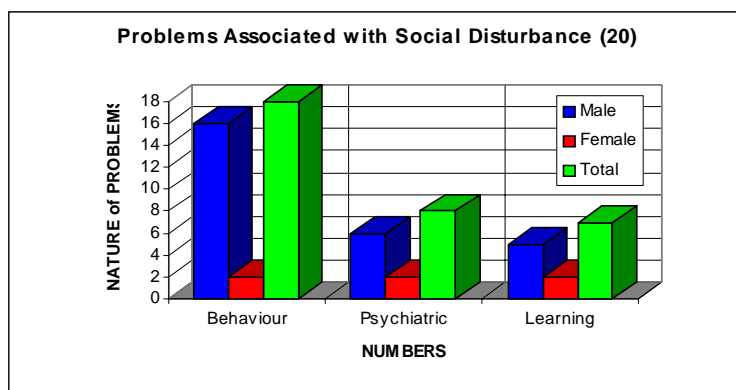
Figure 3.11

Distribution of Social Problems

YEAR, AGE, SEX DISTRIBUTION For Social Problems (20)			
Year	Male	Female	Total
1	0	0	0
2	1	0	1
3	1	0	1
4	4	0	4
5	2	1	3
6	1	0	1
7	2	0	2
8	1	1	2
9	1	0	1
10	0	1	1
11	1	1	2
12	2	0	2
Total	16	4	20



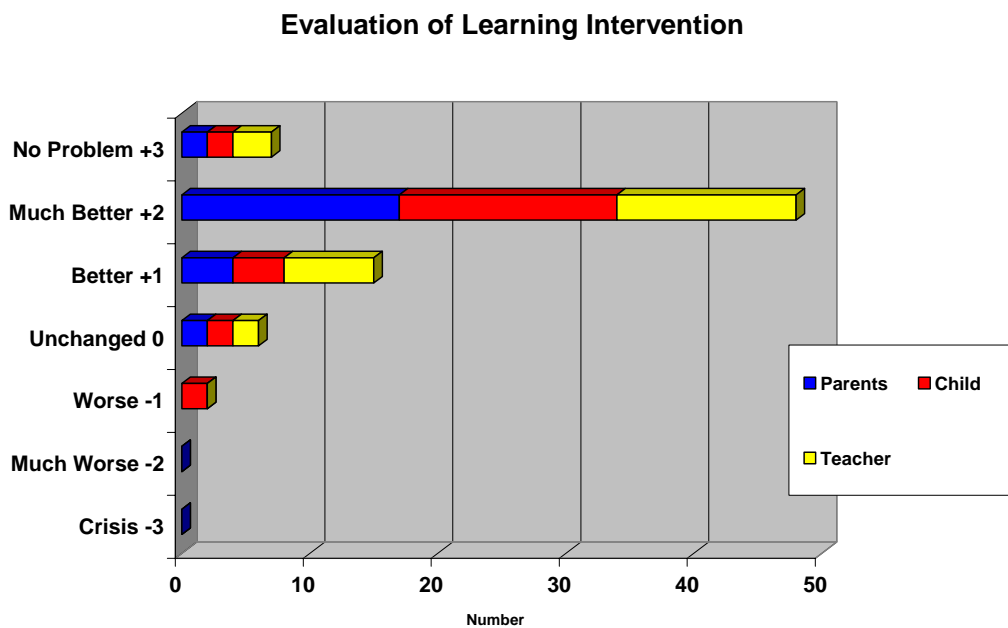
Problems associated with SOCIAL STRESS			
	Male	Female	Total
Behaviour	16	2	18
Psychiatric	6	2	8
Learning	5	2	7



Improvement of Learning Problems

Teachers, students and parents were asked to grade on a 7 point scale where 0 represented no improvement and -3 represented a situation where crisis had occurred and + 3 represented no problems with learning. The results are tabled and graphed below.

Figure 3.12

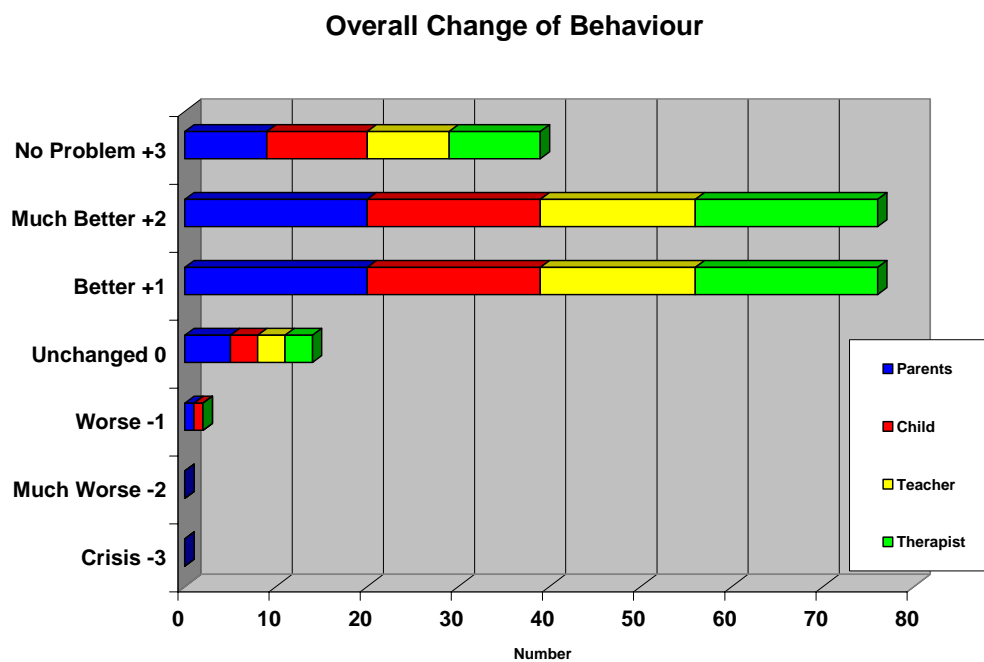


The problem with learning difficulties is that often the cause is genetic for which there is not always a “cure.” However different approaches to teaching and learning such as reading recovery, can make significant improvement.

Behavioural problems were generally improved significantly with intervention and a management plan. The following table and graphs indicate how teachers, students, parents and therapist viewed the changes following intervention.

Graphically the results can be summarised

Figure 3.13



This evaluation was taken between six months and twelve months of a student being brought onto the program. Universally it was agreed by therapists, teachers, and parents and most importantly students that this had been a worthwhile project. (Appendix 8).

CHAPTER 4.

GENERAL DISCUSSION

4. A. Tumby Bay Suicide

a. 1986 - 1995

Although suicide has been the subject of academic enquiry for over hundred years, community based prevention plans were not being discussed or promoted until the 1990s. Certainly there was no clear direction in the early 1990's as to how a relatively isolated rural community of about 3000 should embark on a suicide prevention program (Hendryx, 1993; Spoth, 1997). There was no interested academic research base (St Lawrence and Ndiaye, 1997); there were few psychiatric resources (Petti et al., 1987); and little interest was shown by governments (Andrews, 2005; Clayer et al., 1998). Computers were far from commonplace; internet access in rural areas was in its infancy; and literature searches were difficult and cumbersome to conduct from such a remote area.

It is fair to state that the literature between 1985 and 1995 referred infrequently to specific suicide prevention in rural areas (Loschen, 1986). There was discussion of suicide rates and speculation of causes and common associations (Goldney, 1985), but it was noted by Kachur et al. (1999) that screening tests had not yet been shown to be effective, that risk factors lacked specificity and provided too many false positives. Although studies had consistently shown depression to be strongly associated with suicidal behaviours (Beautrais, 2000; Goldney, 2000; Lonnqvist, 2000), Kachur et al. (1999) stated that "*training*

primary care physicians to recognise and treat appropriately underlying mental health problems such as depression may be effective but long term controlled studies are yet to be performed.”

Initially it seemed that an obvious place to start was to address the problem of depression in the community. As a result of a meta-analysis by Harris and Barraclough (1997), using Standardised Mortality Ratios (SMR), the highest risk of suicide is seen among individuals with major depressive disorder (SMR=20.35), followed by bipolar disorder (SMR=15.05), and dysthymia (SMR=12.12). However, Kessler et al. (1996) have reported that two thirds of people with mental disorders fail to seek help.

From what in retrospect may have been a simplistic view, although it seemed appropriate at that time, the way to tackle suicide was seen to be to educate the community as widely and comprehensively as possible about depression (Leo and Evans, 2003; Goldney et al., 2001). This appeared appropriate, for although the suicide of a fifteen year old student appeared to occur without warning, there was, in retrospect, enough evidence in his behaviour prior to his death to be reasonably confident he had been depressed (Beskow, 1979). It seemed important to emphasise the prevalence of depression in the community; common symptoms that may be suffered; as well as the signs that may be seen in other members of the community; and finally, that with proper treatment the condition could nearly always be controlled (Maharaj and Parasram, 1989).

This view was confirmed by a literature search at the time (Rucker and Dietch, 1986). Thus Barraclough et al. (1974) in Southern England found that depression was the principal illness in 70% of cases of suicide; (Beskow, 1979) in Sweden found in urban and rural suicides depressive disorder was present in 45% & 48% respectively and depressive symptoms were even more common; and in Australia Chynoweth et al. (1980) found depression in 55% of 135 consecutive suicides.

Although as a General Practitioner in a country town it was self evident that I would be concerned about suicide, my specific approach was to train the community to recognise, understand and seek treatment for depression. The main obstacle to overcome was how to educate the community, because generally the community did not want to talk about mental illness, much less come to a meeting in a small town where they may be identified and inferences made as to why they were present.

Previous experience had shown that public meetings on health issues were attended by only the faithful few. The plan to use community organisations was to engage a captured audience and endeavour to make the education as comprehensive, interesting and relevant as possible. At these meetings a model of depression (appendix 4a or appendix 4b) was used to show the interaction between external factors, for example stress and the biological factors and the cascade of symptoms that the illness could produce. This enabled the “captive”

group to gain a picture of the problem. The model generated great interest and became an important part of the community education program. Positive outcomes for treatment were emphasised, particularly for early presentation of symptoms. A part of the exercise endeavoured to reduce the stigma of mental illness which was so common in rural communities (Rost, 1993), and make the community more comfortable about mental illness and seeking appropriate treatment. At these meetings suicide was only mentioned as an irreversible complication of depression in an effort to avoid promoting suicide in vulnerable individuals, remembering the aphorism "*At first do no harm.*"

Unfortunately, the suicides continued to occur even with this approach, and there were twelve suicides in the ten years between 1986 and 1995. It seemed difficult to know how to prevent the next suicide as there was a range of age groups, with both young and elderly males and there were also two females. There was also a mixture of psychiatric conditions. Government assistance was sought regarding the alarming suicide rate and academic help was also sought, but the answer was always that there was no money or resources. Furthermore, it was suggested any interventions should begin in the major centres where resources could be used more efficiently, and lessons learnt could then be applied to the rural sector. It was also suggested that the situation seemed too dangerous for novices to dabble in, and perhaps the alarming suicide rate may have occurred because interventions had somehow produced a morbid

community fascination and focus on depression and suicide. Overall the process had become very disheartening.

Research has shown that fifty percent of those committing suicide had sought medical help in the month prior to suicides but not necessarily for mental illness (Michel, 2000). However five of the twelve suicides had not had regular or prior contact with the medical profession although two were known to local general practitioners for consultations in prior years with medical problems. On a more positive note, increased members of the community were presenting to the consulting rooms and the hospital for treatment of depression and other causes of poor mental health suggesting that there was a heightened awareness of mental health problems and that these were being directed to appropriate places of support and treatment.

It had been hoped that after ten years some changes should have been seen.

4. A. b. 1996-2005

The concept for phase two began in 1993 following the suicide of a school teacher, a well known and popular local identity. That was devastating and very depressing event for the community. It was the impetus for a major rethink of the community approach to suicide. As a consequence there was a deliberate attempt to broaden as far as practical the approach to suicide prevention. The suicide of the teacher brought the general practitioner into prolonged joint

discussions with the principal of the local area school (reception to year twelve) and with the director of nursing, for the purpose of finding useful resources within the community which could be utilised. These persons were consulted as they represent organisations of central importance within the community. As it was unlikely external resources would become available and solutions needed to be found within the local district a “S.W.O.T” (*Strengths, Weaknesses, Opportunities and Threats*) assessment was made.

This time a literature review was more helpful and, although there was still a paucity of information on how rural communities could attack the suicide problem (Hendryx, 1993; Kaufmann, 1993; Rygnestad and Hauge, 1991) there was an increasing focus on rural suicide (Henderson et al., 1991), rural mental health, and some information about early intervention (Kosky and Hardy, 1992), capacity building, and also what has become known as mental health literacy. An article by Gordon (1987) delineating Universal, Selective and Indicative approaches was also helpful.

By the end of 1993 these plans were being initiated, but it took time for this to be up and running in any formal pattern. However, by early 1995 the whole program was in place and running effectively. In the interval of 1996 to 2005 there was only one suicide, a nineteen year old youth who, following a night of drinking and an unhappy communication with his previous girl friend, died by hanging in his father’s garage. There was no suicide note, evidence of planning

or, even in retrospect, signs of psychiatric illness. However, several years earlier he had been identified as having very low self esteem as a result of undiagnosed dyslexia, albeit without obvious behavioural or psychiatric symptoms. Disappointing as this suicide was, the overall numbers for the decade 1995 to 2004 were a statistically significant improvement. Furthermore, not only was there the reduction of suicides but there was also a statistically significant reduction in those who attempted suicide.

It is pleasing to note that the strategies utilised are comparable but predated current recommendations from several national suicide prevention initiatives.

Indeed, it is pertinent to reflect on such national initiatives.

4. A. c. National Strategies of Suicide Prevention

1. Finland

Finland was the first country to address the suicide problem with a national program which initially took place between 1986 and 1996. It's initial aim was to reduce suicide by 20%, although it only managed to reduce it by 9% (Kerkhof, 1999). Although it was a national program, it was implemented in community-based settings. Its plan was to increase awareness of issues regarding suicide amongst the general population and health care professionals, to develop adequate treatment programs, to enhance cooperation between health professionals and finally a community wide program to treat, study and prevent depression. It involved school based programs, alcohol and drug abuse and post-vention.

2. Australia

Australia began its suicide prevention slowly and a decade later than the Finish program. It started with the National Youth Suicide Prevention Strategy in 1995 – 1999, which was later widened in 2000 to include a “whole of life” National Suicide Prevention Strategy (LIFE). There has been limited coordination between Federal and State Governments, and rural penetration has been patchy. A further report was issued by the Mental Health and Special Programs Branch in 2000 for the “**Promotion, Prevention and Early Intervention for Mental Health.**” This noted that:-

“Rural and remote communities require specific strategies to address their needs. Demographic, epidemiological and social indicator data provide evidence that individuals in these communities are at greater risk of health (including mental health) problems than those living in cities. The disadvantages experienced by people living in rural Australia require further research, however, as indicated by the Human Rights and Equal Opportunity Commission.

Social capital is central to the maintenance of mental health in rural communities and has been significantly eroded by recent changes to rural life. A sense of safety, connection and belonging to the community and the environment needs to be supported, along with strong emotional support networks among family and community. Adequate income, meaningful work and a sense of control over decision making are of vital importance. Also essential is access to services that support not only health and mental health but also socioeconomic, educational and justice conditions. Interventions to promote mental health need to focus on improving social capital in rural communities”(Department of Health and Aged Care, 2000).

3. United States of America

It was not until 1999 that The Surgeon General from the United States Department of Health and Human Services (2001) issued a “Call to Action To Prevent Suicide,” where recommendations were made to increase public awareness; to increase interventions at a community based and clinical levels and to develop methodologies to advance the science of suicide prevention. This developed into The United States National Strategy for Suicide Prevention (2001) “*Goals and Objectives for Action*” in suicide prevention (Table 4.1), which utilised Gordon’s (1987) model of universal, selective and indicated approaches.

Table 4.1

Strategies of the Centre for Disease Control (US) Gordon’s Model

CDC INTERVENTIONS FOR SUICIDE PREVENTION			
	Biopsychosocial	Environmental	Sociocultural
Universal <input type="checkbox"/> Intended to affect everyone in a population	<input type="checkbox"/> Incorporate depression screening into all primary care practice	<input type="checkbox"/> Promote safe storage of firearms and ammunition <input type="checkbox"/> Package drugs in blister packages	<input type="checkbox"/> Teach conflict resolution skills to elementary school children <input type="checkbox"/> Provide programs that improve early parent-child relationships
Selective <input type="checkbox"/> Designed especially for certain sub-groups at particular risk for suicide	<input type="checkbox"/> Improve the screening and treatment for depression of the elderly in primary care practices	<input type="checkbox"/> Reduce access to the means for self-harm in jails and prisons	<input type="checkbox"/> Develop programs to reduce despair and provide opportunities (increase protective factors) for high risk populations, such as Native American youth
Indicated <input type="checkbox"/> Designed for specific individuals who, on examination, have a risk factor or condition that puts them at very high risk	<input type="checkbox"/> Implement cognitive-behaviour therapy immediately after patients have been evaluated in an emergency department following a suicide attempt	<input type="checkbox"/> Teach caregivers to remove firearms and old medicines from the home before hospitalization suicidal patients are discharged	<input type="checkbox"/> Develop and promote honourable pathways for law enforcement officers to receive treatment for mental and substance use disorders and return to full duty without prejudice

Source: National Strategy for Suicide Prevention: Goals and Objectives for Action. (National, 2001).

4. Canada

In 2003 a discussion paper for the development of a suicide prevention policy was produced for the Winnipeg Health Authority Winnipeg Area Health Authority (2003) and included a comprehensive review of all available evidence of suicide prevention strategies. It was noted that no suicide prevention activity was found to have strong empirical support” (Gardiner et al., 2003). However, the Winnipeg suicide prevention team reviewed national programs of United States, Australia, New Zealand and England and formulated the following principles and goals (Winnipeg Area Health Authority, 2003).

“Principles

Common guiding principles outlined in the various national strategies were as follows:

- 1. Suicide prevention is a shared responsibility across the community and not the exclusive responsibility of any one sector of society or of health services alone.*
- 2. It requires a diverse approach targeted at the whole population, specific population subgroups and individuals at risk.*
- 3. Suicide prevention efforts should be evidence based, outcome focused and integrate continual evaluation.*
- 4. Build partnerships by incorporating community and consumer participation as well as provider involvement and expert opinion.*

5. Activities must be accessible, appropriate and responsive to the social and cultural needs of groups and populations they serve.

6. Efforts must be sustained to ensure continuity and consistency among all communities

“Goals”

Common themes related to goals and activities identified in the various national strategies were as follows:

1. To promote mental health and well-being, resilience and participation in community life for the population.

2. To promote and support research on suicide and suicide prevention.

3. To develop and promote effective clinical interventions (crisis support and mental health treatment).

4. To reduce the risk in key high-risk groups.

5. To reduce the availability and lethality of suicide methods.

6. To improve media reporting of suicide and mental health issues.

7. To improve and establish surveillance systems.

From this brief review it can be seen that the Tumby Bay program embodied most of the principles addressed in those National Suicide Prevention Programs. This is illustrated well by specific reference to the Canadian program:

- Principle 1 was comprehensively covered where a society-wide approach was made. Everyone including each individual was given a clear description and expectation of their gate-keeping role
- Principle 2. Again, all age groups from children, adolescents and adult members of the community were targeted. All community groups were engaged particularly the school and hospital, but also the town council through district community support group. Widespread community screening occurred by local education and screening programs in the school doctor's rooms and hospital
- Principle 3 was difficult to implement because of a paucity of evidence for rural based programs. Indeed, in this comprehensive review, even in 2003 no suicide prevention plans have strong empirical support or evidence base. However, the Tumby Bay program had commenced in 1986, was reviewed and extensively changed and has been reviewed since. The evidence has demonstrated a sustained and substantial reduction in suicide and attempted suicide. The schools program has been comprehensively evaluated.
- Principle 4 was met at all levels and focus groups with consumers and carers increased forward planning.
- Principle 5 was easily met as it was tailored to local community needs

- Principle 6. This program has been now operating for nineteen years and the need for community post-vention has only been required once in the last ten years.

The strategies suggested by the United States initiative, which used Gordon's (1987) model, that is, universal, selective and indicated approaches, were also consistent with the Tumby Bay plan. The universal strategies were covered with an approach to broad mental health issues, although a focus on depression, and this involved all members of the community, including the school community. Furthermore, the school program was to identify students at risks and, with their parents' cooperation, rectify problems found. It was not possible for us to change firearm laws, although this was done by the federal governments. Certainly the supervision and safety of medications taken by those with poor mental health was canvassed.

A selective strategy was used by the Tumby Bay Support and Action group (see local factors) to reverse the negative publicity and give direction in self-help programs to those struggling with the economic conditions of the time.

Indicated strategies included the careful management of those detected by screening either in consulting rooms, the school or the local the hospital or in those found to have co-existent mental health/emotional problems associated with physical illness. Indeed the hospital had a set protocol to be followed by all those with poor mental health or emotional problems (appendix 7).

The recommendations from these national reviews were determined by national experts after extensive review of the literature. It would have been useful information in 1986 or 1995 as the Tumby Bay community attempted to deal with the problems of mental health and resulting suicide. Fortunately, almost all these recommendation were pre-empted by the Tumby Program in using a broad based community approach to suicide prevention and continued evaluation and, where necessary, modification. Moreover the emphasis on utilisation of local resources has meant this program is ongoing at minimal cost.

It is probable that community measures to combat suicide take at least five years before results of those efforts may become obvious. This study was conceived over twenty years ago and, after modification, the principles which evolved were fully operational by 1995. Indeed, it appears that programs instituted by 1995 had the desired results, as reflected by the five year average rate of suicide which shows two distinct phases. The first indicates a small and modest decrease in the suicide rate, and the second phase demonstrates a dramatic decrease as the more complete program was put in place. It may be simplistic to suggest that the first reflects the results of attempting to tackle suicide alone by confronting depression, whereas the second demonstrated a more comprehensive and early intervention approach to suicide by looking at broader factors adversely affecting mental health. It could also be argued that Tumby Bay simply reflected the Australia-wide reduction that has occurred since 1997. However, the significant decrease preceded the general Australian community decrease, thereby suggesting the impact of the Tumby Bay project was important. Furthermore, the

reduction of suicide rates in Tumby Bay has exceeded the reduction of the Australian national rates.

It is also pertinent to reflect on a comparison by De Leo and Evans (2003) of different components of National suicide prevention programs, as shown in Table 4.2.

Figure 4.2
Comparisons of suicide programs after De Leo

NOTE: This table is included on page 89 of the print copy of the thesis held in the University of Adelaide Library.

This shows that the Tumby Bay initiative addressed each of these areas that were considered to be important.

All these comparisons illustrate that the breadth of the program in Tumby Bay anticipated many of the programs of subsequent National Suicide Programs which were introduced up to ten years later, and it is reassuring that they have had a significant impact. There are probably several explanations:-

1. The Tumby Bay Program had been evolving from 1986 and was comprehensively in place from 1995
2. The strategy of increased mental literacy was applied not only to the community, but also to relevant professionals such as doctors, nurses, teachers and counselors.
3. There has been a significant increase in mental health capacity.
4. An early intervention program directed at the whole community from children to the elderly probably made a contribution.
5. The Tumby Bay program appears to be comprehensively community-orientated and coordinated, involving all sectors and segments of society in raising awareness of suicide prevention strategies.

Each of these factors would be more difficult to coordinate at a national level, rather than in a small rural town, but overall it is probable that the consequences are similar.

It is of interest that De Leo and Evans (2003) reported that, with the exception of Finland, there was little evidence that National Suicide Prevention Programs had produced any benefit. This negative view was consistent with the earlier observations of Gunnell and Frankel (1994) that “*no single intervention has shown in a well conducted trial, randomized controlled trial to reduce suicide;*” the comment of Wilkinson (1994) that “*the reality is there is no convincing evidence that education, improved social conditions and support or better training play a substantial part in preventing suicide;*” and the view of Hawton and van Heeringen (2000) that “*review of treatments and intervention aiming at reducing the occurrence of suicidal behaviour has led to rather disappointing conclusions.*” However, this contrasts with the more optimistic review of Goldney (2005) who concluded that there is compelling evidence of lower suicides rates from a number of different countries and programs. He referred to Kerkhof’s (2000) review of the Finnish national program, De Silva and Jaysinghe’s (2003) report from Sri Lanka, a report from Knox et al. (2003) of United States Air Force Personnel, and also to German studies by Hergel et al. (2003). Furthermore, in Australia in 2004 the age-standardised suicide rate was 6% lower than the corresponding rate for the previous year and 29% lower than the peak in 1997 (Goldney, 2006).

Before concluding this section, it is pertinent to address the role of antidepressant prescribing. Thus there are still conflicting reviews about the role of antidepressants despite evidence of an association between reduced suicide and increased

antidepressant prescribing in twenty seven countries (Ludwig and Marcotte, 2005). The concern about antidepressants possibly being associated with suicidal behaviour was raised by Teicher et al. (1990), who described intense suicidal ideation after starting SSRIs, and recently Healy (2003) has also cautioned about the risks associated with SSRI's. However, Mann and Kapur (1991) noted the emergence of suicidal ideation and behaviour from all classes of antidepressants, and even ECT and light therapy for seasonal affective disorder. The risk of antidepressants in young people has been particularly controversial. Chan et al. (2003) described three random controlled trials and a systematic review supporting the efficacy of SSRI's in young people. More recently the risk-benefit ratio has been questioned by Jureidini et al. (2004a; 2004b), who warned against the use of SSRIs in children and adolescents. However other researchers have questioned this pessimistic view, and Jick (2004), in an examination of a large United Kingdom general practice data set, found no patient aged between 10 and 19 who had been on antidepressants had died by suicide, although 15 not on antidepressants had died by suicide. Similarly, Isacson et al. (2005) noted no SSRIs were detected in 52 suicides under the age of 15 years between 1992 and 2000. In Australia Rey and Dudley (2005) recommended that SSRIs should be considered for severe depression in adolescents.

Generally, antidepressants have been considered useful for treating depression, and in Australia Hall et al. (2003) noted that the association between reduced suicides and antidepressant prescribing could be considered a proxy measure of better treatment of depression. At the very least it now seems clear that although there may be an

increased risk of suicidal ideation, particularly when initiating treatment, at the population level they have a positive effect in reducing the suicide rate (Ludwig and Marcotte, 2005).

In regard to Tumby Bay there is evidence of a relatively high level of antidepressant prescribing (Appendix 11), and this occurred for two broad reasons. First, almost all patients were screened during general consultation for signs of poor mental health, thus increasing the detection rate of depression. Second, antidepressants were generally used as a first line therapy, along with cognitive behaviour therapy and counseling for moderate to severe depression or chronic dysthymia of more than six months duration.

Overall it is not possible to conclude that the reduction in the number of suicides is the result of programs which have been put in place. Thus the research criteria are far from the criteria required for a randomized controlled trial, the accepted gold standard for research. However because of the low base rate of suicide such trials are not possible. Indeed, with a population of only 3000 there was never any intention to conduct a randomised controlled trial, but merely to reduce the number of suicides in the district by whatever means possible.

4. B. LOCAL and OTHER POSSIBLE CONTRIBUTING FACTORS to SUICIDE RATES

Although it can be confidently asserted that the initiatives described have had an important input to the Tumby Bay Community, other broad socio-economic issues should also be considered as possible contributing factors to the changes observed.

a. Local Primary Industry

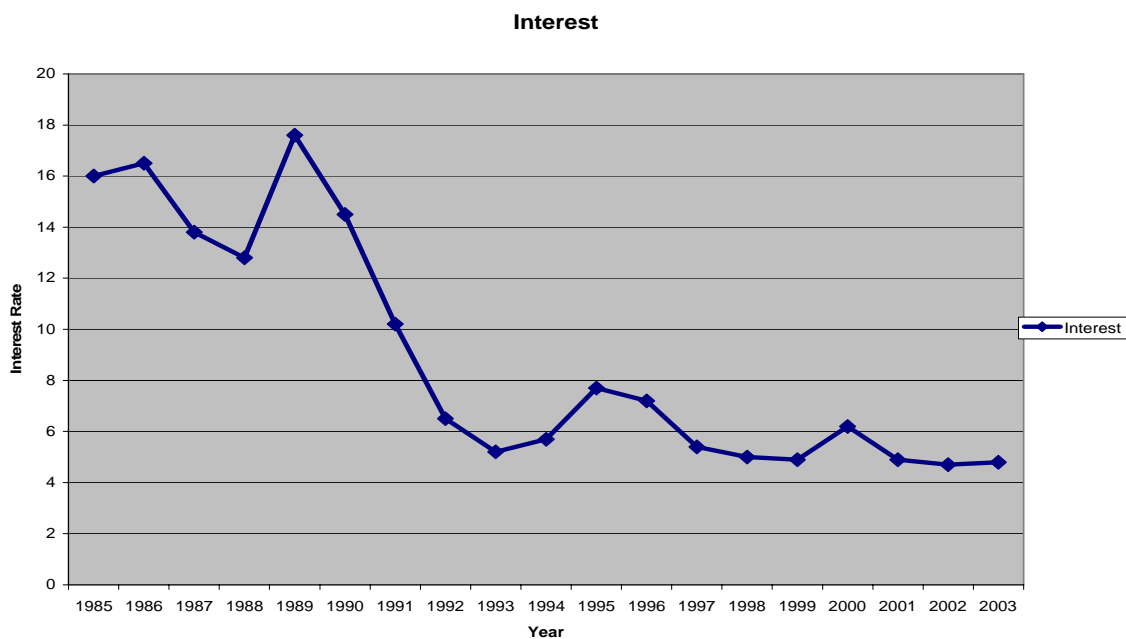
It is well known that since the middle of the twentieth century, rural suicides rates in Australia have exceeded those of urban areas, particularly with regard to young and elderly men. Furthermore, the method of death had predominantly been by firearms, as until restricted firearms legislation, they were readily available to rural males and less likely to be available to the urban counterparts. Furthermore, isolation and lack of appropriate counselling support services were possibly contributing factors.

Rural farmers have traditionally been expected to be more resourceful, innovative and independent in primary industry, which is the main source of employment. This is also subject to significant fluctuations and return for risk. Unemployment has been high in rural areas, and there were few jobs available which offered permanency and regular income. To aggravate these problems, the late 1980s and early 1990s was a time of economic rationalisation, where rural communities lost many of their community services both in the public and private sector. The utilities of power and water maintenance were rationalised to the larger urban towns, and government support services such as agronomists and social security services moved to the larger urban populations (Human Rights and Equal Opportunities Commission AGPS, 1998). Health services were regionalised; farming support services were also regionalised or withdrawn; and banks closed. Furthermore, banks were deregulated in the 1980s, and

farmers were actively encouraged to get “bigger and more efficient” and the banks were very keen to offer loans, often using new found overseas capital. Much of the money was lent without proper assessment of risk. Unfortunately, the interest rates were extremely high and the low international value of the Australian dollar meant the cost of overseas loans became excessive. It was not uncommon for farmers to find interest rates taken at 10-12% per \$A had rapidly become 25% per \$A following unfavourable exchange rates.

All these factors were relevant to Tumby Bay to such a degree that the state newspaper “The Advertiser,” reported on March 9, 1991 that Tumby Bay was a ‘dying town.’

Figure 4.3



The above table shows interest rates peaked in 1989 for Australian loans, and overseas loans had even higher interest rates. Farmers and local businesses were squeezed by

these rates which only stabilised in the period 1993 to 1997 and these higher rates coincided with the period of peak local suicide. This contributed to a general feeling of depression in the community although it is difficult to see how this would have directly affected the cases of suicide except for uncertain employment for victims. At the same time the commodity prices of the main produce of the region show a corresponding dip.

The district is almost totally reliant on the farming sector. In 1986 there were 2,600 farmers on Eyre Peninsula, but by 1991 this had dropped to 1800. By the latter part of 1990 and early 1991 the district was overwhelmed by a pervasive sense of hopelessness, anxiety and depression. One in five farmers was unable to find carry-on finance (Lawrie and Robins, 2003). Although poor commodity prices were one contributing factor, for individual farmers, variations in the season were also stressful. The seasons are difficult to quantify because of the wide variation of rainfall in the area and the nature of the land with some being far more productive than elsewhere. Needless to say poor seasons and poor commodity prices were the death knock for many farmers as illustrated by the reduction of over 25% of farmers. This itself caused a change in community relationships and contributed to a sense of community loss and uncertainty consistent with the sense of anomie of Durkheim (1897) and changing relationship of populations (Wilkinson and Israel, 1984).

During poor seasons farmers who had previously been cautious found they were overcapitalised, could not repay their debts and the banks rapidly foreclosed. This caused a large drop in land prices, which meant that farmers' collateral decreased in value and banks became increasingly nervous in considering that there was greater risk

for existing loans. The banks simply increased interest rates of existing loans, to “cover” the risk such that more farmers became non-viable. Unfortunately this was a national and state phenomenon but Tumby Bay was part of it and many local farmers, whose land had been in the family for generations and who were caught in this economic trap, walked off the land with nothing for their life’s labours except the debt of bankruptcy, with no possibility of local employment and the very difficult task of moving their destitute families to the capital cities, with no prospect of employment, housing or support.

In considering the suicides that occurred, only two of the elderly farmers seemed involved and, although retired they may have had concerns about the “family” farm. The other victims had been shielded somewhat by other employment or partner’s employment. Nevertheless, there was a pervasive definite sense of “doom and gloom” in the community, as reported in *The Advertiser* and each successive suicide, and family moving out of town, reinforced and aggravated it. However, this does not explain why suicides in Tumby Bay were excessive in the years 1986 to 1995 when many other rural communities were suffering the same problems. Nor does it explain why Tumby Bay suicides seemed to cease in 1995 whilst the national peak was in 1997.

b. Local Social Factors

There was one other significant social factor which may have contributed to reduce the suicide rate. Following the doom and gloom report in *The Advertiser*, one of the local

clergy declared a public meeting to investigate ways of arresting the apparent imminent demise of the town. He was a senior man who had spent most of his life in impoverished parts of the world helping local communities review their local resources and improve their economic viability and vitality. Following a meeting in February 1991, a group of townspeople formed “The Tumby Bay Support and Action Committee” in an endeavour to do the same for Tumby Bay. During the next few years a support and action group mobilised the community into local projects and gave the community a sense of future. They organised rural counsellors, financial counsellors and self help-programs. The need for the support and action committee disappeared after several years, although the rural counselling has continued on. Nevertheless, it is possible that this initiative also contributed to a more resilient community.

Overall this is consistent with the concept of the “tipping point,” first described by Tittle and Rowe (1973) and developed by Goldney (1998), whereby it is postulated that a number of negative social or environmental factors interact to produce an increase in the suicide rate. In the case of Tumby Bay, poor seasons, high interest rates, poor commodity prices, and community “doom and gloom” together produced the increase in suicide rates; whereas the self-help reassuring advice of the “Tumby Support and Action Committee” along with an enhanced community awareness of mental health issues and pathways for support together, reduced the suicide and tipped the balance the other way.

It may also be pertinent that The National Rural Health Alliance (1997) identified a range of criteria to assist the survival of rural communities. These were interpreted by the Victorian Rural Communities Task group (VicHealth, 1999) to involve:

- local ownership and development of programs;
- collaborative work between funding bodies and rural communities;
- communication in a language and medium that the community understands;
- goals developed with genuine consultation with the community;
- programs based on fostering the capacity of the community to
 - promote their own mental health;
- supporting rural communities to enhance their sense of control; and
- reducing inequities in income, unemployment and access to essential Services.

The Tumby Bay programs were indeed locally derived and were based on using local resources. There was widespread collaboration and communication across the community. Programs were presented to community forums which were well received. The goals of improving suicide by improving mental health were clearly delineated and evaluated by focus groups. Community capacity was increased at all levels (see later chapter). The Tumby Bay Support and Action Committee gave the community not only a sense of control but a sense of purpose as well and endeavoured to address the issues of community inequities.

Most other rural communities have survived the recession that occurred, in an economic sense, although suicides continues to occur such that their rates among young men peaked in 1997 but has continued on albeit at a slightly lower rate (Laukkanen et al., 2002). This is particularly so for young men in towns with populations less than 4000 (Dudley et al., 1997). Nevertheless, suicides have continued in other rural and remote regions and still exceed urban levels.

c. Other factors.

It is also fair to note that reduction in suicide has occurred in a number of developed countries (Goldney, 2006; Isacson, 2002; Ludwig and Marcotte, 2005) and that could explain the reduction of suicide in Tumby Bay. However, the Tumby Bay reduction predated and exceeds the reduction of the national level, so this becomes a less plausible explanation of the present results.

Chance alone could also explain the reduction in suicide rate, but statistical analysis over the long period of a decade suggests that this is not likely, and that other factors have been operating and are more likely to explain the reduction of suicides.

4. C. STRATEGIES UTILISED AT TUMBY BAY

a. Mental Health Literacy

The community

How well the objectives of increasing mental health literacy were met is difficult to ascertain. In retrospect, it would have been useful to have utilised assessments such as

that described by Jorm et al. (1997) or even the General Health Questionnaire in the community before and after the programs and at regular intervals following. However, the term ‘Mental Health Literacy’ had not been formulated at the inception of this study, and resources were not available to incorporate such psychometric instruments in 1986. Initially simple questionnaires, before and after, were used more as a guide for future presentations and to ascertain what the participants liked and thought. Unfortunately, presentations were limited to an hour because that was generally considered what community members would accept and remain interested. Even so, the common complaint at almost all meetings was “information overload” and a request for further presentations. The content and information conveyed was found to be interesting and helpful, as the tables in outcomes demonstrated. Furthermore, there were more hospital admissions following the talks and more patients presenting to the doctor’s rooms following each presentation. It would seem that the program went some way toward reducing the widespread community misunderstanding and stigma attached to mental illness (Mechanic, 2002). Rost et al. (1993) also found there was greater stigma attached to mental illness in rural areas than in more urban areas. In retrospect other groups that had not been targeted until recently were sporting associations, where coaches also are sensitive to subtle changes in the psyche of the athletes they train.

General Practitioners

During the program, knowledge about mental illness and its management increased markedly. The continuing education sessions at the intensive care units of adult and adolescent units were important for increased confidence and competence in treating

acutely unwell patients, particularly those requiring hospitalization. Moreover, the principles taught in the “Keep Yourself Alive” program were invaluable. The assessment and management of dysfunctional children and adolescents was entirely learnt during this program, to the extent that confidence was gained in dealing with the difficult and uncooperative adolescent, so much so that the adolescents were being referred from surrounding areas. The importance of social background, academic performance and emotional problems were such that virtually every individual was screened by verbal clues during any consultation for any reason. This helped also in the identification of children and adolescents with underlying problems.

Nursing Staff

The importance of increasing the mental health literacy of nursing staff could not be overestimated. As community members they are often asked for advice well outside their nursing duties and frank informed answers, particularly as to the nature of particular illnesses or resources for assistance, were invaluable. Accordingly they increased their ability to treat severely unwell patients with psychosis or major depression, and this allowed patients with these conditions to be managed locally. Furthermore, they began to recognise signs of mental illness in those admitted for unrelated matters, such as myocardial infarction or fracture neck of femur. Finally many mental crises do not occur in office hours and the hospital is the main point of triage after hours. This meant that nursing staff who were triaging patients after hours now have the ability to rapidly assess the nature of problems presented, the urgency of

management and safety issues, as well as reassuring the patient until appropriate assistance can be found. Skills were improved by special lectures by the educational psychologist on understanding specific learning difficulties and their management, and on understanding psychiatric issues by the general practitioners. They became very astute at detecting early warning signs of dysfunction, assisting in the detection of previously unsuspected emotional problems in children. This has been noted by other researchers (McCutchen, 2002). Post lecture questionnaires received a very positive response

Consumers and Carers

It was considered important that this group understood the illness associated with them, in particular the early warning signs and symptoms, in order to present in a timely and appropriate manner.

Mental health literacy was a term coined by Jorm et al. (1997), but the principles behind it were being utilised in the Tumby Bay program before that time. There have been similar programs elsewhere, such as in Rogaland in Norway (Johannessen et al., 2001) and in Ontario in Canada (McAiney et al., 2006) and in the Compass program in California United States of America (Wright et al., 2006). Its success has been attributed to a total community approach including general population, health professionals and schools, and this is exactly what has occurred in the community based programs in Tumby Bay.

4. B. b. Increasing Mental Health Capacity

Mental Health Capacity is difficult to define, but it embodies, workforce development, organisational development, partnerships and resource allocation, all of which are considered to be predictors of sustainability (Hawke et al., 2000) An example of an attempt to assess and monitor capacity building has been provided by Ausinet (O'Hanlon et al., 2002). They reviewed capacity building in eight separate sites (not including Tumby Bay) and re-evaluated them two years later. Some were government organisations, but others were non government agencies, and most were directed at increasing capacity related to child and adolescent mental health or suicide prevention (O'Hanlon et al., 2002). Generally the findings were similar and comparable with the Tumby Bay Program although the Ausinet program addressed reorientation of the workforce, whereas the Tumby Bay was augmentation of the capacity of the workforce.

Ausinet reported that workers involved found that barriers were work load, whereas the Tumby Bay Program eventually reduced workload by the resolution of chronic problems and reduction of crisis counselling. The only real barriers were those of a silo mentality confined to several individuals who thought the program encroached on their territory, or they did not consider it was their responsibility. One example was a guidance officer employed by the Education Department who thought his work was being criticised, until persuaded that his work load was being reduced. Some general practitioners involved in the child and adolescent mental health program felt

uncomfortable with child and adolescent mental health psychiatry and required further training.

The original intentions of the Tumby Bay Program were to address these issues, but they were independent to a large extent on ongoing funding. Nevertheless, even without funding, gains were made, and they appear to have been sustained because they made the relevant workers' lives more rewarding, effective and efficient.

The General Practitioner

A part of the strategy was for the general practitioner to gain intensive training in the management of mental illness by spending six weeks in the acute emergency ward at the former Hillcrest Hospital. Another strategy was to ensure that the general practice reception staff had an increased capacity to recognise mental illness and make provision for appropriate consultation and length of consultation.

Child and Adolescent psychiatry has been poorly taught until recent undergraduates, and Child and Adolescent Psychiatrists are in short supply. However, with the advent of the child and adolescent program, access to a senior visiting child and adolescent psychiatrist was gained and basic principles were appreciated. This was reinforced by the "Keep Your Self Alive" program run by Dr Graham Martin as a "train the trainer exercise" (Martin et al., 1997). Finally, one of the general practitioners spent eight weeks in Boylan ward, the acute child and adolescent psychiatric ward at Women's and Children's. This experience was considered the most important and most difficult to achieve due to the paucity of programs available anywhere, but particularly for rural

areas. Thus even the better outcomes initiative of the Federal Government Department of Health and Ageing (2000) has largely ignored child and adolescent mental health, and the General Practice Standards Committee has not approved or even been presented with a child and adolescent mental health program for use by general practitioners.

The value of the increased capacity to deal with and feel comfortable with child and adolescent mental health problems in the local community is invaluable. This is important as many psychiatric conditions have their origins in child and adolescent development. Furthermore, strong resilient personalities are an important rite of progress for teenagers.

Nursing Staff

The importance of increasing the capacity of general nurses to work with mental health problems was their ability to:-

- Competently and comfortably deal with acute crisis triage in a timely caring and professional manner.
- Manage acute psychiatric conditions such as acute psychosis, major depression or mania, where previously they had been sent to a tertiary unit
- Detect those health conditions which often masquerade as somatic symptoms, or coexist with increased morbidity with other medical conditions or significant chronic illness.

This increased capacity was achieved by in-service lectures by one of the general practitioners, utilising both the common causes of mental health, and also specifically

addressing psychosis and its nursing management. Finally, a template was used for nursing staff to complete each mental health crisis presenting to hospital, or for the assessment of a patient suspected of having either a mental illness or coexistent one.

There are no statistics regarding the success of the training in the form of pre or post lecture questionnaires, but the increased admission rate for all causes of mental illness, and in particular psychosis and depression, suggested that the nurses were able to adapt to their new roles.

Teachers

This group of professionals was extremely important to the overall strategy. The most difficult task initially appeared to get them on side. There were three dilemmas for teachers.

- They were concerned that their work load could significantly increase and that their central role of teaching might suffer. Furthermore, they were concerned they may have been given direction which was impossible to implement in their class rooms structure and have still it functional.
- They were also worried that they might take on a role for which they were not only untrained, but for which they were unsuited and uncomfortable.
- Finally they were worried that the “new” approach might end in disastrous consequences and that they may be blamed for or, worse, feel responsible for the situation.

This did not happen and in fact the teachers became very astute at detecting subtle signs suggesting there was an underlying problem.

Retired Professional

Retired teachers or nurses were persuaded to complete a counselling course at the University of South Australia and one retired teacher completed a graduate diploma in community mental health counselling

In considering mental health capacity overall, the general practitioners, nurses and teachers all felt rewarded by there being fewer emergencies, there was more cooperative effort between disciplines, and it appeared that more favourable outcomes occurred than had previously been thought possible.

4. D. c. Early Intervention

Community

Early identification and intervention was really dependent on increasing community mental health literacy and community capacity. The success of the early intervention in the school community was outstanding, as discussed later. However success in the community was more difficult to measure, particularly the initial aim to teach the community to “be their brother’s keeper.” In other words, how effectively did community members recognise warning signs of poor mental health and refer them to appropriate places of treatment? Certainly there was an increase in patients presenting directly with mental health symptoms, rather than somatic complaints and only mentioning depressive symptoms as they walked out the door. Secondly, there was a marked reduction in crisis counselling.

General Practitioners

Overall there was an appreciable detection of depressive illness and mental health problems in general. The National Prescribing Service has demonstrated that the principal researcher had a significantly increased rate of prescribing antidepressants (appendix 11), which may reflect an increased pick up rate and management of depression, although it could also reflect over prescription.

Patient safety was always canvassed during consultation regarding issues of mental health, and patients at risk were always directed to personal supports and often this was by early and direct admission to the adjacent hospital. Suicidal ideation and behaviour was addressed by asking questions such as:-

1. ***“Have you thought life not worth living lately?”***
2. ***“Have you thought how you might possibly end it?”***
3. ***“What arrangement have you made?”***

Nursing Staff

Early intervention here was also difficult to assess, although much more expert triaging meant that patients were having emotional problems detected and treated earlier. However, perhaps the biggest gains were in nursing staff recognizing psychological stresses in patients admitted for unrelated causes. The number of cases of co-existent depressive illness increased dramatically. Nurses became particularly sensitive to

problems of insomnia and checking whether it was a long standing or only an admission phenomenon.

Schools Program

The early intervention program instituted within the area school from reception to year twelve was introduced for three reasons

1. Many adult patients with mental illness could trace the beginning of their illness back to primary school.
2. There were teenagers who were frequently in crisis with parents, teachers or their peers who were extremely difficult to manage. It was thought that if their illness had been identified earlier it would be easier to treat, as described by Ryan (2003) and by Dickinson et al. (2003) in New Zealand, with the “Travellers” program for teenagers.
3. There were students whose behaviour and performance or academic progress suggested problems.
4. Many parents were happier to seek assistance through the schools, rather than attempting to access other mental health supports (Sourander et al., 2004). At Tumby Bay mental health assessments were not only economically and geographically difficult to access prior to the program, but following its introduction parents preferred school access. It was also found parents were accurate predictors of emotional problems with children, as was found by other workers (Ellingson et al., 2004).

The overall concept of early intervention was summarized by Auseinet in a Monograph on Early Intervention for the Australian Government. It was suggested that several process indicators should be implemented (Department of Health and Aged Care, 2000):-

- *Process indicator 1: Increased monitoring and surveillance of mental health problems, mental disorders, and risk and protective factors, including social and family functioning.*
- *Process indicator 2: The presence of evidence-based programs related to promotion, prevention and early intervention for all priority groups.*
- *Process indicator 3: Increased early identification of mental health problems and mental disorders and appropriate referral.*
- *Process indicator 4: Increased community education related to mental health.*
- *Process indicator 5: Increase in public policy and practices that promote mental health in all relevant settings (including family, education, workplace, recreation and community).*
- *Process indicator 6: Increased professional education and training.*
- *Process indicator 7: Increased inter-, intra- and multisectoral collaboration and partnerships.*
- *Process indicator 8: Increased mental health research and evaluation Activities.*

Process indicator 1

It can be seen that the Tumby Bay program partially fulfilled by its community approach and, in particular, its schools approach.

Process indicator 2

Although evidenced based programs were not available in 1993 the Tumby Bay Program has used strategies later suggested as best practice, particularly its whole of community approach

Process indicator 3

Basically fulfilled by whole of community approach, such as teaching community to be their brother's keeper, screening in general consultation, looking for disability in schools and coexisting mental health problems in patients in general hospital

Process indicator 4

Fulfilled by both broad based community education strategies and educating special skills appropriate for other professionals.

Process indicator 5

Partially fulfilled with protocols in school and hospitals

Process indicator 6

Fulfilled with training of community, general practitioners and teachers

Process indicator 7

Definitely fulfilled with intersectoral communication and cooperation

Process indicator 8

Careful records and statistics kept partially fulfils this requirement.

The comprehensive approach instituted by the program running in 1995 clearly predates the recommendations of the monograph produced by Ausienet for the Australian Government and it fulfilled most suggestions for an early intervention approach.

4. D. d. Child and Adolescent Health Services

The child adolescent component of the program was based on the premise that suicide had multi-factorial causes (Pfeffer, 1968). However, there were other important considerations.

1. Many adults with mental health problems could clearly track them back to childhood. The formative years of childhood and adolescence are an important basis for growth of personality and behaviour. Subsequently, other researchers have found clear evidence that behavioural problems in children often escalate with time, making them more difficult to treat (Bernstein et al., 1996). Furthermore, a monograph on Promotion, Prevention and Early Intervention for Mental Health reported “*Internalising disorders such as depression and anxiety often have their earliest signs in childhood. Anxiety disorders are the most common mental health problem in childhood and if left untreated, they tend to persist: many adult psychological disorders can be traced back to anxiety disorders in childhood*” (Department of Health and Aged Care, 2000). And subsequently “*Experiences in childhood lay the foundation for mental health later in life.*”

There is very clear evidence showing the continuity of disorders between childhood, adolescence and into the adult years. Many prevention activities for mental health problems are therefore ideally placed in childhood. This can have the effective impact on the developmental trajectory of mental disorders and other psychosocial outcomes, the possible cumulative effect of risk factors and the development of resilience” (Department of Health and Aged Care, 2000)

2. There were already teenagers with problems and behaviours, some of whom were difficult to deal with from the schools point of view, as well as from the general practitioner’s point of view. Subsequently this has been suggested by many researchers who have found the incidence of mental health problems in teenagers of 15 % to 20% (Department of Health and Aged Care, 2000; Hofstra et al., 2002; Sawyer et al., 2000; Zubrick et al., 1995). It seemed obvious that children were much easier to get back on track the younger they were and the less severe their disability, whatever that may be.
3. There were no adolescent child and adolescent services of any type available to students in the local community and we endeavoured to put some form of structure in place.
4. The school and hospital are central facilities in small rural towns and initiatives focused on them result in maximal community response. Indeed,

this was recommended in a World Health Report (World Health Organisation, 1986).

It is of interest to note that a “Health Evidence Network” group reviewing evidence based programs for the World Health Organisation reported evidence for the success of school based programs (Guo and Harstall, 2004). They stated “*School based suicide prevention programs focusing on behaviour change and coping strategies in the general school population indicated lower suicidal tendencies, improved coping skills.*” Other researchers have also confirmed the importance of school programs for improving student mental health (Dickinson et al., 2003; Durlak and Wells, 1997,1998; Hosman and Jane-Lopis, 1999; Laukkanen et al., 2002; Quality of Care and Health Outcomes Committee, 1997; Tilford, 1997). Sawyer et al. (1990) found that children and adolescents presenting to a mental health unit with behavioural problems were referred by general practitioners and school guidance officers and recommended they had an important role to play in early identification. Furthermore, Fotheringham and Sawyer (1995) found adolescents preferred to get information about mental health from schools or television rather than designated mental health services. For conduct disorders, Bierman (1997) suggested rural schools could play an important role in treatment of conduct disorder. This concurs with a report from Promotion, Prevention and Early Intervention for Mental Health-A Monograph, by Mental Health and Special Programs Branch, Commonwealth Department of Health and Aged Care, where it was stated that “*There is strong evidence for the effectiveness of prevention*

programs related to child and adolescent mental health, and for early intervention for behavioural disorders in children and in response to early warning signs for psychotic disorders in late adolescence and early adulthood. A meta-analysis of universal prevention programs for children and adolescents revealed that they were at least as effective as many established treatment interventions in medicine and the social sciences” (Department of Health and Aged Care, 2000). Thus by the late 1990s there were many school based programs which have been shown to improve mental health. This evidence was not so obvious five years earlier when the Tumby Bay Program began, so that what appeared to be a good idea at that time, has subsequently been shown to be proven strategy. However, there is no clear evidence from the World Health Organisation reports how relevant that is to small rural communities. Nevertheless, a similar model was recently proposed from Tasmania rural areas (Malcolm, 2000, 2002).

In the early 1990s there was little literature as to how to institute a mental health, and preventative suicide program in a small school. The Tumby Bay Program decided on a team approach. There had always been informal discussions between the school principal, general practitioners and parents about how best to manage students with disabilities. The rationale was that general practitioners understood a little about mental illness and medical problems; teachers had background knowledge of relevant psychology and student behaviour; whilst the parents often had good insight and were useful historians. By pooling various skills it was thought a reasonable assessment could be made. The Tumby Bay program added a registered nurse to the team, as they

were useful at coordination and education of parents. This group constituted “*the team.*” Fortunately, at the same time a commonwealth grant was received to enable the employment of a psychiatrist and educational psychologist on a consultative basis. These consultants played three important roles. Firstly, they played a diagnostic role, confirming or otherwise diagnoses made; secondly, a therapeutic role; and thirdly an educative role for the student, parents and very importantly members of the team. Although the pooled efforts of the team were reasonably accurate, as described later, it was reassuring to all involved to have a second line of expert review for the findings of the team. Although the specialists refined each diagnostic category, the team approach successfully categorised the nature of the problem in each case. The learning curve for the team was rapid and steep.

The identification phase

Teachers were taught the hard signs (DSM IV) and a group of soft signs (appendix 5) that they may observe in the classroom. It was thought that DSM signs may be too specific and limiting and students may be missed. The list of soft signs did not necessarily mean the student who exhibited some of them was definitely at risk, but it was an indicator to look for more signs and carefully monitor the student’s behaviour and performance. In addition to depression there were other conditions such as learning problems. Indeed, there is a complex relationship between learning problems and emotional problems, with either preceding the other or coexisting together (Spreen, 1989). Other behaviours had symptoms and signs whose significance was initially uncertain for the team. Therefore a broad sweep was made for any student whose

behaviour or performance was considered unusual for that student or compared with their peers, was an indication for assessment. This approach has been subsequently recommended by other researchers. For example, Krigger et al. (2002) reported “*A careful assessment should determine the work-up, correct diagnosis, and treatment. Additional primary care physician responsibilities in school dysfunction cases include patient education, family support, and specialist referral, if necessary.*” Within the team these students were considered as “possibly dysfunctional,” but no diagnosis or label was attached until a formal assessment had been made.

Consent

Once a student was so identified, the parents were contacted requesting an interview. The site of the parent interview was at the school with the school principal if the main problem was considered behavioural or learning, or the general practitioner if the main problem was thought to be medical/ psychiatric. Often interviews took place in both sites. These interviews were kept confidential. There was never any compulsion for both parents to be present but this was recommended

It was important that each student was given a full explanation of the process and questions were answered. The student was always informed of the findings and the management plan.

Management Phase

The strength of the overall program was the progression from identification of perceived problem, to the assessment of that problem, and that assessment always

dictated the principles of the management plan for each student. Each plan was tailored for that student and the perceived needs. All members of the team, relevant parents and the student were clearly informed of the management plan. Often this may have involved behavioural contracts or work commitments, or intensive remedial work such as reading recovery. As there were no specialist remedial services available, this was usually overcome by co-opting retired school teachers, professionals or interested parents as a part of the remedial work required. The management phase involved regular evaluation of progress. That occurred no less than quarterly, but in reality each student's progress was monitored at weekly or fortnightly meetings with the team. This assessment and management phase decided and utilised in the early 1990s in Tumby Bay is congruent with a subsequent report of the National Health and Medical Research Council (1997) who in a report regarding ADHD stated *“That children suspected of having the disorder should undergo a thorough assessment before diagnosis is made. The assessment should include medical, developmental, behavioural and educational components. An individualised management plan should be developed that involves consideration of simultaneous medication use, behaviour therapy, educational management and family counselling and support. Management plans should be reviewed regularly.”*

4. D. d. i. Co-operation

Students

As it transpired, student resistance never progressed past the first interview and as the student's problems resolved they became willing participants in the process. Not a

single student balked at the process once it had commenced, and they were almost universally cooperative with the process.

Parents

Out of a school population of 350, there were 49 (14%) students identified who were assessed. Consent was not able to be gained for two students. The remainder of the parents was extremely happy that help was being offered, and they were part of the process and were continually informed of plans and progress. In almost all cases they were delighted with the progress and outcomes.

Teachers

Initially there was a slow trickle of referrals, usually from the difficult students to manage or those with obvious disabilities. However, as these students were assessed, and if necessary further investigations made and a management plan instituted, the teachers became more enthusiastic as problem students in the class room became more manageable. They quickly became very astute at discovering subtle signs and uncovered a second wave of students with problems.

4. D. d. ii. Confidentiality and Labelling

Significant effort was made to make the whole process seamless and unobtrusive. All information was kept within the team and regarded as highly confidential, but all findings were transferred to relevant parents and students involved. Falloon et al. (1996) warned “ *Early intervention is the very antithesis of the “labelling” concepts that have been so justifiably criticized.*” However, in the local program tight confidentiality was made because interviews and consultations occurred within the

privacy of the principal's office or the doctor's consulting rooms. Any confidentiality that was lost was students discussing their progress with their peers. In fact many students lost self imposed labels of themselves as failures or labels from their peers as "dropouts or troublemakers". Indeed, students previously isolated either voluntarily or by group pressure regained normal social interaction and contacts.

Overall the process was extremely effective because, as the assessment phase determined, for the most part, the management plan, the team's skill and knowledge level increased dramatically as the initial students were processed. Patterns of behaviour started to emerge, and more subtle changes of signs and symptoms of depression or dysthymia in students, as shown in (appendix 4c Student Depression) were recognised.

4. D. d. iii. Protocols.

Initially on assessing a student, the team endeavoured to find every bit of significant information about the student and his or her environment. However, it soon became obvious that after the exclusion or management of medical problems, the team invariably found four areas of prime importance.

1. The student's behaviour at home, at school, and with his or her peers. Usually behaviour was disturbed in at least two or three areas, although problems at home or school alone were encountered. The importance of this assessment has since been discussed by other researchers. Thus Albrecht et al. (2003) noted that once a full

assessment of disturbed behaviour has been made, better management strategies can be instituted.

2. The student's academic performance was always checked with current schools teachers and then compared with all school reports including previous years. Often a common pattern was found such as inattentiveness, disruption or poor motivation. It was not uncommon to find six years of very poor performance without any evidence of educational psychologist assessment.
3. Psychiatric symptomatology, as described in DSM IV, or warnings symptoms as indicated in the appendix of soft signs.
4. Social environment, which included parents, siblings, grandparents, friends and sports

No student was considered fully assessed until these areas were fully covered. The importance of a medical examination was important to exclude visual and hearing problems, or chronic illnesses such as tonsillitis or sinusitis.

4. D. d. iv General Comments

The team demonstrated an ability to identify dysfunctional students and over a period of eighteen months identified 49 students the team believed would benefit from formal assessment. The identification rate of 1 in 7 corresponds with the findings of Sawyer et al. (2001) in a survey of Australian young people. It also is congruent with research in other western countries, including that of Verhurst et al. (1989) in Holland in 1989, Hannesdottir (1995) in Iceland, and Lehmkuhl et al. (1998) in Germany. Indeed, it is pertinent that the Mental Health and Special Programs Branch, Commonwealth

Department of Health and Aged Care, reported in monograph “Promotion, Prevention and Early Intervention for Mental Health (2000)” :-

“Mental disorders account for 16 per cent of the disease burden in children aged 0–14 years (Mathers, Vos & Stevenson 1999), and mental health problems become increasingly prevalent during childhood. According to the 1993 Western Australian Child Health Survey, nearly one in six 4–11-year-olds have had a mental health problem compared with more than one in five 12–16-year-olds, within a 6-month period (Zubrick et al. 1995). In the recent child and adolescent component of the National Survey of Mental Health and Wellbeing, 14 per cent of children aged 4–17 years had a mental health problem in a 12-month period.

Comparisons between these reports are difficult because different populations are being studied. Many are studied on referral to mental health units, but others are population studies (Achenbach and Edelbrock, 1983; Rutter et al., 1976). Furthermore, some are by interview and others are by checklists or questionnaires (Achenbach et al., 2003; Allison et al., 2000; Hodges and Gust, 1995). Finally, different definitions of conditions have been utilised.

By contrast with the above studies, the present work is a rural study looking at a stable school population over two years looking for disability or dysfunction. In fact, bearing in the mind that the team identified students on the basis of observed behaviour and performance, the identification rate of 1 in 7 is strikingly similar to all the other research findings.

After diagnostic categories were assigned by the team, students identified were assessed by senior specialists, either child and adolescent psychiatrists and or senior educational psychologist. Of the twenty eight assigned to the group of psychiatric symptoms, twenty were confirmed to have an identifiable condition according to DSM IV. There was one conduct disorder; the remainder was dysthymia or major depression. Of the twenty students identified with learning problems, nineteen had specific learning difficulty. The remaining one, though well behind, was of above average intelligence but had missed the basics due to the fact he had moved to five different schools in the first eighteen months of his schooling. It was interesting to note that his mother did not have numeracy skills and his father did not have literacy skills.

Thus with this “snapshot” the team was able to demonstrate it could identify students with problems. The sex ratio and school years where they were identified were consistent with other studies whilst the small number of female students was less than other studies. The possible reasons for this will be discussed later. The fact that a senior paediatric psychiatrist and senior educational psychologist was able to confirm the diagnosis of students identified with psychiatric symptoms and learning problems respectively, was reassuring to the team regarding the accuracy and competence of the process.

When this program was expanded to five other schools it is of interest that there was a similar picture, with no psychosis being detected and only one child was identified with

Attention Deficit Hyperactivity Disorder (ADHD) from over 1000 students surveyed. The latter was managed with behavioural management programs alone. The rate of ADHD is variously quoted at between 5-10% (Centre for Community Child Health and Ambulatory Paediatrics, 2005). However, if 5% is the expected rate, more cases of ADHD would have been anticipated. The nature of ADHD and the design of program should have easily identified students, as distractibility and chronic inattention are one of the key features teachers look for as they are most disruptive when teaching. That is not to say that hyperactivity and distractibility were not found, but other causes such as learning problems or emotional problems seemed to be the underlying problem and resolved when appropriately managed. It is pertinent to remember that most of the students with problems, particularly if they affected learning, were reviewed by an educational psychologist who had an interest in this problem.

A shortcoming of this process is that its detection rate is only based on behaviour or performance. In other words, it is more sensitive to externalising behaviours such as defiance, impulsivity, hyperactivity, aggression and anti-social features, but not so sensitive to internalising behaviours such as seen with withdrawal, dysphoria and anxiety. Thus, it does not pick up the quiet student who is undergoing severe emotional turmoil, nor the student with chronic dysthymia with reasonable personality development and good self control. Furthermore it does not select students with very poor self esteem or character flaws such as poor resilience. In addition, the identification rate for girls was very low and, although this is in accord with other studies (Rutter et al, 1975), it is known that emotional problems in female teenagers are as frequent if not more so than males (Rutter et al., 1976). It is probable that girls

for the most part internalised their feelings, or were less likely to act out their frustrations and therefore bring attention to themselves or their problems (Borowsky et al., 2003; Breton et al., 1999). It would seem that a screening instrument such as an Adolescent Behaviour Checklist (Achenbach and Edelbock, 1983) would broaden the identification rate of students with problems.

Nevertheless, the strength of the program, based on performance and behaviour, was that issues so identified were part of the assessment strategy and the formal investigation associated with the underlying problem. This ultimately clearly dictated the management plan required.

Consideration was given to using a universal screening instrument as an initial part of this project, but that was abandoned because the process may not specifically tell what the problem is, other than indicating that the child may have an emotional disorder. It was felt that there may not be sufficient local resources within the team to manage those conditions presented, or alternatively sufficient resources available to reassure themselves no real problem was present, as in the case of a false positive result. The second problem was the more difficult legal one of how the team would proceed if a student reported sexual abuse. In this situation, legally, suspicion of sex abuse demands written notification. This raises several issues, angst among parents if this was a false positive, and the slowness and lack of communication with those who have the authority and resources to investigate. In addition the promise of confidentiality would have to be broken.

The small number of girls found was explained in this and other studies (Fombonne, 1994) by the fact that boys will often act out their frustrations (externalise) where generally girls are more passive (internalise) and less likely to bring attention to themselves (Elgar et al, 2003). Before puberty major depressive disorder and dysthymia are equally common in boys and girls (Rutter, 1986). However after age fifteen depression is twice as common in girls and women than boys and men (Joffe et al., 1988; Linehan et al., 1993; McGee et al., 1990; Sweeting and West, 2003; Weissman and Klerman, 1997).

The common ages of problems in the Tumby Bay study were at 8 years, 12-13 years and later teenage years and that is consistent with other findings (Starling et al., 2004). The first peak may be when the students either become aware of a learning difficulty or begin to compare with their peers. The early teenage years are the beginning of puberty, but also where they graduate to more independence at high school. Finally the later adolescence years are associated with the expression of internalising emotions such as anxiety or depression.

4. D. d. v. Behavioural Problems

Not surprisingly, more males were identified as having behavioral problems than females, consistent with other findings which have demonstrated that males present with more externalising symptoms (Mattison et al., 1993). All students with

behavioural problems were placed on behavioural modification programs which were negotiated between parents, teachers, parents, and student as determined by the team. Other co-existent problems which were equally distributed between learning problems, psychiatric symptoms or perceived social problems in order were also assessed and managed. Overall, behavioural problems generally resolved to a large degree, which encouraged teachers to rapidly refer any problem children. It was evident that parents discussed success amongst themselves, such that after six months there was an avalanche of referrals.

4. D. d. vi. Psychiatric Symptoms

Of the twenty six students with psychiatric symptoms, one student was diagnosed with conduct disorder and after assessment at a tertiary centre was sent back to the team for behaviour management. Although he was recorded at the end of program as no better or worse, persistence with the behaviour management process ultimately showed by year twelve he had attained the status of prefect. The remainder had dysthymia or major depression. The male to female ratio was nineteen to seven. Although the numbers are small, it appears school years three and four, school year eight and finally years eleven and twelve are the most common years for problems (Hill et al., 2004; Sourander et al, 2001). It is of note that Sourander et al. (2001), in a large Finnish study, found problems at eight years (school year three) were the best predictors of problems eight years later. School years three and four are often the time learning problems become apparent and where students are beginning to compare themselves with each other.

Year eight is the first year of high school and the last two years are important but also coincide with the onset of late adolescent depression.

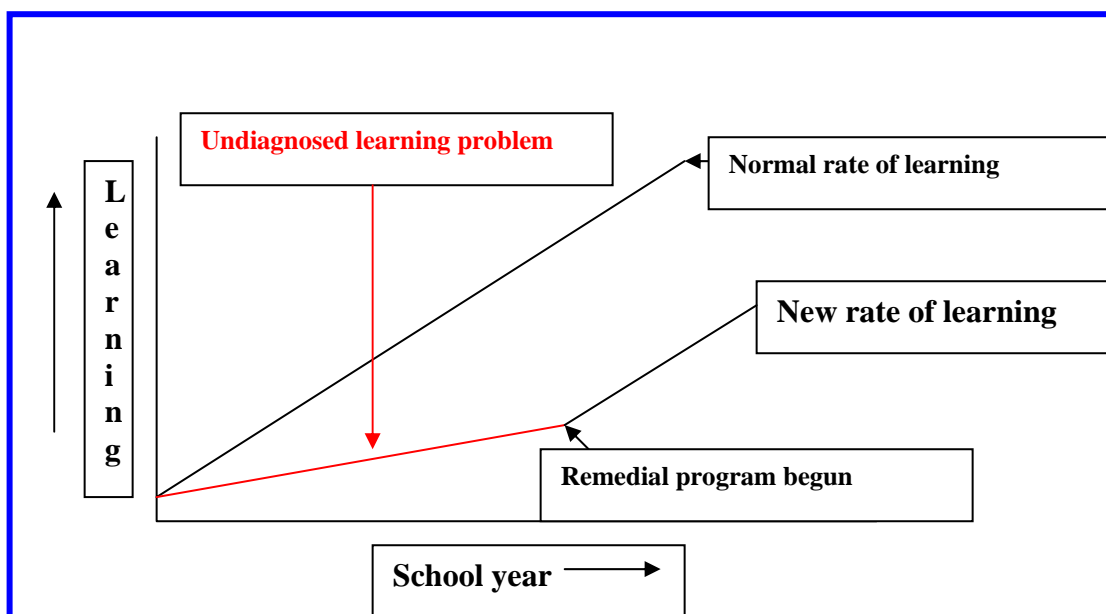
Dysthymia was the commonest diagnosis and its importance is two fold. Firstly on average, dysthymia lasts four years (Kovacs et al., 1997) and secondly, seventy percent of children and adolescents with dysthymia eventually suffer major depression (Kovacs et al., 1994). Indeed some of the remaining eight who had some psychiatric symptoms but did not fulfill criteria, went on to develop dysthymia or frank depression. Furthermore, there was also a small group of students, mostly female, who were not identified during the period of the study, but who later presented with frank psychiatric illness, almost all with internalising symptoms of anxiety and depression. Generally those that presented with chronic emotional problems such as insomnia, lethargy and mood disturbance before puberty developed more florid symptoms in their mid to late teenage years where criteria for DSM diagnosis such as major depression were met. Some students appeared to fluctuate with mild symptoms but occasionally they produced a more florid picture requiring intervention.

4. D. d. vii. Learning problems

The decision to use a base line of more than one academic year behind the student's peers was decided after much discussion. The reason one academic year was chosen was it was felt any greater interval than one year would be too difficult to catch-up, particularly with a possible pre-existing learning problem. The value of this decision was confirmed when many students were to be found significantly behind their peers

due to learning problems that had not been recognised or characterised, and who were without remedial programs. When the team attempted to introduce remedial work it was found the student's learning improved, as did their self esteem and behaviour. Unfortunately, with limited resources available, no student ever appeared to catch up to the same level as their peers. However, their learning overall appeared to increase at about the same rate. Therefore the delay in diagnosing learning problems meant there was a gap between the student and the peers that seemed unable to be closed with the limited resources available. Diagrammatically it can be represented in the figure below

Figure 4.4
Learning Recovery Model



The education department categorises students with an intelligence quotient below 70 as having a learning disability, and those with learning problems with an intelligence

quotient of above 70 as having learning difficulty. Although there were resources provided regionally for those with learning disability, the Tumby Bay Program identified more than the region could resource. For those with the milder learning difficulty there were no local support services so modified programs designed by the educational psychologist were devised to be applied by parents or retired teachers or other professionals. Furthermore, teachers became more astute with time in accurately assessing students and designing their own remedial programs. Independent evaluation confirmed that generally students with learning problems improved with the program.

Students with learning problems usually became apparent by year four at school. These students became frustrated, disillusioned and confused as their peers appeared to be making progress whilst they did not understand why they could not learn as readily. They expressed this frustration by either internalising with symptoms of anxiety, depression and poor self esteem; or externally by poor behaviour in the form of disobedience, distractibility or often playing the class idiot. Those with the higher intelligence quotient were more prone to de-compensating behaviours. Several learning problems were found when students in high school years presented with frank depression and with very intrusive suicidal ideology. Dekker et al. (2002) found children with lower Intelligence Quotient were more prone to mental illness over a broad range of items and not necessarily subject to developmental delay (Backer and Neuhauser, 2003; Dekker and Koot, 2003). Once a learning problem was classified it was always explained to the student that learning ability was not the only measurement of intelligence and success in life and that student would find a greater flair than

average in other aspects of life. The response from the student and the parents that a problem had been identified and that help was being given was usually one of an immense sense of relief, and that there was almost always a rapid return to more normal behaviour.

Although remedial programs assisted the student with a sense of well being, it was never possible to regain the academic level of their peers. Some students, who were found to be academically behind their peers but did not have specific learning problems, usually had had an episode of distraction in early school years (e.g. family breakdown, moving schools) that had left them without the basics required for further learning. All with learning problems lagged behind their peers, in spite of intense catch-up strategies. Although learning problems were mostly detected in earlier school years, it was disappointing to find students in high school years with significant undiagnosed and un-assessed learning problems. It is pertinent to note that one of the students identified early in the program with moderate learning difficulty at high school level committed suicide some nine years later. At the time of diagnosis of his learning problem he was noted to have very low self esteem, but no other psychiatric problems. At the time of suicide there appeared to be no evidence of pre-existing psychiatric illness save for low self esteem. He had a large blood alcohol recorded at post mortem. Similarly, Gould et al. (1996) found a number of teenagers were at risk of socio-environmental risk factors independent of psychiatric disorder. Generally almost all students with learning problems had low self esteem. Boys more commonly had externalising symptoms whilst girls had internalising symptoms.

It is interesting to note that in some studies, over 70% of inmates at correctional institutions have literacy or learning problems (Svensson et al., 2001). Considering that most students with learning problems are ignored by the current system, this study may give some explanation and solutions to the problem.

5. D. d. viii. Social Problems

Social problems were perhaps the most difficult to characterise for several reasons. Firstly, there was no access to a social worker. Secondly, many families were personally known and the team did not want to be seen to be prying into personal matters. Finally in small towns there is a worry about confidentiality. The social problems identified were usually defined where an intervention that needed to be introduced was possible because of social situations. Usually this was a situation where one or more parents or partners had poor mental health, such as personality disorder or drug abuse, or had limited resources such as one parent families with several children. Emotional disturbance in children of single parent families has been well described Spencer (2005), as have emotional problems from socially deprived areas (Reijneveld et al., 2005). This was often complicated because there were no other associated family members such as grandparents through whom interventions could be brokered.

4. D. d. viv. Other Schools

The program was introduced to four other schools with similar results. However the Tumby Bay program appeared to be more successful. This was probably because it was associated with an ongoing community program, with there being a close and formal relationship with the school regular weekly meetings, while at other schools extra support was on a more ad hoc basis. It is probable that because of increased mental health capacity, of the community and the interest of the general practitioner, there was a more intensive contribution to school by other persons.

4. D. d. x. The Future for Schools Program

It would seem that identifying students on the basis of them being “possibly dysfunctional” will understate the incidence of emotional problems because it is not as sensitive for internalising symptoms. Therefore consideration could be given to using a screening instrument to augment the detection process as such a checklist may be more sensitive (Achenbach and Edelbrock, 1981, 1983). A compromise could be that students should be identified on performance and behaviour (dysfunction or disability) for the first twelve months, and then a screening instrument could be used for the whole school population. The former identifies perceived problems that need addressing, and the process is such that the assessment phase determines the management phase. Screening has a problem of false positives, but as many students would already have been identified, the number that would need to be assessed would probably be small. Assessment could then be made of those detected by screening instruments to

determine, if a problem is indeed present or needs addressing. In this way a more orderly approach to a total school population could be made.

4. D. e Post -Vention

Following suicide there were two significant challenges to meet. The first was the increased counselling load that occurred not only immediately afterwards, but for some months and often years following the event. The second was the thought of contagion or “Who is going to be next.?”

Grief Work

Initially this occurred in the homes of the victims or close friends, but usually following the funeral this occurred in the consulting rooms.

This usually included the grief themes as described by Clark and Goldney (2000) and consisted of :-

- Shock and disbelief and sometimes, after a long period of illness a sense of relief from the on going trauma.
- Often anger towards the victim for doing it or anger to others that they did not intervene appropriately or anger towards themselves that they were somewhat contributory to the terminal event. Often this would be coloured by a sense of shame that this had happened to their family, or rejection by the victim or their friends. Generally there is a sense of an incredible waste particularly if they were young or held a life full of promise.

- Often an intense sense of the how and why and the exact nature of the terminal event and the manner of death
- Frequently there is re-evaluation of life's values and a questioning of what is still important and who else may hold suicidal ideation or even afraid of their own feeling of suicide.
- Generally there comes an acceptance of the events although they need to reprocess their thoughts and ruminant for months or years and
- Finally progress through a period of resolution such as they begin to see a future for themselves once again.

Unfortunately none of this seems to be in an orderly progression, as some make progress towards resolution, only to relapse again into the more difficult phases.

It seemed that there were frequent crisis episodes immediately following the event during the sense of shock and disbelief, regarding the “nightmare’ unfolding, and then at six weeks with the themes “How can I go on and live with this?” Somewhere between three months and six months there usually appeared to be another crisis, which was best described as mental exhaustion, and following this resolution began to occur.

There was always the sense that grief as a result of suicide was more difficult and overwhelming, but research has failed to show this quantitatively, although qualitatively there were differences (Barrett and Scott, 1990; Clarke et al., 2003; Cleiren et al, 1996).

Initially, most grief work was delivered on a needs basis. The needs were either determined by the general practitioner who arranged regular follow up by those who he

thought may be vulnerable. Secondly, another group whose vulnerability had not been recognised who presented for consultation. This may have been because there was a presumption they were coping and there was another more distant group whose connections or associations were previously unknown. Suicides associated with cases, 1, 7, 9&13 appeared to be particularly overwhelming.

Contagion or temporal clustering was always a worry, particularly with cases 1, 9 and 13, as they appeared to touch the more vulnerable adolescents where suicidal ideation is common (Hacker and Drainoni, 2001). Martin (1990) described this very succinctly where he identified increased suicidal ideation and linkages to other suicides in school populations in South Australia. In fact, the only real associations noted were in cases 2 & 11. Victim 2 had suicided some years prior. His brother in law, victim 11, in the weeks prior to his suicide frequently told his wife that her brother had the right idea and he also eventually committed suicide. The second case was the teenage daughter of 9 who following the suicide of her father, over a long period became more morose and withdrawn. Psychiatric intervention was arranged, but she refused to cooperate saying it was her problem to fix. This was followed by a long period of drug abuse and extreme risk taking behaviour although clinical support and direction were given by her general practitioner. Her problems eventually resolved about ten years later and she is now a very responsible adult. However there were other examples of people who still showed significant grief after five years.

The suicide of the last victim in 2004 was particularly traumatic for the young people of the district, many of whom were unable to work in the days following the event. A public meeting five days after the event appeared to be a time of resolution. The theme of the meeting was the risk factors associated with suicide, adolescent problems and drug abuse and the importance of good mental health. From a health point of view this was an excellent time to reach young people about mental health issues, as they appeared to be desperate to understand. As this victim had been drinking on the night prior, it was a sobering time for them to consider more appropriate use and respect for alcohol. In retrospect in small towns, public meetings post suicide are a good time to deal with mental health issues, drug abuse and adolescent matters to an audience who want to listen, to know and to understand.

6. E. The Future

The question that needs to be asked is, “Could the results of this research be used to improve the mental health of other communities?” If so, what is the next step?

It seems to me that this could be regarded as a pilot project, and that it is now ready for wider application. Thus when this project was started twenty years ago, the outcome was uncertain, but now the results are positive, and in fact the program has been recognised as successful not only by the local community, but more widely as reported in Hansard, and even in TIME magazine (Appendix 13). This suggests that it may be appropriate to broaden this initiative to other localities.

The natural step would be to extend this to a whole sector of the state, equivalent to one of the recent designated area health authorities. It would seem ideal to combine relevant government departments, epidemiologists, university departments and divisions of general practice to constitute a development committee to plan a roll out of the program.

This would need to define the area to be approached and then endeavour to match a similar control area (e.g. another health sector) as a control to more accurately evaluate the evidence. It would seem that the following principles should be considered

1. Plan to measure more accurately the outcomes expected
2. Plan training of which personnel where and how
3. Once initial surveys are made to roll the programs out
4. Follow up surveys
5. On going evaluation
6. Universal application if it appears successful, particularly for minimal costs

4. E. a. Plan to measure outcomes more accurately

It would seem to be useful to measure mental health literacy more accurately initially, and then repeat at twelve months and then at two to three year to measure whether literacy has been improved and is sustained. Furthermore, assessment could be made before and after training, for health and teaching professionals. Finally, several screening instruments used for children and adolescents to determine levels of underlying emotional stress, anxiety, depression and suicidal ideation as well as general

well being, could be used before and after the implementation of the school based program.

4. F. b. Plan training of personnel

Obviously early in the planning a list should be made of what health workers were needed and what their roles and expectations should be. Retired professional personnel may need retraining to help with counselling or learning programs associated with the school. Teachers would need a half day training session initially to learn about the program and how it works, with shorter refresher lectures of one to two hours either six or twelve monthly. The training of general practitioners would depend on the past experience. At least half a day would be required to teach them the process. A further week would be useful to teach approaches for the difficult adolescent or resistant depression, as well as focused psychological strategies to level 2 of the “Better Outcomes” training plan for general practitioners. This would utilize either cognitive behavioural strategies or interpersonal counselling, and two weeks training with an early intervention program would ensure that general practitioners could cope with most things in general medical practice. Consideration should be made of developing educational psychologist support services particularly for the accurate assessment and remedial protocols for learning problems. Finally, nursing staff would benefit from a half day training session as a part of their professional development, with updates and reviews every six months. Perhaps a TAFE or university certificate course on community mental health may be offered to retired professionals or nursing staff.

4. F. c. Roll out of Programs

Before the programs are rolled out an assessment should be made of programs already in place so they can be complemented rather than duplicated. This should be coordinated by a program supervisor and reviewed and evaluated initially at least bi-monthly by a focus group consisting of a program supervisor, health authority administrator, senior nurse, general medical practitioner, school principal and school counsellor and/or chaplain, a community representative and one or two carers and consumers. Once the program is running smoothly this could be reduced to quarterly meetings.

4. F. d. Follow up surveys

Screening instruments of mental health well-being should be administered after twelve months and results evaluated and programs modified. Similarly all twelve year old students could complete a screening instrument similar to the Achenbach to evaluate school's component of the program.

It is to be expected that all this will incur a significant setup cost and be followed by an increased demand for services over eighteen to thirty months. Following this period the demand will decrease below current levels and crisis interventions should decrease. It is probable hospitalizations and referrals will also decrease and the program would be ongoing and self sustaining, because the current personnel will not want to revert to ineffective, inefficient and traumatic practices of the past. The role of the project supervisor could be moved to an administrative position within one of the professions

or perhaps a mental health sector team leader. No other costs over and above that utilized at the present should be required and current expenditure should see a more efficient and effective mental health service.

Chapter 5

CONCLUSIONS

This journey into community mental health began over twenty years ago as an effort to tackle what appeared to be an escalating number of suicides, some of which appeared to be preventable. Its success in reducing suicides and attempted suicides as well as other parameters can be attributed partly to the fact that it became community owned and community based. Certainly careful documentation and continued evaluation and revision also contributed to its success. Furthermore, the fact that the “team” lived in the same fishbowl as the community allowed a more sensitive and targeted approach.

The strength of the program was that it depended primarily on finding and educating local resources to train and assume new roles. The importance of the child and adolescent program cannot be overestimated, because it brought greater community interest and ownership, as well as providing a valuable service to local students. Indeed the protocols that were eventually devised and extended to another four schools show this program can be transported to other rural areas. Furthermore, with minimal alteration it could be utilized in urban areas as well. In retrospect the success of the program was considerably strengthened by having a formal relationship between general practitioner and teachers, and it was augmented by a steep learning curve for the general practitioner’s greater understanding of child and adolescent health.

Suicide is really the tip of the iceberg of many underlying social and mental health problems, with many other sequelae. For example, members of the community and their families are traumatised by incapacitating depression, schizophrenia, personality

disorder and drug abuse. Suicide should be seen as only the most terminal consequence of poor mental health.

The WHO definition of mental health is “*Mental health is a state of emotional and social wellbeing in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively or fruitfully, and is able to make a contribution to his or her community*”(Saeed et al., 1999). It is similar in concept to that which was developed in the local program in 1993.

Dysfunctional students were detected and supported, learning problems were identified, and remedial programs put in place immediately. There was less antisocial behaviour in the community and graffiti was noticeably absent. Furthermore, there was much less crisis counselling and members of the community are now presenting early and openly complaining of depression and stress related problems. Moreover, they more easily recognised that many of their physical symptoms may represent somatisation of an underlying emotional disorder. There was also a greater sense of achievement, as different members of the community worked cooperatively to achieve common goals, increasing the social capital of the community.

In view of this program's relative success, its low cost and emphasis on local resources, it would seem appropriate to consider this as a pilot for a more extensive run out over a larger area, and perhaps match that with another similar rural area to act as a control. It is also not difficult to conceive an urban application, although in that case it may be useful to have several appropriately trained general practitioners in schools and nurse

educators to improve community and health worker literacy. Furthermore, extending the training to specifically involve school counselors, school chaplains, sports coaches and police officers could also be beneficial. In larger areas child and adolescent psychiatrists, and educational psychologists could be employed part time for educational, therapeutic and assessment roles.

Finally, it is reassuring to note that although this program evolved in the late 1980s and early 1990s, before publication of broad based suicide prevention initiatives, it appears to have anticipated the majority of the attributes of national and international suicide prevention and mental health promotions programs. Furthermore, it has demonstrated a successful rural and remote approach to suicide prevention.

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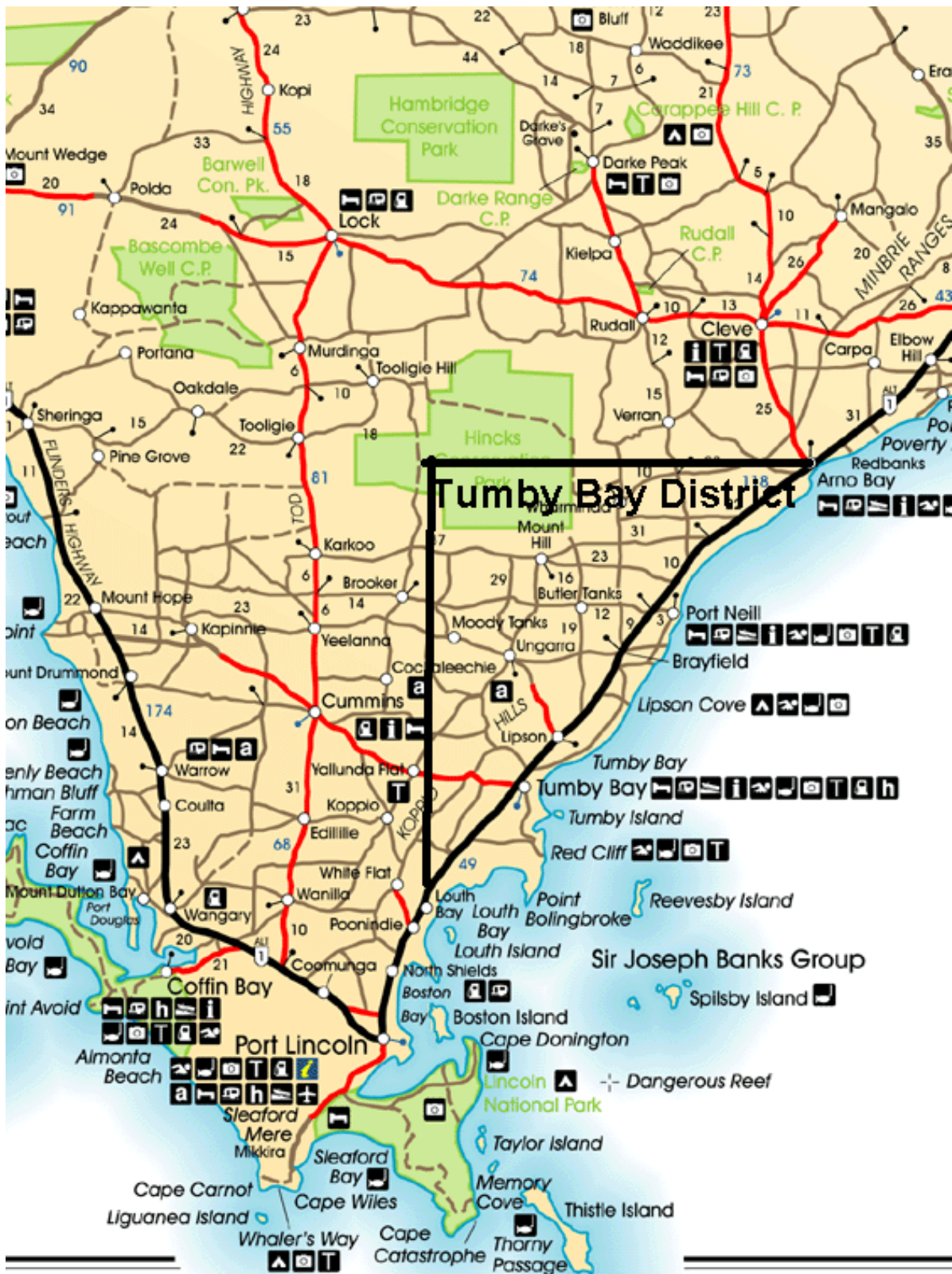
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Appendix 1



Appendix 2



Appendix 3

VIGNETTES OF SUICIDE VICTIMS

No 1. **A fifteen year old school boy** was found dead by hanging at home. **July 86**

Parents were publicans and were a warm supporting family. The event appeared to be a surprise to family and even closest friends. There was no suicide note and the only trigger considered was that the previous day his mother forbade him from surfing with his mates. However post mortem psychiatric review noted deteriorating school work, poor sleep pattern and he was increasingly withdrawn and moody.

No 2 **A 79 year old retired farmer** was found dead by hanging on the farm **Feb 87**.

He had endured three great losses. The first was his wife about 30 years but the second was his son who was the apple of his eye. This son was a fine looking man, excellent sports person and immensely popular with the community. He died after a long battle with cancer some years before. When this elderly farmer suffered from a stroke causing complete nominal aphasia and paralysis, he never really recovered from this final insult and in his eyes, unable to make a worthwhile contribution to the farm. He did what he did to old tired dogs and put himself down to end the misery and remove a self perceived millstone from the family.

Appendix 3

No 3. A 32 single unemployed man died from shooting. Apr 87

Suffered from chronic schizophrenia and never came to terms with illness. He belonged to a supportive family who were worn down by his illness. He did not like medication and had very poor compliance and no mental health supports. He self medicated with cannabis, alcohol and magic mushrooms. A gun was borrowed from a mate. His family was devastated although also a sense of relief his suffering had ended.

No 4 A 70 year partially retired farmer died from shooting. Jun 89

He suffered epilepsy with severe long standing bipolar affective disorder. He was chronically obsessional, paranoid and prone to violent episodes of rage. There was strong family history of epilepsy and bipolar affective disorder. Despite all of the above he was an excellent and respected citizen farmer and family man. He was diligent with medication and medical advice and frequently consulted Neurologists and Psychiatrists in Adelaide. His symptoms became refractory and did the honourable thing as he believed and put himself and his family out of their misery.

No 5 A 35 year old school teacher, overdosed on prescription drugs. Apr 88

This man was unknown to the Tumby Medical Practice but apparently a popular young man in the district who took an overdose of 100 Isoptin tablets when he realised his marriage was irretrievably over.

Appendix 3

No 6 A 26 year old farmer died from gunshot wounds Aug 89

This young man lived in an apparently warm and supportive family, but they were really ignorant of his condition and lacked insight into their son's problem and were very disapproving of his use of social drugs in the form of alcohol and cannabis. Unknown to his parents he had sought medical help and was referred to a visiting psychiatrist who confirmed the diagnosis. As compliance was poor, and he lived in an isolated area no further follow up occurred. The parents were subsequently very angry they had not been informed of the diagnosis and its consequences.

No 7 A 38 year old mother of four overdosed on cyanide. Nov 90

This mother of four suffered chronic dysthymia and alcoholism, which she covered with a vibrant personality. However, there were personality traits and attempted overdoses on several prior occasions requiring retrieval and intensive care. Her husband moved to Tumby Bay where he thought it would be quieter and social temptation less. She appeared to be an excellent caring mother. Her fatal overdose was cyanide, and champagne. The doctors were in the house within minutes but had no antidote for such a massive poisoning and resuscitation was hopeless and failed. The resuscitation took place with copious cyanide granules on the bed and in her mouth. Her son and the doctor's son live close by and were

Appendix 3

great mates. It was extremely difficult time for everyone with many hours of subsequent counselling.

No 8 A 37 year old divorcee. Oct 92

This victim was unknown to the practice and is included in the figures because she overdosed in the area. She had come from Pt Lincoln to establish a de-facto relationship with a commercial pilot who lived in an adjoining town. She evidently had an affair with another young man and did not cope with the lover's triangle. She was found dead in a neighbouring cemetery from an overdose.

No 9 A 40 year old school teacher died by exhaust fumes. Apr 93

This popular school teacher was very civic minded and involved with many community events and sat on the local hospital board. There was a background history of chronic dysthymia and after his suicide it was discovered there was a strong family history of suicide and more distant relative had also committed suicide. There were two significant stressors in his life. Firstly one of his boating companions went missing from his boat about 14 miles offshore and was never found again. The boat was moored with the anchor rope twisted around the propeller. This teacher spent many hours searching for the body without success and towed the boat ashore. Secondly, there were major

Appendix 3

difficulties with his marriage and his wife was expecting their long awaited second child. This teacher was also in business partnership with one of the medical practitioners in a charter business and his wife worked in the local doctors surgery. There was much soul searching from the doctors as to how they had missed the warning signs. He was found in his car in the garage with a pipe from the exhaust to the window. Attempts at resuscitation on the garage floor and later at hospital were unsuccessful and this compounded the doctors sense of failure when they lost a friend. It transpired this was far more traumatic than case No 7. because of personal grief and the incredible amount of counselling that needed to be done and an a overwhelming sense of “who will be next!” The suicide prevention program almost came to halt until we were persuaded to become even more aggressive in outlook.

No10 **A 28 year old aeronautical engineer died of gunshot injury. Jun 94**

This patient was unknown to the practice and had never made contact. He had moved to area and lived with another local young man who was also an aeronautical engineer. They lived in a flat together and he was well known to abuse alcohol and cannabis socially. In post mortem psychiatric review it was obvious he was a troubled individual. He had often mentioned suicide at work but was told not to be stupid. He was also in trouble with the air safety board as a result of doing aerobatics in a Cessna 172 when neither he nor the plane was

Appendix 3

certified to do so. There was also other history of risk taking behaviour. There was evidence of some paranoid behaviour but it is difficult to attribute this to cannabis or an underlying schizophrenic illness.

No 11 **A 75 year old retired farmer died from gunshot injury Jul 94**

This man was a confirmed bachelor that married late in life to an intelligent caring woman. They retired to live in Tumby Bay. He was a brother in law to case NO 2. He was legally blind and suffered macular degeneration and several profound T.I.A.s. When his wife encouraged him to be more positive and active he accused her of nagging. He often remarked his late brother in law had the right idea to which his wife good naturedly said “do it outside and do not make a mess inside.” Eventually she was admitted to hospital due to multiple medical problems with little prospect of returning home. This patient was the last surviving member of the Ungarra gun club and fittingly shot himself in the lounge presumably as retribution for the so called nagging.

No 12 **A 24 year old farmhand died of hanging Sep 95**

A likeable young man, who struggled with depression, and remained well when on medication and off social drugs. However, as he was away for long periods of time would run out of medication and then self medicate with alcohol and cannabis. He had returned home for some recommenced medication and had been seen at weekly intervals for several weeks and several days before death had consulted his medical practitioner and had been excited about the prospect

Appendix 3

of a new job in the outback. He had spent the afternoon in the local hotel and his parents had found him hanging from the shed when they returned from Adelaide with a new car.

No 13 **A 19 year old apprenticed carpenter found hanging in his garage Apr 04**

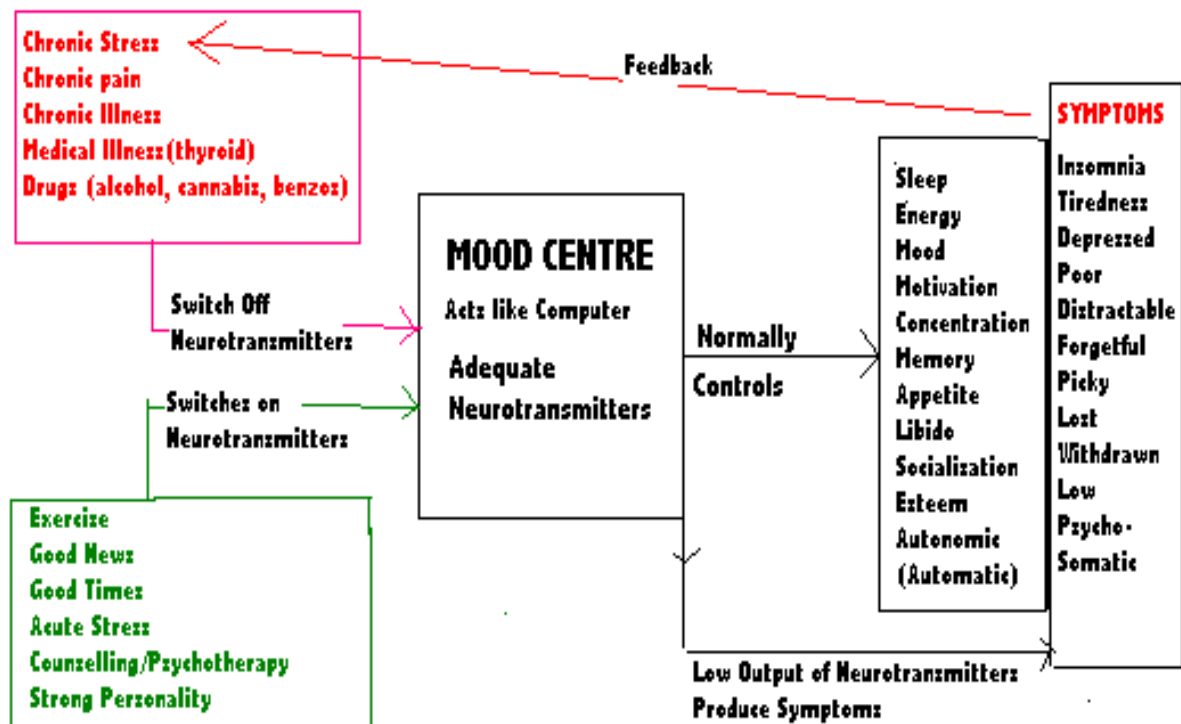
This popular and likeable young man inexplicably hung himself from his father's garage after a twenty first party of one the sons of case No 7. He was named best on ground on the football field that afternoon and seemed to be enjoying himself at the party. His parents had been present as well as the medical practitioner and his two sons who about the same age. There was no suicide note, although some unhappy text messages were found on his phone from a girl from a previous relationship. This young man was noted to have low self esteem about nine years earlier when he was identified as having a major learning problem associated with dyslexia. On remedial work he had appeared to have made good recovery and was successful as an apprentice carpenter. His family environment must have been one of the best that the district could offer. His post mortem blood alcohol was 0.19. This was distressing for the medical practitioner, whose two adult sons, were grieving and wanted to know why while their father was busy with the police, the family and undertakers. The community grief was overwhelming as this young man had been very popular at the football club. Almost all the young people from 18 to 30 in town had gathered at a house with the young women together in one room the young men

Appendix 3

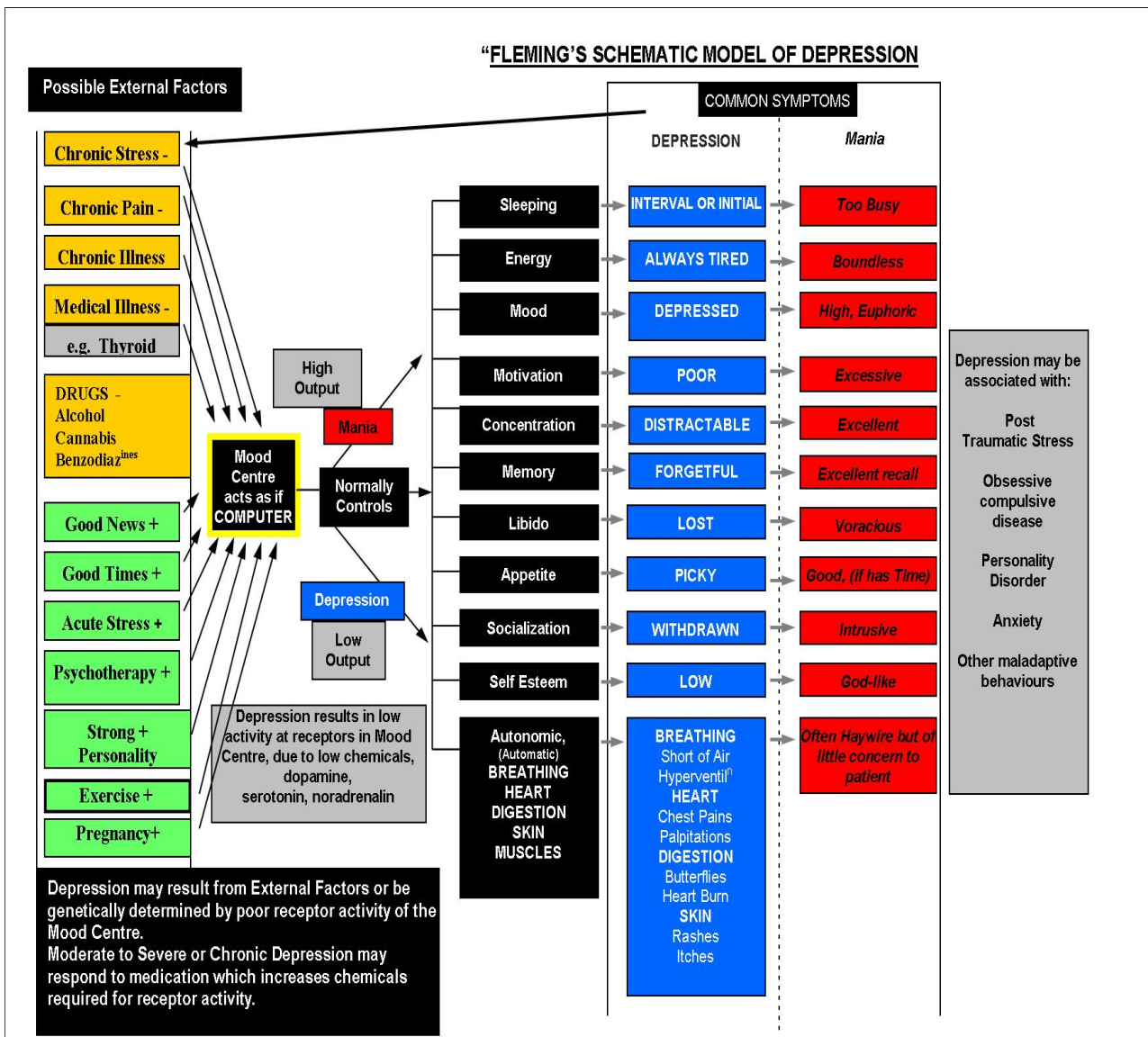
in another with very few words spoken and all grief stricken. The parents stood by at distance talking amongst themselves. No-one it seemed was prepared to go back to work and a public meeting was called at the local football club rooms for the Wednesday evening. This meeting will be discussed subsequently in a segment regarding post-vention.

Appendix 4a

Depression or “Brain Shut Down”



Appendix 4b



Appendix 4c

SYMPTOM	ADULT	STUDENTS
Insomnia	Interval or Initial	Interval or Initial Mum's often deny or normalise
Lethargy	Abnormally tired	Tired, grumpy, fractious
Depressed Mood	Sad, Depressed, or grumpy	Feel like crying "Cheesed Off" Upset or always being teased School refusal or poor schoolwork
Motivation	Loss of interest in most things	Cannot start homework Unable to complete assignments or work
Memory	Forgetful	Poor school performance
Concentration	Poor	Distractible
Self Esteem	Poor	Play victim, loss of resilience
Socialisation	Withdrawn	Few Friends Do not play Become loners (look in libraries)
Appetite	Picky	Refuse to eat
Psychosomatic	Palpitations, Indigestion, SOB etc	Feel awful, abdo pain School Refusal

Appendix 5

“Soft Sign” Inventory for Psychiatric Dysfunction

- Who persistently play the victim or the bully
- Who frequently miss school with sickness or other excuses
- Who demonstrate school avoidance, school refusal and truancy
- Who appear rarely to smile, or appear sad, easily cry or seem depressed
- Who appear to lose weight especially those on diets who have normal body form and think that they are overweight
- Who have lost a close family member or friend recently (? new students ?)
- Who openly or persistently talk about suicide or whose thinking is persistently morbid or bizarre
- Who appear to have delusions, paranoia or hallucinations
- Whose behaviour appears askew from the norm for that person or askew from that of their peers
- Whose pattern of learning is behind by more than one year of their peers
- Who it appears should be performing better than they are
- Whose standard of work begins to deteriorate
- Who appear to have few friends and especially “ loners ”
- Who appear abnormally quiet and cooperative especially if withdrawn
- Who are constantly sleepy or always tired
- Who quickly loose concentration or are distractable
- Whose behaviour is persistently disruptive or who spend frequent periods in detention

Appendix 6

PRESENTATION RATING by ATTENDEES

How would you rate the quality of presentation?

Excellent	Good	Fair	Poor

Did you find the information interesting?

Yes, Definitely	Yes, Generally	No, not really	No definitely

Has this information increased your understanding of mental illness?

Considerably	More than I expected	Somewhat	In between

Do you think the community will benefit from the presentation?

Yes	No	Unsure

Will the knowledge and skills you have learnt help you to understand children and adolescents who suffer from learning and behaviour problems?

Yes, very helpful to me	Not me but yes will help others	No won't help me	Unsure

How clearly was the information presented?

Extremely clear	Clear	Faintly clear	Not at all clear
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Was there sufficient time for questions and discussion?

Yes	No	Unsure
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Do you think the length of the presentation to be?

Just Right	Too Long	Too short	In between
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Appendix 7a

Name	d.o.b.	UR
Address		

To be completed in Accident and Emergency & signed before discharge

Photostat copies: Notes, G.P., MHP, and Referral Site

What Happened

(Events leading to distressed state)

Why

(May be confusing at this time and not reliable but this information may be important later)

Prior Symptom inventory

Sleep (initial and interval)	
Energy	
Mood (Cheesed off /Pissed off)	
Motivation	
Memory and concentration	
Appetite	
Libido	
Socialisation	
Self esteem	
Psychosomatic symptoms Headaches, Abdominal pain, palpitations, chest pain, shortness of breath, skin irritation	

Other psychiatric indicators

Paranoia, Hallucinations, Delusions, Voices,
Scratching or risk taking behaviors

Current Medications:

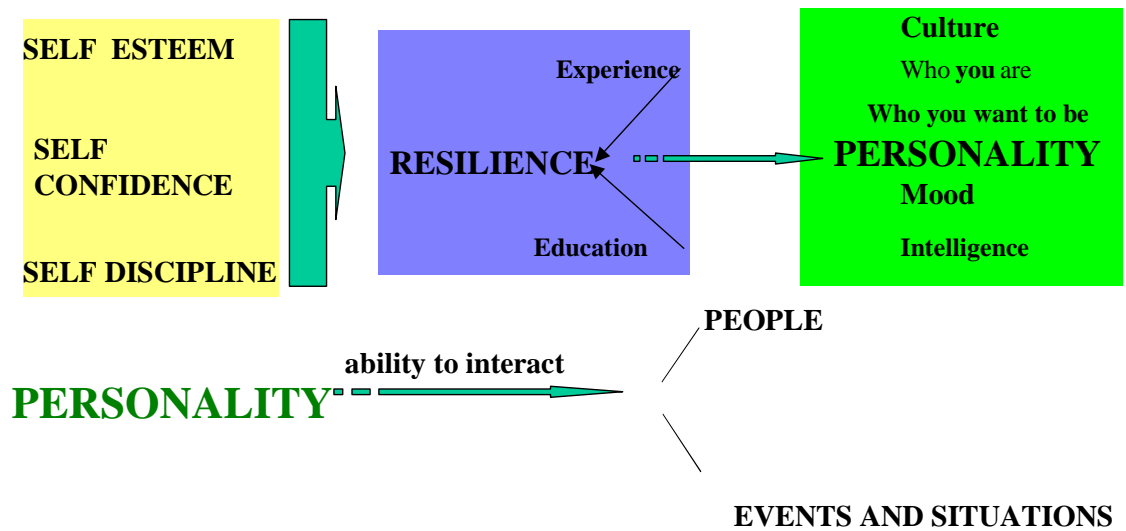
Recreational Drugs Alcohol, Cannabis, Amphetamines, Others

Current Stressors

Family/ marital/relationship
Financial
Employment ?unemployed
Illnesses
Losses
Others

Appendix 8

Concept of Personality



Appendix 9

The Eyre Peninsula Child and Adolescent Mental Health Service (EPCAMHS) was independently evaluated by:

Name: Dr. Ian Wilson

Position: Director, RACGP Research and Health Promotion Unit, Adelaide, SA

Address: Research and Health Promotion Unit

215 Payneham Rd., St. Peters

S.A. 5069

The following is a transcript of his evaluation

Summary

The EPCAMHS program has achieved all of its stated objectives to a variable degree. The program was successfully introduced to all but one of the towns with most of these setting up intersectoral GP-teacher teams. That only a small number of these teams are still operational is due primarily to factors beyond program control.

GP and teacher involvement in community education has taken place successfully, and is continuing in numerous small ways with the involvement of GPs in schools. In propagating the Graham Fleming Mental Health model a Suicide Prevention Model has been provided to a large number of communities and schools, and they have taken it very seriously. Using it to develop and / or augment their own local mental health programs.

Finally, as indicated via a number of different means below, the EPCAMHS program has been successful in providing targeted resources to a number of towns in need of

Appendix 9

assistance with children who were having difficulties. The benefits of the program are numerous and the majority consensus is that it added a distinct and sorely needed service to the community.

Specifically Reassessment and evaluation is as follows

Characteristics of Children who have received 12 Month Follow-up Reassessments

Gender	N	%
Male	26	66.7%
Female	13	33.3%
Total	39	

School	N	%
Kimba	17	43.6%
Cleve	11	28.2%
Cummins	2	5.1%
Lock	9	23.1%

Classification	N	%
Low Average Ability	21	53.8%
Specific Learning Disability	6	15.4%
Immaturity / Attentional Problems	6	15.4%
Inappropriate Teaching Strategy	6	15.4%

Appendix 9

Average scores and age equivalents on the Basic Number Skills, Spelling and Word Reading subtests of the Differential Abilities Scales. Complete results were available for 38 of the 39 children.

		Initial Assessment	One year Follow-up	Difference
Average age (in Years)		10.16	11.19	1.03
Differential Abilities Scale Subtest	Score Type			
Basic Number Skills				
	Scaled Score	79.79	82.08	
	Age Equivalent (in years)	8.64	9.55	0.99*
Spelling	Scaled Score	80.33	81.33	
	Age Equivalent (in	7.95	8.70	0.81*

	years)			
Word Reading	Scaled Score	78.74	79.97	
	Age Equivalent (in years)	7.96	8.53	0.63*†

*Significant changes at $p < .001$ level using **Dependent Samples t-tests**. N=38

Significantly different at $p < 0.05$ from the increase in age equivalent (ie. 1.03 years)

Note that on average the children were 1.03 years older at follow up and not 1 year. This is because the follow up was done on a number of children at the same time to maximise resource. The allowable range was up to 1.30 years since the initial assessment.

Average age equivalent scores for the initial (Time 1) and follow up (Time2) assessments for the Differential Abilities Scale Subtests.

Classification	Time 1 Number	Time 2 Number	Time 1 Spelling	Time 2 Spelling	Time 1 Reading	Time 2 Reading
Low Average Ability	8.352	9.333	8.176	8.852	7.929	8.367
Specific Learning Disability	8.417	9.700	7.400	8.267	7.900	8.300
Immaturity / Attentional Problems	9.260	9.817	8.040	7.917	8.400	9.000

Inappropriate Learning / teaching	9.367	9.950	7.667	9.400	7.767	8.867
Total	8.642	9.559	7.955	8.703	7.961	8.531

N = 39

Differences in age equivalent scores from initial to follow up assessment for the Differential Abilities Scale Subtests

Classification	Basic Number Skill Age Equivalent Difference	Spelling Age Equivalent Difference	Reading Age Equivalent Difference
Low Average Ability	.9810	.6762	.4381
Specific Learning Disability	1.2833	.8667	.4000
Immaturity / Attentional Problems	1.1800	.2400	1.1800
Inappropriate Learning / teaching	.5833	1.7333	1.1000
Total	.9921	.8158	.6342

N = 39

Appendix 9

Average T scale scores for the Child Behaviour Checklist (CBCL) and the Teacher Response Form (TRF) sub-scales.

The higher the T score the more behavioural difficulties the child is having. The Normal Range for behaviour is between 50 and 70. Positive differences indicate improvement while negative indicate increasing difficulties.

Not all parents or teachers returned their forms for the follow up. Complete teacher forms were available for 35 students and complete parent forms for 22.

The most common issues for both sets of respondents were social and attentional.

Teacher Response Form

CBCL Scale	Initial Assessment	One year Follow-up	Difference
Withdrawn	57.91	54.66	3.26 *
Somatic Complaints	52.80	52.80	0.00
Anxious / Depressed	55.94	53.74	2.20†
Social Problems	59.97	57.34	2.63†
Thought Problems	52.06	51.83	0.23
Attention Problems	61.69	58.89	2.80†
Delinquent Behaviour	55.63	53.89	1.74
Aggressive Behaviour	55.63	57.31	-1.69

N = 35

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Child Behaviour Checklist (Parent Completed Form)

CBCL Scale	Initial Assessment	One year Follow-up	Difference
Withdrawn	54.82	52.41	2.41†
Somatic Complaints	55.64	55.36	0.27
Anxious / Depressed	58.09	54.86	3.23†
Social Problems	60.45	59.27	1.18
Thought Problems	55.09	53.86	1.23
Attention Problems	64.00	61.41	2.59†
Delinquent Behaviour	56.05	56.23	-0.18
Aggressive Behaviour	55.50	55.41	0.09

N = 22

* = $p > 0.006$, for one tailed Dependent Samples T- tests. Bonferroni correction made for multiple t - tests.

† = strong but not quite significant trends

Follow-up of children assessed by the Educational Psychologists

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The primary role of the Psychologist was to perform assessments to distinguish the relative contributions of organic learning difficulties and social - psychiatric issues to the child's current level of functioning when teachers were unable to determine the underlying cause. The Psychologist made recommendations on appropriate behavioural programs for the child. The psychological assessments account for a major portion of program budget. The assessments also provide detailed information.

Prior to the advent of the present program one Education Department Psychologist (Guidance Officer) serviced approximately 7000 children on the Eyre Peninsula. This meant that some schools received little or no service. Those schools who received very little in the way of Guidance Officer assessments have made the most use of the Educational Psychologists provided in the present program. Three schools (Cleve, Kimba and Lock) between them have received 75% of the assessments done (Attachment 2) with the other 7 schools sharing 25% of the resource.

One Psychologist has assessed 95% of the students. He produced some general diagnostic categories for the primary diagnosis of the 52 children he had assessed in 1997. Forty four per cent (23) had a primary diagnosis of low cognitive ability, 15% (8) had specific learning difficulties or dyslexia, 11% (6) were classified as early hearing loss or inappropriate teaching strategies, 17% (9) had immaturity / attentional problems, while the remaining 11% had an assortment of emotional and behavioural disorders.

One year follow up reassessments were carried out for those children who were seen by the Educational Psychologist. A decision was made to focus on reassessing those who were in the 4 main categories (ie excluding the assorted disorders group). This may

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allow a more refined determination of which type of children were helped by the program.

The aim was to administer, to 46 children, a short form of the original assessment plus the Child Behaviour Checklist (CBCL) to be completed by parents and the Teachers Response Form (TRF) by the teachers. Children were reassessed within 12 months of their initial assessment (+- 0.3 of a year).

Seven children were unavailable at the time of reassessment due to having moved away or other commitments. Complete assessment information was available for 39 children (85% of the sample), with complete pre and post teacher questionnaires for 35, and complete parent questionnaires for 22.

i) General Findings:

The initial assessment results (Attachment 5) indicate that the assessed children were, on average, 2 years behind their peers in number skills (8.64 vs. 10.16), spelling (7.95 vs. 10.16) and word reading (7.96 vs. 10.16). While some had behavioural difficulties, on average, they were within the normal range as assessed by teacher and parent ratings on the TRF and CBCL respectively. Obviously these children were experiencing considerable difficulties at school, based on their skills scores.

Twelve months later they are still 2 years behind their peers for basic number skills (9.55 vs. 11.19) and their spelling (8.70 vs 11.19). They did not lose a significant amount of ground relative to their peers in the intervening year. However, their reading ability, although it increased significantly (from 7.96 to 8.53 years), did not keep pace

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with the increase in age and therefore the children fell a little further behind relative to their peers.

Most categories of behaviour on the CBCL and the TRF registered at least slight improvements over the same period. The only significant result was an decrease in the extent to which the children were socially withdrawn as rated by the teachers. Strong but non significant trends were noted in decreases in anxiety / depression issues, attentional problems and social problems. Similar patterns were noted for parent completed questionnaires.

The only exceptions to this positive picture were slight increases in aggressive behaviour as indicated by the teachers and delinquent behaviour as indicated by the parents.

The increasing cognitive difficulties are not resulting in increased behavioural or mental difficulties.

ii) Additional Findings

Further tests were run in order to explore any differences between the 4 general groupings of students (low average ability, specific learning disability, immaturity / attentional problems, and inappropriate learning strategies), as well as any differences between the towns.

Different Classifications:

Results of the abilities tests show considerable variation in the way in which the ability of members of the 4 groupings increased over the year. The largest and most significant

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increased was on the spelling subtest for children in the inappropriate learning strategy subgroup. Their scores jumped by the equivalent of 1.73 years, which proved to be a significantly larger increase than the other groupings on the spelling subtest. Unfortunately this group is still substantially behind most of their peers (9.40 vs. 11.21 years equivalent). The reading ability of this group of children also increased by over a year equivalent (1.10).

Other groups that increased by over a year equivalent were number skills for those with a specific learning disability (1.28), and number (1.18) and reading skills (1.18) for those with immaturity / attentional problems.

Analysis of the teacher response forms showed that the largest decrease in social withdrawal behaviour occurred for the children in the 'inappropriate learning strategies' group (marginal significance $p=.06$). This decrease provided the largest proportion of the behaviour improvements in withdrawal noted earlier. This group also demonstrated less anxiety and depression related behaviour over the 12 months than some of the other groups ($p<0.5$). No other differences between the groups were of note.

Different Towns:

Tests indicated no differences in the ability test scores for the different towns. According to their teachers, students at Lock tended to have lower anxiety / depression and social behaviour problems than in other towns, particularly Kimba. This may be reflecting different cultural views within the schools. Tests (Chi Squares) showed that there were no significant differences in the student diagnostic groupings between the towns.

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iii) Conclusions

The findings about the different student diagnostic groupings need to be treated as indicative rather than conclusive because of the small numbers of students in 3 of the groups. However, they do appear to indicate that children with different diagnoses benefit differentially from the assessment and subsequent behavioural programs. The students on the EPCAMHS program and who were assessed by the psychologist did experience reduced social withdrawal. Whether that was due to increased attention or better assessment / programs remains the subject of conjecture.

Within the total sample there appears to be distinct diagnostic group who benefited more than others, as indicated by increased skill levels and by reduced social withdrawal and reduced anxiety / depression. This group are characterised by problems that have more an environmental / developmental basis which can be rectified within the school.

6. Parents Questionnaire

A questionnaire to assess the views and experiences of the program was given to parents of children who were due for 12 month follow up by the EPCAMHS psychologist. Attachment 6 contains a copy of the questionnaire and covering letter. In order to maximize responses and to maintain confidentiality parents did not have to record which town they were from.

Eighteen completed questionnaires were returned. This represents a 45% return rate, which is quite reasonable given the sensitive nature of the program and the fact that

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parents were being asked to complete the long behavioural questionnaires at the same time.

Results (attachment 7) show that, overall, parents felt that the program was beneficial for their children and themselves. The majority indicated satisfaction with the implementation of the program in terms of obtaining permission for their child's involvement (82.4%), having the program and the assessments explained to them (76.5% and 82.4% respectively), and being kept informed of their child's progress (76.5%). However there were also several parents who did not understand the nature of the program (some did not return questionnaires) or about the increased cooperation with the local GP. This was partly due to the variability in program implementation from town to town. However, as part of quality assurance future implementations of the program need to be provided with a written set of guidelines which they can build the program around.

In general, parents indicated that their child's academic performance had improved since they became part of the program (77.8%), as had the child's self confidence. (58.8%). The child's ability to cope in everyday life situations, everyday behaviour and getting along with family and friends were the same as before for the majority (58.8%, 58.8% and 70.6% respectively).

Some parents felt more 'in control' of their child than before the child became part of the program (31.3%), the majority (68.8%) did not feel any more or less in control than they did before.

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One major concern that parents and other agencies had was that the program may lead some of the children being labelled for being part of the program. Importantly only 1 parent said that their child had been labelled as 'dumb' or 'stupid' since becoming part of the program.

Almost 85% of respondents indicated that increased co-operation between the local GP and teachers would be of some benefit or very beneficial for the local community. Some parents did not see any benefit because they could not see any connection between the child's learning problem and any medical problems.

Overall all respondents agreed that other country communities would benefit from the help and assistance provided by the present program.

7. GP and Teacher Views.

The nature and impact of the program to date was discussed in face-to-face and telephone interviews with all the GPs, and representatives of all schools on program at the end of 1997 and the end of 1998.

The following summarises the findings of those interviews. Attachment 8 contains a copy of the questions covered.

The impact of the program varied from town to town, in part as a function of the educational resources available to the town. Towns with fewer resources made more use of the program principles and resources to help themselves.

GP interest, skills and availability greatly influenced how the program resources were utilised in each town.

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In towns where the GP was not as interested in mental health issues, then the program consisted virtually entirely of the Educational Psychologist interacting with the school to assess and develop individual child programs, and where possible, family counselling from the EPCAMHS counsellor. Only very rarely did the local GP have input to the case.

Where GPs have the skills and interest then the GP - teacher group meetings are on a more regular basis, and the GP can have considerable input to the cases. Of course, the Educational Psychologist's and family counsellors input was the same as for the other towns.

7.1. GPs identified the main benefits of the program as being

1. Information sharing with the teachers leading to:

Support when making their own clinical judgements and intervention

More appropriate referrals and decisions about the child

Objective, real life, monitoring of the effects of any medical intervention

In effect it saves GP's time by making decision and long term case monitoring easier

2. Professional support for the GP, which is important in communities where the GP and teachers are often the only professionals.

Increased knowledge of childhood issues and mental illness. Some, though, are still a little unsure about the role, effects and identification of mental illness.

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3. It encouraged GPs to interact with other professionals in the town, and increased interaction even if the interaction only ever took place on an informal basis.
4. A mechanism is in place to enable liaison with the teachers when necessary. This is particularly important for those GPs who do not have regular meetings with the teachers. It has already been used in a couple of cases.

7.2. Schools, from their viewpoint, identified the biggest benefits of the project as being

1. The provision of a responsive Educational Psychologist for assessment and child program development. Because of the lack of Education Department resources the waiting list to see the Guidance Officer was often long, up to 18 months for a low priority case. In addition the Education Department reports were seen as low quality and lacking in specifics. In contrast the EPCAMHS psychologist provided reports which had detailed and easy to follow recommendations.
2. The provision and skills associated with the main Educational Psychologist for in-service training for the teachers. In particular this involved education about individual child learning styles.
3. There is no doubt that the skills and personality of the EPCAMHS main

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4. psychologist are one of the most important aspects of this program.
5. Encouraging the development of 'wholistic' mental health and behavioural programs within the school, and providing the theoretical underpinnings and focus
6. to do so. Graham Flemings Mental Health Model (see the original Tumby Bay
7. project report) was very influential in this regard.
8. Where behavioural program already existed then the EPCAMHS program encourage the refinement of those programs, in particular the on going monitoring of student outcomes.
9. Encouraging the development of other mental health related sessions and seminars eg. self confidence workshops, suicide discussions, body image discussions.
10. Where available, the provision of "follow-up" and a family counsellor was seen as "invaluable", complemented the assessments and opening up the family for increased interaction.
11. Encouraging schools to look for support and resources outside of the traditional boundaries of the education department, giving schools 'power over their own destiny'.

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12. The following aspects were identified by schools who interact with the GP regularly:

- Providing the GP as part of the behaviour management strategy who can ‘enforce’ behavioural programs beyond the jurisdiction of the school and whose opinion carries more weight than that of the teachers. Teachers identified that this took pressure of them and refocused at least part of it on the external environment influences and the home life of the child. Parents become more responsive when that happens.
- Information sharing with the GP leading to a better understanding of the child and their situation.

7.4. Benefits to the Children

The following were identified as being program benefits for the children

1. Large numbers of the children (up to 90% by some estimates) had improved in learning.

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2. Raising awareness of mental health among parents and the community and destigmatising it

7.5. *Students on the Program*

Although originally created to assist those students who were 'at risk' and were not receiving any resources from the education system. The Education Department classifies students with an IQ of less than 70 as having a 'Learning Disability'. Students with an IQ of 70 and above and having problems are defined as having a 'Learning Difficulty'. The former group are covered by the Education Department assessments but the latter group are often not. It was this latter group the program was targeting. In

some towns, such as Lock, Kimba and Cleve which were receiving no assessments or few assessments from the department many students were assessed in the EPCAMHS program. Some assessments were therefore performed on students who were not necessarily 'at risk'.

7.6. *Project Lifecycle*

A common lifecycle can be identified for the towns most involved in the program, and one which was displayed in the original Tumby Bay project. When the program was initially introduced to a town a large number of children were identified as being in need. However as the assessments and the programs developed the number in students with immediate needs was reduced, until the new assessments are only being done on children new to the school as they need it.

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7.8. Types of Students that the program helps:

The program was recognised as having limits and not working for all students. Students with social difficulties did not respond well to it, but students with ‘pure’ learning did, As did students who were depressed or whose relatives were depressed.

7.9 Selection of Quotes:

“It (the program) works better than anything else the Division has done”

“The school is now the most focussed I have seen in 20 years of teaching”

Appendix 10

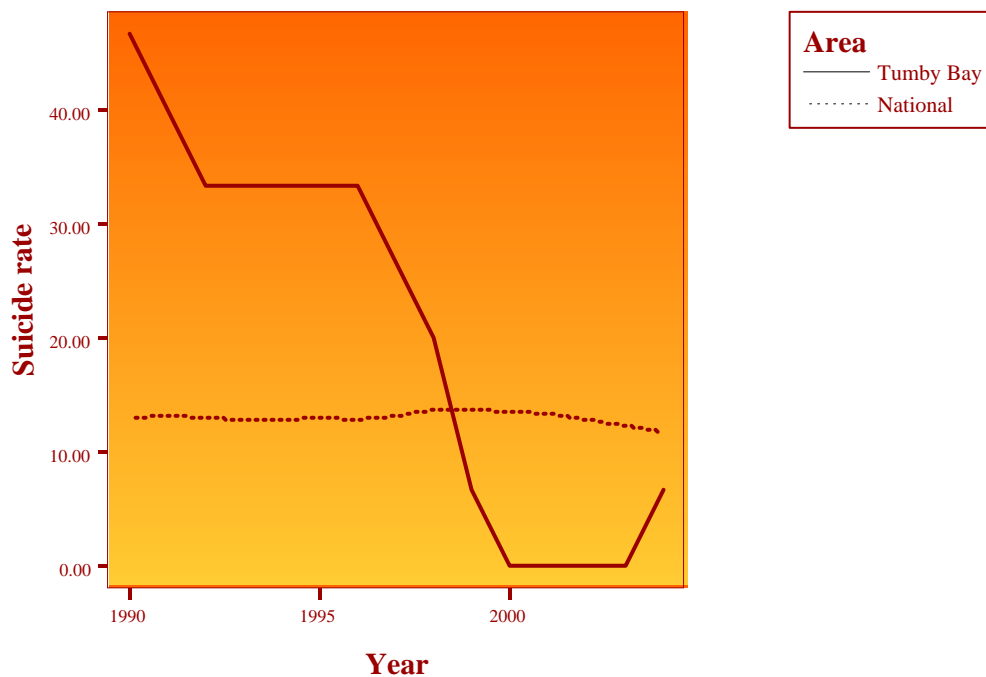
STATISTICIAN REPORT

John Petkof

University of South Australia

SUICIDE RATE FOR 1990-2004

Suicide Rate per 100,000 by 5-year average



We will model the rate of suicide by the use of Analysis of Covariance (ANCOVA)

A regression is run using the suicide rate as the dependent variable. Time (1-15) and area (1=Tumby Bay and 2 = National) as the two groups.

Appendix 10

Regression analysis

Response variate: Rate
Fitted terms: Constant + Time + Area + Time.Area

Summary of analysis

Source	d.f.	s.s.	m.s.	v.r.	F pr.
Regression	3	3945.9	1315.31	66.44	<.001
Residual	26	514.7	19.80		
Total	29	4460.7	153.82		
Change	-1	-1708.6	1708.60	86.31	<.001

Percentage variance accounted for 87.1
Standard error of observations is estimated to be 4.45.

The variance explained is large (87.1%)

The regression is highly significant overall.

Estimates of parameters

Parameter	estimate	s.e.	t(26)	t pr.
Constant	49.08	2.42	20.30	<.001
Time	-3.524	0.266	-13.25	<.001
Area National	-35.86	3.42	-10.49	<.001
Time.Area National	3.493	0.376	9.29	<.001

Parameters for factors are differences compared with the reference level:

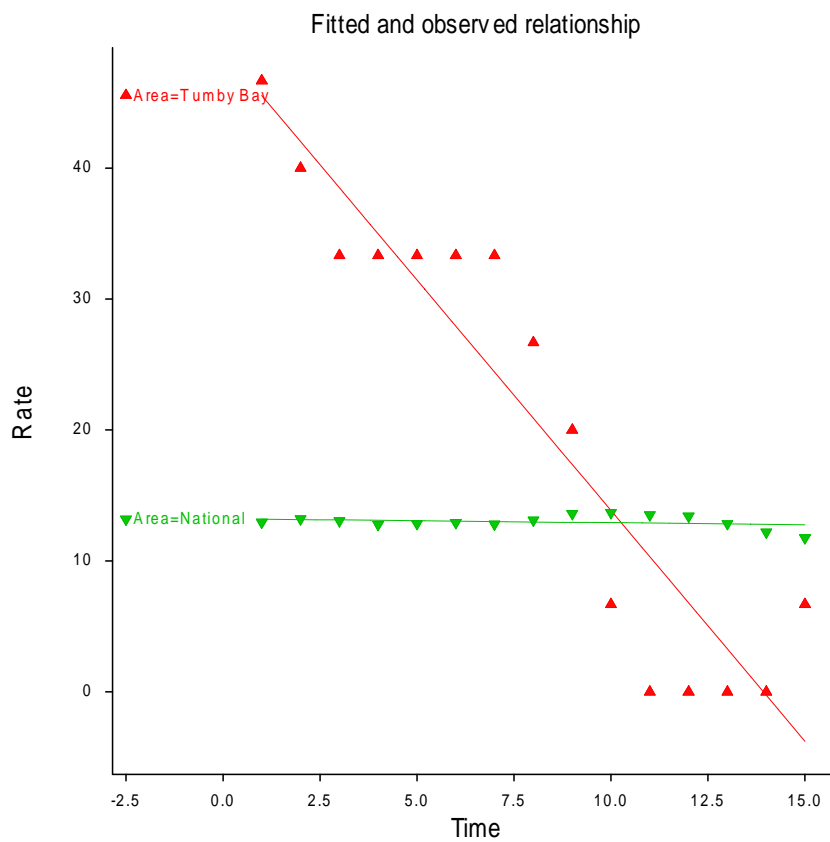
Factor	Reference level
Area	Tumby Bay

Note the following: (estimates)

- **Time is significant and negative-the rates are falling overall**
- **National figures are significant and negative-this is obvious and not of interest to us**
- **The interaction Time by Area (national) is significant and positive. This tells us that as time progresses the national rate is larger than the rate at Tumby Bay.**

Appendix 10

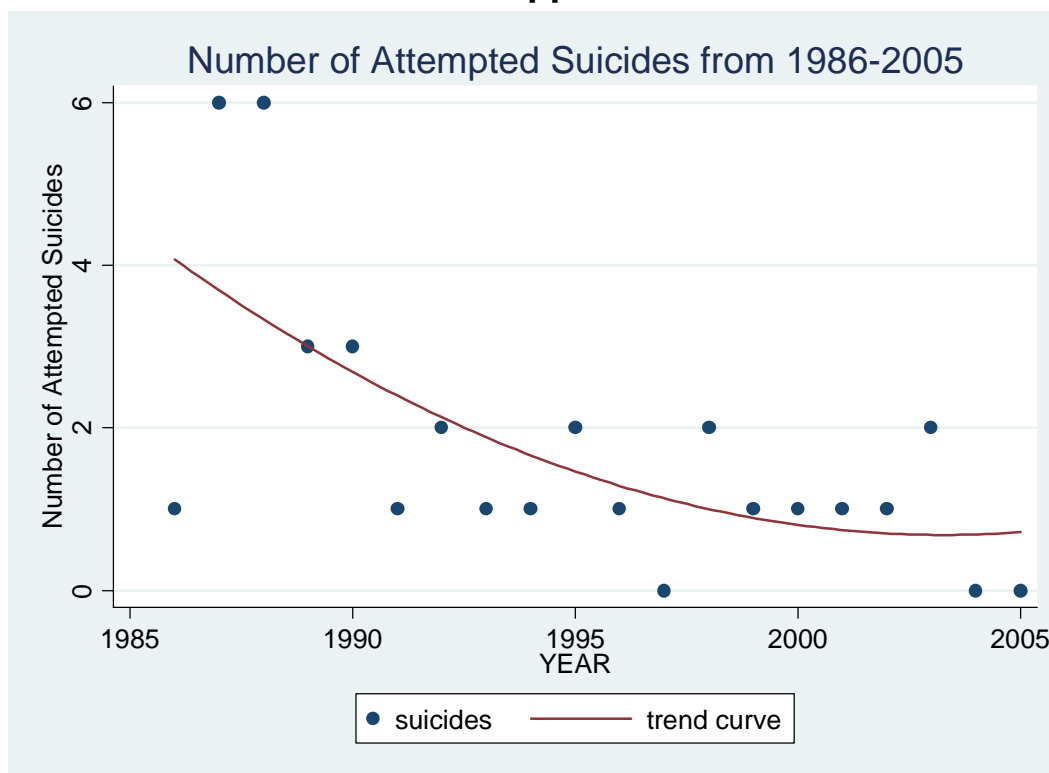
Suicide Rate per 100,000 for Tumby Bay and National



The fitted plot confirms the analysis above.

The time series graph shows a decreasing trend.

Appendix 10



The data is count data and consequently we fit a Poisson Regression to this data.

```
poisson suicides year, robust
```

```
Iteration 0: log pseudolikelihood = -28.778332
Iteration 1: log pseudolikelihood = -28.778316
Iteration 2: log pseudolikelihood = -28.778316
```

```
Poisson regression
```

```
Number of obs = 20
Wald chi2(1) = 9.55
Prob > chi2 = 0.0020
Pseudo R2 = 0.1761
```

```
Log pseudolikelihood = -28.778316
```

suicides	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]
year	-.1086832	.0351693	-3.09	0.002	-.1776138 - .0397527
_cons	217.2478	70.13212	3.10	0.002	79.79142 354.7043

The regression is highly significant and shows that the number of attempted suicides was decreasing from 1986-2005 (the coefficient of year is negative indicating a decrease)

Appendix 10

We check for goodness of fit:

```
estat gof
```

```
Goodness-of-fit chi2 = 15.80334
Prob > chi2 (18)    = 0.6063
```

The Chi-Square fit test is not significant and this indicates that the Poisson model is not rejected. Any deviance from the proposed model is not significant. We have a good fit.

We repeat the above analysis and report the incidence ratio:

```
poisson suicides year, robust irr
```

```
Iteration 0: log pseudolikelihood = -28.778332
Iteration 1: log pseudolikelihood = -28.778316
Iteration 2: log pseudolikelihood = -28.778316
```

```
Poisson regression          Number of obs = 20
                             Wald chi2(1) = 9.55
                             Prob > chi2 = 0.0020
                             Pseudo R2 = 0.1761
Log pseudolikelihood = -28.778316
```

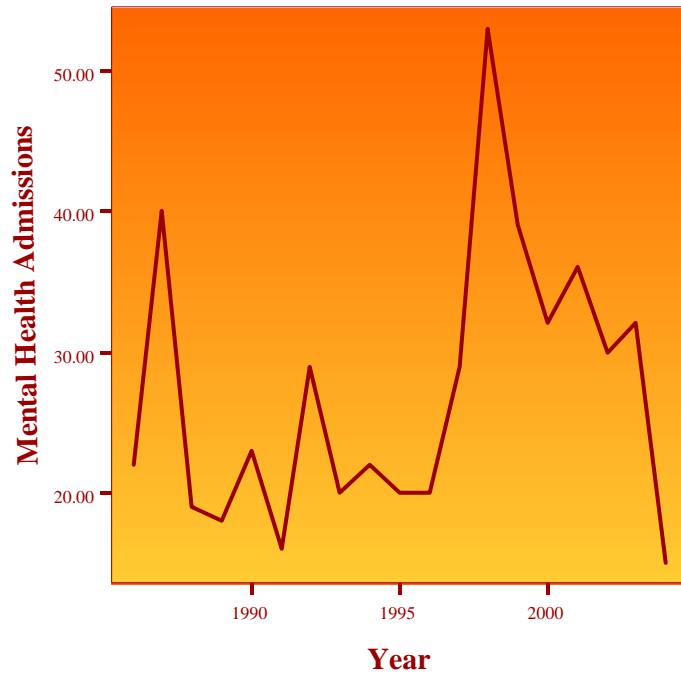
```
-----+-----
suicides |          Robust
          |          IRR   Std. Err.   z   P>|z|   [95% Conf. Interval]
-----+-----
year |   .8970145   .0315474   -3.09   0.002   .8372657   .9610271
```

The incidence ratio is 0.897 (yellow). This tells us that the incidence of attempted suicide in any one year is 0.897 of the previous year.

**ANNUAL FREQUENCY OF ADMISSIONS FOR POOR MENTAL HEALTH
(1986-2004)**

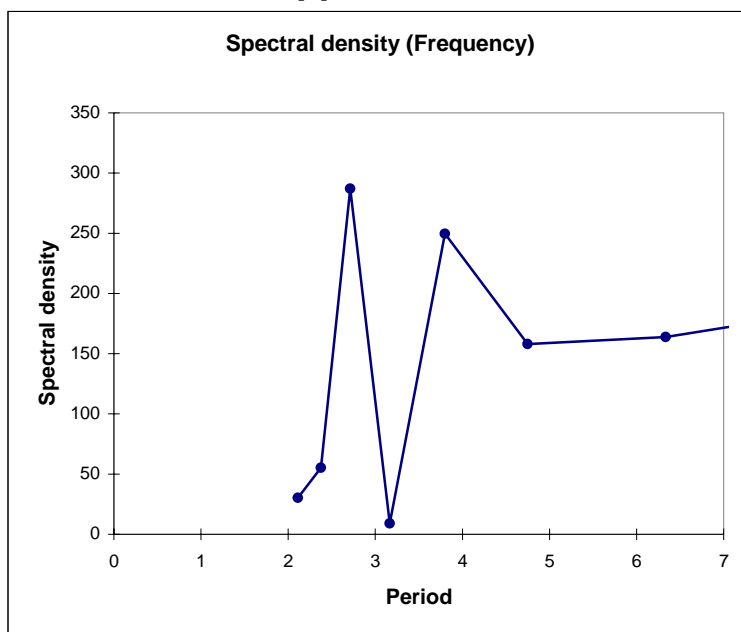
Appendix 10

Annual Frequency of Admissions for Poor Mental Health



The data has seasonal or cyclical components. We form a spectral analysis. This looks at the data from the frequency domain view, not the time domain view.

Appendix 10



The frequency spectrum does not show too much at all-this is due to the small sample. The spikes suggest a cyclical effect every 3-4 years. The original data bears this out. It should be kept in mind that the trend effect has been removed.

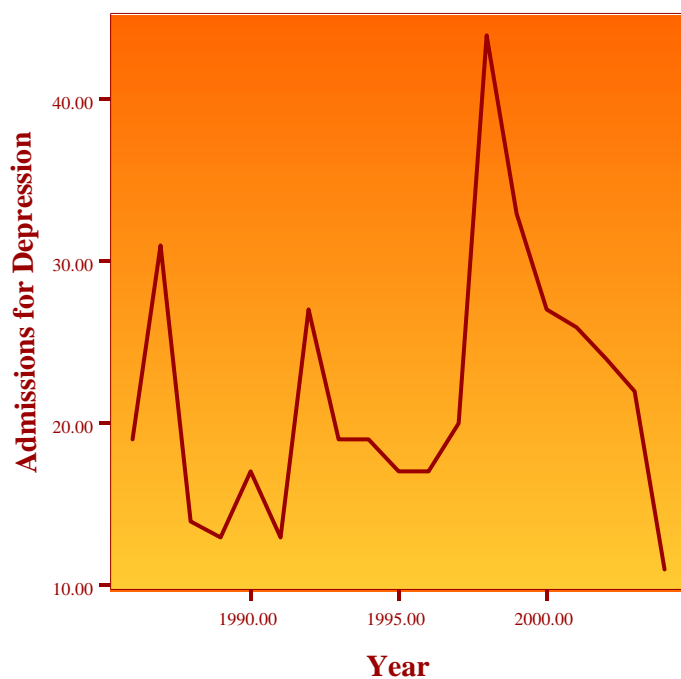
White noise tests (Frequency):		
Statistic	Value	p-value
Fisher's kappa	0.000	< 0.0001

The test above suggests that the data is not due to noise alone.

Appendix 10

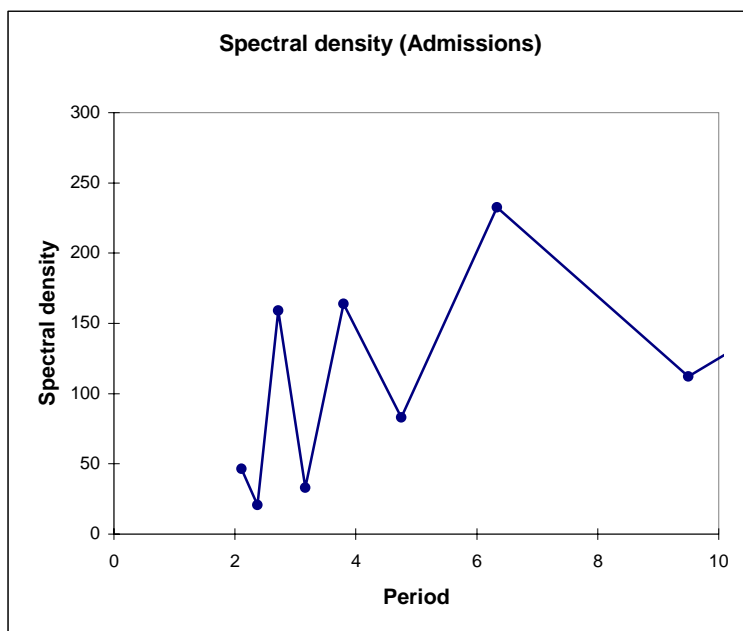
ADMISSIONS FOR DEPRESSION

Annual Frequency of Admissions for Depression



The data displays the same cyclical pattern as before.

Appendix 10



The large spike at 7 suggests a cyclical trend every 7 years or so. Any trend has been removed.

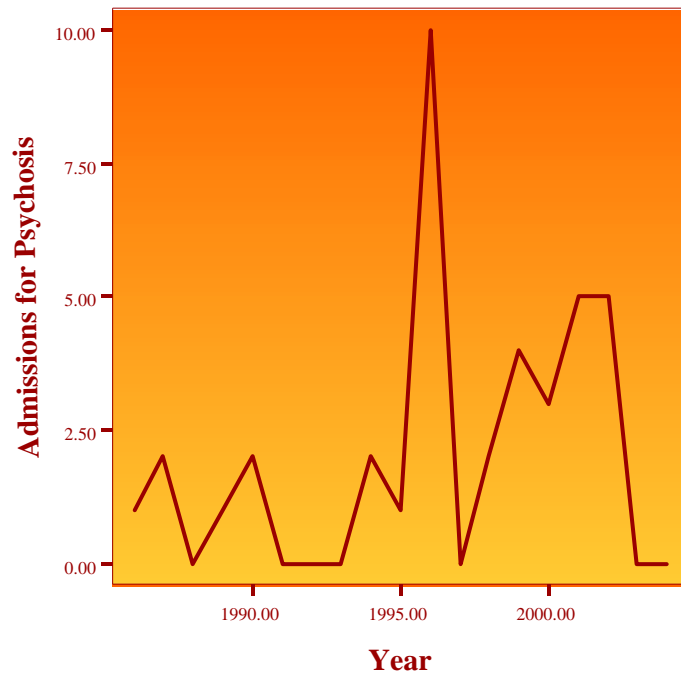
White noise tests (Admissions):		
Statistic	Value	p-value
Fisher's kappa	0.000	< 0.0001

The test above shows that the data is not due to noise alone.

Appendix 10

PSYCHOTIC ADMISSIONS

Annual Frequency of Admissions for Psychosis

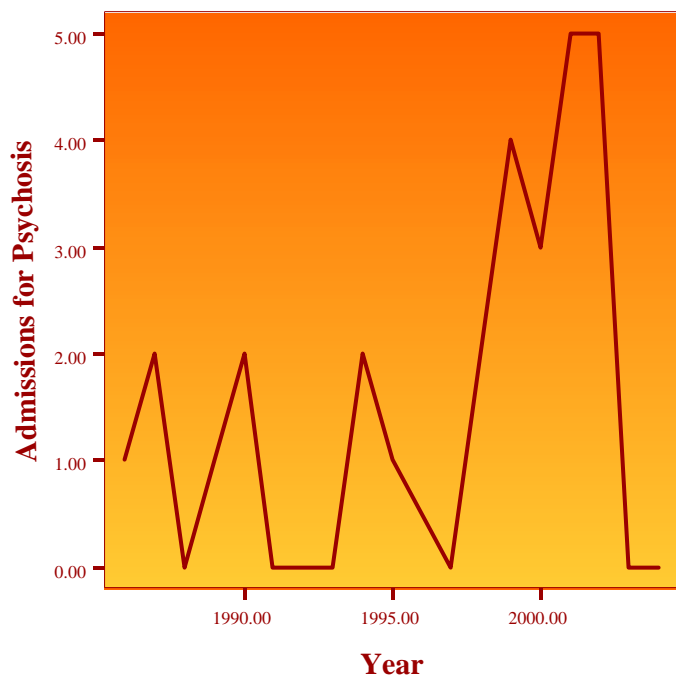


There is a definite positive trend here. The 1996 point of 10 is a clear outlier.

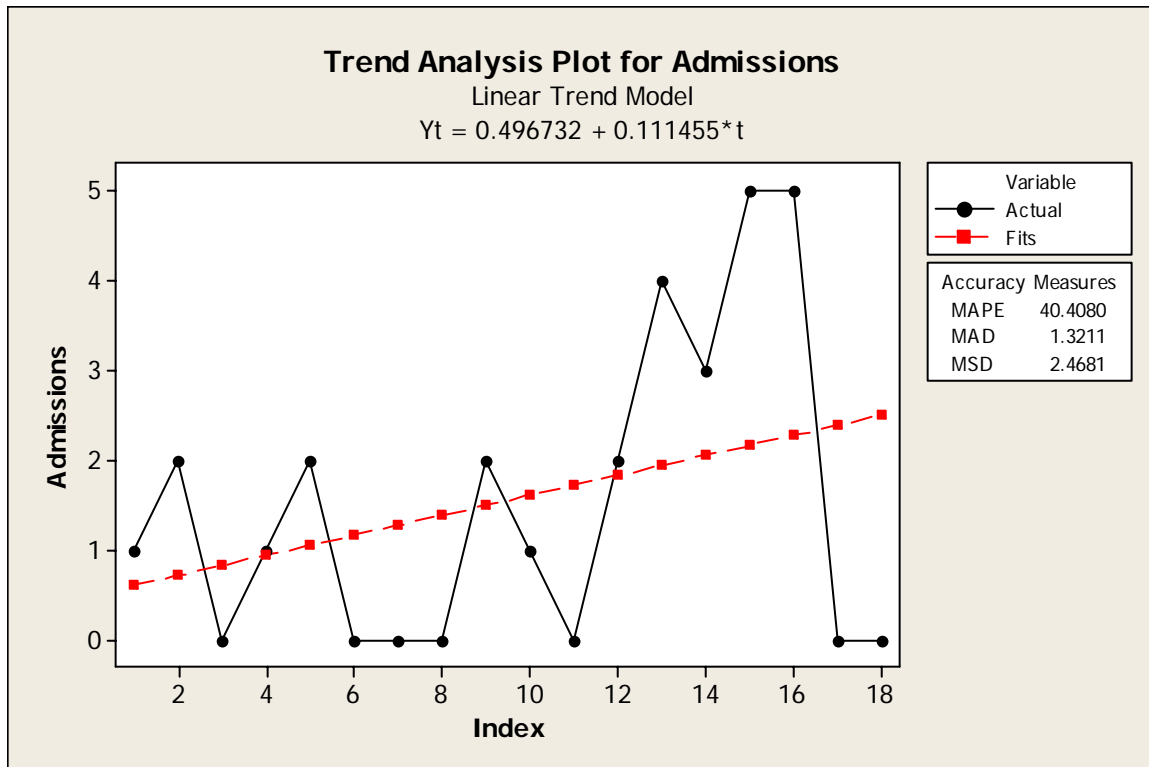
If this point is removed a clearer picture is seen.

Appendix 10

Annual Frequency of Admissions for Psychosis



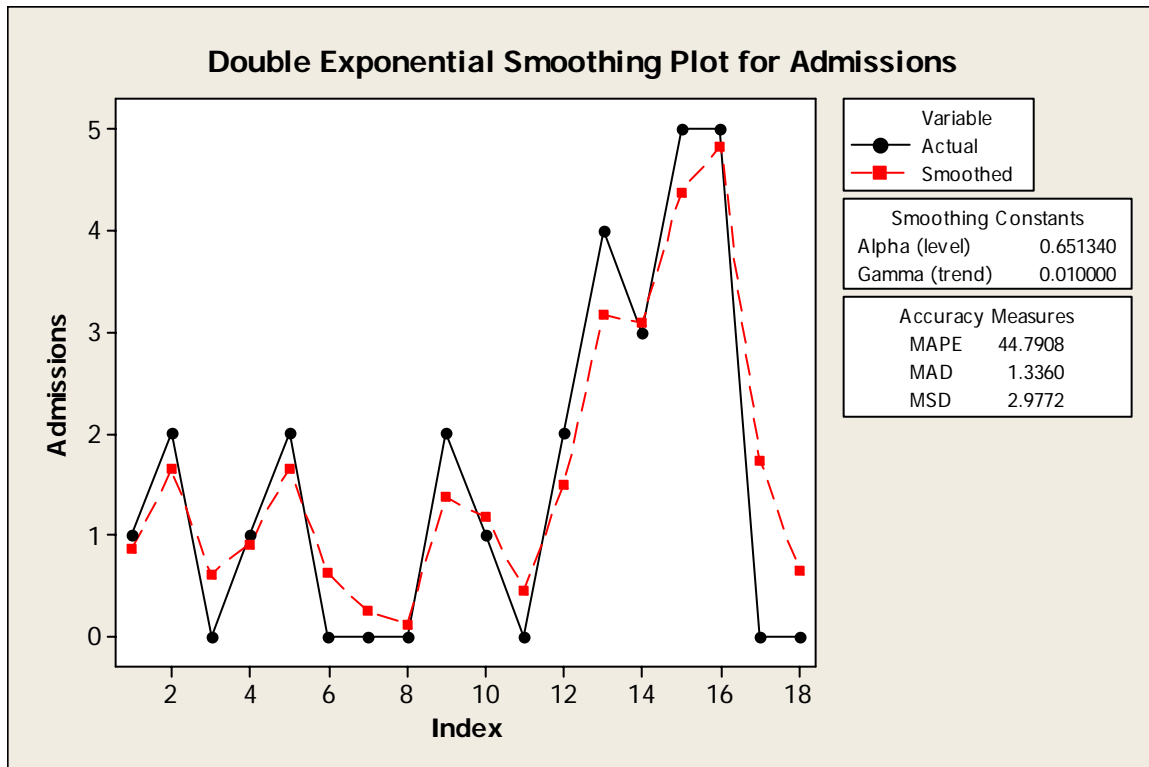
Appendix 10



The trend equation is shown above. The slope is positive and so shows an increasing trend. Unfortunately, by itself, this is not significant ($p = 0.145$). But the trend is clear.

This trend is very typical of a fit involving Double Exponential Smoothing.

Appendix 10



The model fits quite well.

Appendix 11

Oxford Centre for Evidence-based Medicine Levels of Evidence (May 2001)

NOTE: This appendix is included on page 213 - 214 of the print copy of the thesis held in the University of Adelaide Library.

Produced by Bob **Notes**

Appendix 12

NOTE: This appendix is included on page 215 - 217 of the print copy of the thesis held in the University of Adelaide Library.

Appendix 13

NOTE: This appendix is included on page 218 - 220 of the print copy of the thesis held in the University of Adelaide Library.