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Psychological problems in rural primary care: Evaluating a model of mental health service delivery in rural Tasmania.

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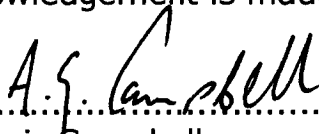
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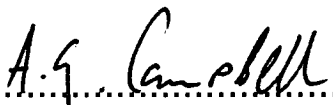
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Abstract

Over the past 10 years in Australia, there has been significant expenditure of resources on mental health. Research has demonstrated that psychological disorders are a frequent and disabling health issue for many in the community. However, there continues to be a singular gap in our knowledge of mental health in rural and remote Australia.

Numerous publications have identified the issue and called for more research in rural settings at all levels. Yet a number of reviews have shown that most publications in this area are commentaries, descriptions of services, or policy statements. There is a significant gap in our understanding of the prevalence of mental health problems in rural and remote Australia. Currently we know very little about the risk and protective factors that moderate prevalence and the impact of service delivery on outcome for clients in rural and remote areas.

This study included basic research on common mental disorders in a Tasmanian primary care population whilst evaluating the relative clinical effectiveness of a locally developed model of mental health service delivery.

The study used a combined survey and naturalistic experimental design to screen participants (N=490) making a routine visit to their GP and subsequently assess them (N= 227) using a diagnostic interview and rating scales of psychiatric symptoms and quality of life. Participants were re-assessed on these measures after 12 months. The primary care sample was grouped into those who had received a mental health service (N=22), those who had symptoms but did not receive treatment (Untreated Control, N=100), and those who did not have symptoms and did not receive mental health treatment (Normal Control, N=105). Clients being seen by a Local Mental Health Worker (N=28) were compared to the different groups of primary care participants.

The study revealed a high prevalence of common mental disorders in this sample. In addition, a moderate correlation was established between the GP evaluation of psychological well-being and measures used in the survey suggesting that the GPs in this study were good at identifying psychological distress. Finally, it was found that the clients of the Local Mental Health Worker improved to a statistically and clinically significant degree on all the indicators of symptom level, distress, and quality of life compared to the other groups.

More research is necessary but this study supports the idea that people do better when treated by mental health professionals in their own community. Such a model should be given serious consideration when developing future services.

ACKNOWLEDGEMENTS

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Chapter 1: Scope, aims, and definitions.

> *And so we turn the page over*
> *To think of starting. This is all there is.*
> John Ashbery(b.1927)

1.1 OUTLINE

The purpose of this chapter will be to provide a brief framework for understanding the context and aims of the research described in this thesis. The chapter begins by introducing the context of the research in terms of current directions in Australian mental health policy and then covers the importance and relevance of developing a better understanding of rural mental health issues. Next, there will be a more detailed description of the specific circumstances surrounding the research project and an exploration of the research methodology. This section alludes to some of the difficulties with implementation of the research method but leaves a fuller description for later chapters. The final section for contextualising the research project looks specifically at the questions that the research was designed to address. Finally, the last two sections of this chapter provide a brief exploration of the definition of the terms 'mental illness' and 'rurality'.

1.2 INTRODUCTION

Mental health has been a focus of concern for the Australian government for some considerable time and the findings of the Human Rights and Equal Opportunity Commission in 1993

highlighted the issues. Since that time there have been two five year strategic plans for the reform of mental health services in Australia with very significant effects on the delivery of services (Australian Health Ministers, 1995, 1998, 2003).

It has been noted that there has been a significant shift to delivery of services in the community away from psychiatric institutions. There has been an almost universal integration of mental health services with existing hospital and health services. There has been a very successful educational campaign about the role and rights of consumers in mental health care and a consequent partial integration of consumers and carers in the administration of mental health services (Whiteford, Buckingham, & Manderscheid, 2002). It is probably fair to say that the change in mental health service delivery in Australia over the past ten years has been staggering.

But the main changes have been to the basic infrastructure of mental health services and it has been acknowledged that more change will be needed, particularly in relation to special needs populations, such as forensic mental health clients, indigenous communities, children & adolescents, dual diagnosis clients, and people living in rural and remote areas (Australian Health Ministers, 2003).

1.3 IMPORTANCE/RELEVANCE

It has been generally acknowledged that the risks of experiencing mental health problems are magnified for people living in rural and remote areas. This has been said to be primarily due to increased exposure to economic and environmental stressors and limited access to basic services in rural areas (Fox, Blank, Rovnyak, & Barnett, 2001; Fraser et al., 2002; Fuller, Edwards, Procter, & Moss, 2000; Fuller, Edwards, Proctor, & Moss, 2002; Judd, Fraser et al., 2002; Judd & Humphreys, 2001; Judd, Murray et al., 2002). The Australian government has identified people in rural and remote regions as population groups with special needs. However, the main changes in mental health service structures have been in major metropolitan areas or larger regional centres. People in rural and remote areas in Australia continue to be disadvantaged in a multiple number of ways in relation to receiving mental health care.

It has been repeatedly noted, that there continued to be an almost complete lack of specialist mental health practitioners (e.g. psychologists, psychiatrists) located outside of major metropolitan or larger regional centres (Ivey, Scheffler, & Zazzali, 1998; Lau, Kumar, & Thomas, 2002; McLaren, 2003; Tobin, 1996). Most

mental health care in rural settings has been delivered, in the first instance, by general medical practitioners and secondarily by visiting mental health specialists (Wagenfeld, ; Wagenfeld, Murray, Mohatt, & DeBruyn, 1997). People in these areas have reduced access to an adequate crisis response. As a result people in rural and remote areas have been found to be more likely to be hospitalised for assessment and treatment and the admissions were very likely to be outside of their local area away from family and friends (Australian Institute of Health and Welfare, 1998; Glover, Watts, & Tennant, 1999a; Hendryx, Doebbeling, & Kearns, 1994).

Despite rhetoric about community consultation, it could be said that services to rural and remote areas reflect the funding constraints of metropolitan and regional mental health services more than the wishes or needs of the communities being served. The Australian government has funded a number of recent initiatives (e.g. the *More Allied Health Services* program, the *Medical Specialists Outreach Program*, and various telepsychiatry programs) to attempt to redress some of the inequities, but the funding for these has been project based and there has been little evidence of fundamental infrastructure change to address the issues for people in rural settings.

1.4 SUMMARY OF THE RESEARCH

In 1999 an opportunity arose to evaluate a relatively unique model of mental health service delivery (Campbell & Walker, 2001). The model had previously been developed by a group of local general medical practitioners in response to community concerns about the high level of suicide in the town and surrounding district (Malcolm, 2000).

The model was based on the concept of attaching a mental health professional to a general practice to assess and treat clients referred from GPs in that practice setting. This was similar to a Canadian program described by Kates, et al.(Kates, Craven, Crustolo, Nikolaou, & Allen, 1997) where mental health workers were attached to primary care practices in a health region. The model also paralleled a growing trend in the United Kingdom for general practitioners to employ their own mental health workers - counsellors, psychologist, mental health nurses or social workers (Bower et al., 2003; Corney, 1996; Friedli, King, Lloyd, & Horder, 1997; Gournay & Brooking, 1995; Hemmings, 1997; Rowland et al., 2000; Sharma, Wilkinson, Dowrick, Church, & White, 2001). The Canadian and UK literature describe these models of practice at a general level and there has been little specific attention paid to the application of this model to rural service delivery.

The service in question was initially established with Australian government funds in 1996/97. It had been operating successfully for several years prior to a request from the Department of Health and Aging that the model be formally evaluated. As this model was operating alongside existing 'traditional' models of service delivery to this, and other rural areas, it was possible to develop a research paradigm focusing on the relative outcomes for clients receiving 'treatment as usual' versus those receiving treatment within the local mental health worker model. As there has been very little research looking at the effectiveness of mental health service delivery models in rural settings, this was considered a significant issue to explore.

This circumstance also offered a chance to gather epidemiological data on a population of rural clients using measures that had been used in previous large-scale surveys where the focus was not specifically a rural population. Coincidentally, this research was conducted at the same time that the Australian National Survey of Mental Health and Wellbeing (Australian Bureau of Statistics, 1998, 1999) and the SPHERE study of psychological problems in primary care (Hickie, Davenport, Naismith, & Scott, 2001b) were being carried out.

This had some significant disadvantages as most of the literature describing specific methodology and measures began to appear after the commencement of the research. However there were advantages as the literature in this area was highlighted in journals and government publications allowing the research to build on previous international and national experiences.

As will be discussed later, there has been a paucity of reliable information on the relative prevalence of psychological problems amongst rural populations internationally and virtually nothing specific to the Australian context. This research added to that basic body of knowledge by presenting data on relative risk as well as specific diagnostic status in a rural primary care population.

Another theme in the literature has been the relative inability of general medical practitioners to recognise the presentation of common mental disorders in their clients. This observation has been made in a number of studies and is part of a developing literature on the effects of improving recognition on outcome for clients (Füredi, Rósa, Zámbori, & Szádóczky, 2003; Hickie, Davenport, Scott et al., 2001; Thompson, Ostler, Peveler, Baker, & Kinmonth, 2001; Wittchen & Pittrow, 2002). One of the primary interests of the SPHERE project was recognition and

management of disorders by GPs and whether outcomes could be improved by training GPs in these skills. In Australia the Australian government has also been developing an approach to the management of common mental disorders, which assumes that improving recognition amongst GPs will improve outcome (Mental Health Branch, 2002a, 2002b). The study described here looked at the recognition of psychological problems and the treatment response by the GP.

1.5 METHODOLOGY

The research was designed to enable comparisons between groups of primary care patients who had access either to 'usual' mental health services or to the rural mental health worker. As the rural health worker was located geographically in the North East of Tasmania, centred on the town of Scottsdale, the comparison population areas were based on a selection of rural communities having similar socioeconomic and demographic features. The geographic locations for the research are identified in Figure 1.5.1. The initial approach planned for the research was to use a modified two-stage study involving;

a) initial screening for psychological problems of a large number of potential subjects from people attending for care at their local GP surgery,

b) selected follow-up of high and low risk subjects with more a comprehensive diagnostic assessment, rating of symptom severity, and measures of quality of life, and

c) follow up of clients seen within the 'traditional' mental health service and comparison with those managed within the locally developed model of service.

Figure 1.5.1: Map of Tasmania showing the geographic areas from which the research populations were drawn.
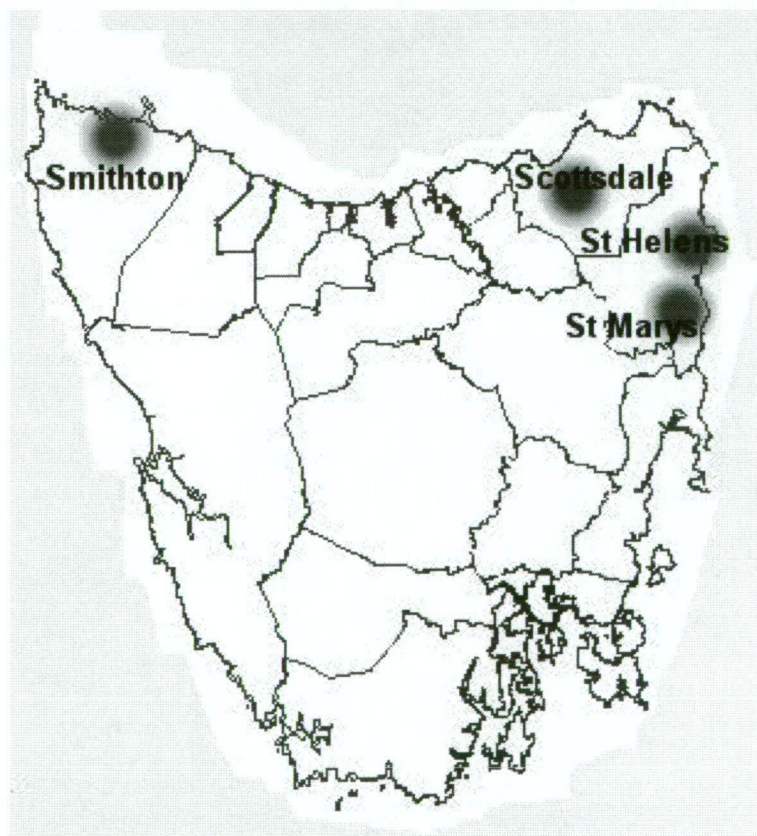
This approach would have allowed for a quasi-random sampling approach within a 'real-world' clinical service setting. Unfortunately, issues to do with initial sampling size and a loss of access to a significant proportion of initially screened clients required modification to the methodology that precluded randomisation of the population follow-up groups. Instead, all clients who indicated a willingness to be involved in follow up were contacted. From this point of view, the final sample sizes were significantly smaller than initially expected, and were essentially convenience samples.

Nonetheless, the main aspects of data collection were maintained in the actual research design. A large number of clients waiting to see their local GP completed a screening questionnaire and provided demographic data and information about current physical health status. A percentage of these subjects also participated in a baseline assessment encompassing; a psychiatric diagnosis, a symptom distress inventory, and a quality of life measure. Additionally, information from the GP about the patient's physical and psychological status as well as any mental health intervention used during the consultation was also available for many of these patients.

In addition to the general primary care population, baseline data was available for clients being seen by the local mental health worker. Following the baseline assessment clients were recontacted some 9-12 months after the initial assessment and re-assessed on the symptom and quality of life measures.

1.6 SPECIFIC QUESTIONS

The main question to be answered in this study was whether clients seen within the local model of service delivery would have different clinical outcomes from those seen within the 'traditional' model of mental health service delivery. It was expected that a service delivered in the local community by a locally based worker would have advantages in terms of accessibility, availability, local acceptance, and timely interventions which would improve outcomes. In addition, the primary model of intervention was client-centred and crisis oriented which was expected to be more relevant for the local consumers than a standard model of psychiatric care.

Additional questions explored in this study included whether there were any differences between the rural primary care sample and other non-rural primary care samples at risk of experiencing psychological problems and prevalence of psychiatric disorder.

The general view in the literature, has been that the prevalence of psychological disorder was similar between rural and non-rural populations and may have been lower for some disorders, particularly the major mental illnesses. So it was expected that the prevalence in this study would be similar to other studies though there might be some qualitative differences.

In addition, the issue of recognition and management of psychological problems by the GP were explored. The literature has been quite clear that GPs under-recognise psychological problems and generally provide inadequate treatment for mental health conditions. Although there has been no conclusive evidence, it has been suggested that GPs based in rural areas may be more experienced at recognising and managing a broader range of conditions than their non-rural counterparts simply because they have reduced access to specialist support (Britt, Miller, & Valenti, 2001). If this were the case, it would be expected that GPs in this study would be better at recognising psychological disorders and more likely to use appropriate interventions than has been found in other studies.

1.7 DEFINING 'MENTAL ILLNESS'

So far in this document, the terms 'psychological problem', 'psychological disorder', 'mental disorder', 'mental illness' have been used somewhat interchangeably. There are clearly problems with this approach as these terms tend to signify different degrees of symptom severity and functional disability depending on the reader's discipline and background.

The terms used for psychological or emotional disturbance are necessarily fraught with difficulties. The history of psychiatric terminology abounds with language that both offends and imprisons the labelled and the labeller. From this point of view, it may be better to be relatively pragmatic in deciding terminology. Although terms such as 'seriously mentally ill', utilised in the initial National Mental Health Plan, have been strongly criticised for disenfranchising significant numbers of people suffering from psychological or emotional problems, the terminology used here will accord with that which has been commonly agreed in the various Australian government documents available in this area.

The main source for these definitions was the National Mental Health Strategy, articulated by the Australian Health Ministers since 1992 in various Mental Health Plans. The most recent plan defines 'mental health' as;

A state of emotional and social wellbeing in which the individual can cope with the normal stresses of life and achieve his or her potential. It includes being able to work productively and contribute to community life. Mental health describes the capacity of individuals and groups to interact, inclusively and equitably, with one another and with their environment in ways that promote subjective wellbeing, and optimise opportunities for development and the use of mental abilities. (Australian Health Ministers, 2003) (p.35-36)

It is important to recognise, in this definition, that mental health is not simply the absence of mental illness.

Further, the term 'mental health problem' has been defined as;

A disruption in the interactions between the individual, the group and the environment, producing a diminished state of mental health. (Australian Health Ministers, 2003) (p.35)

Finally, 'mental illness' has been defined as;

A clinically diagnosable disorder that significantly interferes with an individual's cognitive, emotional or social abilities. (Australian Health Ministers, 2003) (p.35)

In view of this particular definition, the terms 'psychological disorder' and 'emotional disorder' will be used interchangeably with 'mental illness'.

1.8 DEFINING 'RURALITY'

The concept of 'rural' and what could be meant by 'rurality' has largely been undefined, both in the literature and in the discussion so far (Leduc, 1997; Zapf, 2001). In broad terms, a commonly agreed definition of rurality has been seen to be important to enabling fair and equitable distribution of health service resources (Humphreys, 1998). More specifically though, such a definition may also be important to allow for comparison and generalisation of outcomes research data (Judd, Murray et al., 2002). For the purposes of clarity, some of the features that seem to be required in conceptualising a rural focus will be sketched but, given the depth of this issue, it will only be possible to point to some of the complexity involved.

There has been an increasing interest in the past few decades in trying to develop a common definition of 'rurality'. This seems largely a resource issue, as governments in the developed world shift their funding of programs from historical budgets to distribution schemes based on needs based evaluations. This

introduces the question of how to assess the need of a defined community if there is no commonly agreed index for defining that community (Humphreys, 2002).

Initial attempts at defining 'rurality' have focused on population numbers but as Humphreys (Humphreys, 1998) and others have pointed out this simple approach probably obscures more than it reveals. Several authors have noted that the term 'rural' can refer to an extremely heterogeneous mix of communities that are often dealt with by government as homogenous because of the lack of complexity in established definitions (Fraser et al., 2002).

Several governments around the world have been developing indices of rural and remote status and the criteria utilised in these indexes essentially reflect the factors considered important in defining 'rurality'. In 1997 the then Australian government Department of Health and Aged Care developed the Accessibility/Remoteness Index of Australia (ARIA) to assign a classification to most, if not all communities, in Australia (Australian Institute of Health and Welfare, 2004b; Commonwealth Department of Health and Aged Care, 2001; Information and Research Branch(DHAC), 2001).

The ARIA was based entirely on an analysis of distance from the nearest major service centre, with four categories of service centre based on population size, and provided a continuous measure of remoteness. In this scheme an ARIA classification was based on the average ARIA index score (between 0 and 12) within a defined area, such as a Statistical Local Area (SLA). A map has been provided, below (Figure 1.8.1), of the ARIA values for populated areas in Australia, which provides a practical visual understanding of the ARIA values. ARIA values for Tasmania, and other island areas, were calculated using additional weighting to account for the fact that it was separated from the nearest category A centre (Melbourne) by sea (Australian Institute of Health and Welfare, 2004b; Commonwealth Department of Health and Aged Care, 2001).

The use of road distance and four classifications of service centre meant that the ARIA was conceptually simpler than the other existing remoteness index (RRMA). It was also more stable over time, since changes in the index score were dependent on significant changes in the population density in the service centres (Australian Institute of Health and Welfare, 2004b). However, some of the assumptions underlying the use of road distance, such as uniform access to reliable transport and generally good

road conditions, are not supportable for rural and remote Australia (Australian Institute of Health and Welfare, 2004b).

The major limitation of the ARIA classifications, in fact all indices of remoteness, is that they are primarily geographical and are of limited utility when studies involve issues affected by socioeconomic factors, health outcomes, or Indigenous status (Australian Institute of Health and Welfare, 2004b). Generally such indices are not good at capturing the depth and complexity involved in describing and defining specific communities (Humphreys, 1998).

More specific categorisations or indices of rurality have been proposed and developed by medical associations in different parts of the world (Leduc, 1997; Rourke, 1997). The focus of these definitions has been on 'rural practice' and not so much the general rural setting. All of these definitions share some common variables, such as distance from a specified level of service, population being served, number of other medical practitioners, access to specialist services, and degree of non-generalist procedures engaged in by the GP.

The Royal Australian College of General Practitioners (RACGP) for instance, defined rural practice as practice in

communities that are more than 80km by road from a centre with

a continuous specialists service in anaesthesia, obstetrics, and

surgery (Rourke, 1997). Humphreys (1998) has noted, however,

that any index or definition needed to be able to account for

quantifiable and qualitative (e.g. attractiveness of the rural

setting, availability of employment for spouse/partner) factors if it

was to have the depth required to capture the reality of rural

settings.

Figure 1.8.1: ARIA values for populated localities in Australia (Adapted from
(Commonwealth Department of Health and Aged Care, 2001: Figure 2.)
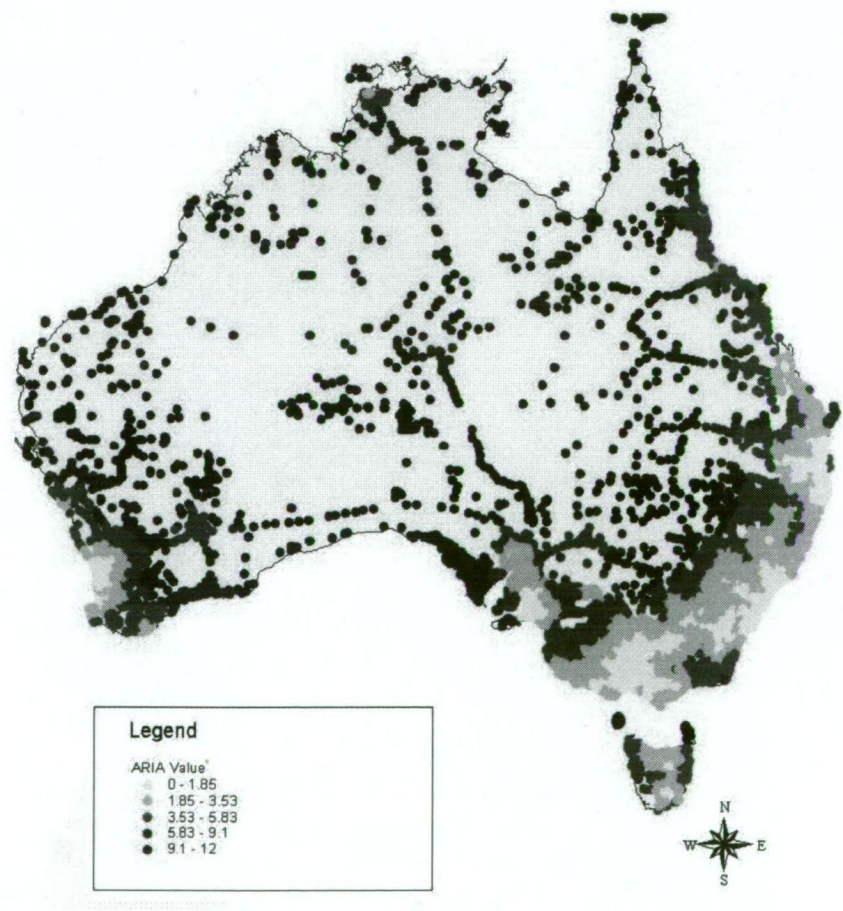
It is worth noting that the issues identified by medical associations in terms of 'rural practice' such as isolation from specialist services, requirement for rural practitioners to undertake procedures not common for non-rural practitioners, and isolation from colleagues, are all directly relevant to the non-medical disciplines. Thus, the conceptualisation and definition of rural practice can be quite easily applied to clinicians working in mental health.

As yet, there is no single agreed index or definition of rurality. As the focus of government funding shifts to needs based assessment the potential inequities in using systems such as ARIA are being identified and there are calls for the development of a more sophisticated and 'deep' conceptualisation of 'rurality'. However, as has been pointed out by a number of authors, there is no one factor that commonly links rural communities (Humphreys, 1999, 2002; Judd, Fraser et al., 2002; Judd, Jackson et al., 2002; Leduc, 1997). The concept of 'rurality' necessarily requires that some account be taken of the heterogeneity that is present both within and between rural communities.

At the very least it can be said that 'rural' is not simply 'non-urban'. Also, 'rural' and 'underserved' are not

interchangeable terms as some rural settings are well serviced and some urban settings are under resourced. Ultimately defining 'rurality' probably comes down to a mix of agreed and measurable variables and a subjective judgment about what other features are important. So the definition will always require justification and some level of debate or discussion.

The population sampled for this research was by most definitions inarguably rural, certainly diverse in sociodemographic terms, not remote in Australian terms, definitively not urban and definitely rural. A more detailed picture of this will emerge in the following chapter but, by way of introduction, the following points can be made about the communities that were involved in the study. All were classified on the ARIA as 'moderately inaccessible', which essentially means that these communities had restricted access to specialist services. The North East of Tasmania was chiefly populated by people involved in farming and foresting and they had usually lived there for a number of generations. The East Coast was made up mainly of older people retired to a seaside community, farming families, and fishing families. Whilst the North West was made up of farming families and mining folk who had been in the area for generations along with a growing number of environmentalists attracted by the wilderness areas close by.

The nearest specialist services for the North East and East Coast are in Launceston, which is only a short geographical distance away but considerably further in the mindsets and histories of the people who live there. The North West's main regional centres are located in two areas, Devonport and Burnie, which are very close to most places but, there is again that distance produced through a people's history of isolation and self-sufficiency.

It's a strange thing, but most mainlanders can't understand why such a small island state, no more than 4 hours travelling time from top to bottom, should be experienced as 'rural' and even 'isolated'. Nevertheless, one need spend only a few years living in the 'rural' areas of this state, to taste the sense of isolation, of psychic distance, to be able to understand that 'rurality' is more, very much more, than simple geographic distance.

1.9 SUMMARY

This chapter has provided an introduction to the concepts and themes which will be developed in later chapters. The research was considered to be important and relevant, at this point in time, because of the general lack of research in rural

mental health in the Australian context. But, more importantly, this study evaluated the effectiveness of a service delivery model for rural settings which can be adapted and implemented in many rural communities. Finally, definitions of terms were considered and some of the concepts in measuring 'rurality' were introduced.

Chapter 2: The changing face of mental health in Australia

> Ye gentle souls, who dream of rural ease,
> Whom the smooth stream and smoother sonnet please;
> Go! if the peaceful cot your praises share,
> Go, look within, and ask if peace be there:
> If peace be his-that drooping weary sire,
> Of theirs, that offspring round their feeble fire,
> Or hers, that matron pale, whose trembling hand
> Turns on the wretched hearth th' expiring brand.
>
> George Crabbe (1754-1832)

2.1 OUTLINE

This chapter will introduce the main themes that will be developed throughout the thesis in relation to the delivery of services. This chapter will discuss issues to do with health services, models of mental health service delivery generally, and then specifically in relation to rural populations, and the difficulties that existing models have in providing for rural service delivery. In addition, the location of the research will be introduced with a discussion of the demography and health status of Tasmanians.

2.1.1 Common models of mental health service delivery

Delivery of health care services is necessarily constrained in any society by a number of factors. Many of these are political or economic but there are also geographic, temporal, economic, and socio-demographic factors. In formulating plans for service delivery, the level of activity that is required, and the best form of service to meet the level of activity, have to be considered. This obviously includes considerations as to whether the service can be delivered by a local health presence or whether it needs to be brought in.

Humphreys (2002) described the concepts of 'threshold' and 'range' as limiting factors in the development and delivery of services in rural settings. 'Threshold' can be thought of as referring to the minimum market (i.e. number of people) needed to maintain a service over a period. If the number of potential clients requiring a service was too low, the service would be considered inefficient or unwarranted. Those services that catered to smaller potential numbers of people to sustain the services must, by definition, provide more specialist functions.

It is clear, in considering this, that Humphreys was describing a concept that relates primarily to prevalence or incidence of conditions in populations. Threshold is a concept that encapsulates the notion that service delivery for a low incidence condition requires a greater population pool whereas conditions with high population prevalence require a smaller population pool. But, threshold also describes the relationship between population size and service type. So, if threshold numbers are low it is to be expected that the type of service will be more specialised requiring specialist knowledge and staff. Whereas if threshold numbers are high, the type of service is most likely general, and delivery of services should be able to be accomplished by generalist staff.

'Range' can be thought of as the maximum distance that people will go to obtain a service. But, as with threshold, range is an interesting and multi-dimensional concept, in that it incorporates concepts such as the valence of the health issue for the patient, the stigma associated with having the condition, belief in specialist treatment for the condition, and a multitude of other determinants. Range and threshold are also related to some degree, as they both describe the aggregation of populations of patients and the impact of that aggregation on possible service type, and potential models of service delivery.

These two factors provide a metric for describing some of the basic dilemmas experienced in the provision of rural health services. Common conditions, or services that can be applied to whole populations, have lower threshold and range. Therefore, they can be delivered by generalist staff and at the local level. Rare conditions have higher threshold and range, and therefore require specialist staff and are most likely to be delivered in a major metropolitan centre.

However, there is an interesting set of service delivery dilemmas where threshold and range are in boundary positions. For instance, it is a common experience for health workers in rural communities that services are often hampered by the lack of a

'critical mass' of patients or patients with specific conditions to require a locally based specialist service. But, there may be sufficient numbers of patients to require the generalist rural health worker to develop an expertise beyond that of their counterparts in metropolitan communities (Britt et al., 2001; Humphreys et al., 2003).

In Humphreys'(2002) terms, threshold and range under these circumstances would be in a boundary span. The dilemma for service planners and rural communities is how to provide sufficiently specialist services when there are not quite enough cases to make a locally based service viable.

A significant feature of the continuum described by Humphreys (2002), was the recognition that service needs will vary between communities. The variation will be dependent on how the community is defined geographically and demographically and, ultimately, this means that the specific circumstances of the defined community have to be taken into account in any service planning or development.

Not only must the community be clearly defined but also there should be data available about the prevalence of conditions of interest in that defined community, information on the

community attitudes to illnesses, and some map of skills available in the local community in relation to specific complaints. In short, service planning requires a thorough understanding of the specific context, as well as the involvement of the community, in the development of services.

Such an approach is necessarily very complex yet, potentially, very rich. However, the most common approach to health service planning is 'top down', with a strong implicit assumption that all rural communities are the same (Fraser et al., 2002).

Australia has one of the most urbanised populations in the world with nearly 70% of the population living in capital cities and 45% of the remainder living in regional cities or large towns (Australian Institute of Health and Welfare, 1998). Generally speaking, Australians living outside of the major cities have higher levels of health risk factors, and slightly increased mortality, than those Australians living in cities. There is no straightforward explanation for these differences. But, an understanding of the health risks for people living in rural and remote Australia must take account of variations in access to health services, lower socioeconomic status indicators, lifestyle factors, more hazardous work environments, and higher proportions of Indigenous

Australians living in rural and remote areas (Australian Institute of Health and Welfare, 1998, 2004a).

There are also significant variations between rural areas on health risks, so that it is too simplistic to say that rurality, in and of itself, constitutes a risk factor for poorer health outcome. Rather, there is an interplay between the factors of geography, lifestyle, socioeconomic status, race, gender, and work that interact with accessibility and availability of services to impact on health outcomes (Australian Institute of Health and Welfare, 2002, 2004a; Humphreys, 2002).

There is a growing emphasis in Australia on the development of models of health service delivery appropriate to rural health care. The Australian government made a strong commitment to rural health care with, the 'Healthy Horizons' initiative through to 2003 (National Rural Health Policy Forum, 1999), ongoing attention to the issue in the Australian Health budget (The Hon Tony Abbot MHR, 2004), and increasing numbers of projects, demonstrations, and funding mixes being trialled around the country (Humphreys, 2002).

The main thrust of the Australian Government's current direction includes a focus on primary health, increased consumer

participation, flexibility in service development, intersectoral coordination and multidisciplinary collaboration. There is also a recognition that changes in health status in Australia need to be promoted in a whole of health framework including socio-economic and lifestyle factors (Australian Health Ministers, 2003). The general lack of information about specific rural populations has also been recognised and there is an increasing focus on the need for research in these settings to provide better information (Judd, Murray et al., 2002; Parsons, Merlin, Taylor, Wilkinson, & Hiller, 2003; Patterson, 2000).

The provision of mental health services in rural communities is a subset of the issues in relation to health services. The way that mental health services are delivered in Australia has been undergoing dramatic change in the recent past, since the development of the National Mental Health Strategy and the subsequent plans for structural and philosophical change. Although services have been provided in the community progressively more since the 1960s, the last 20 years has seen the most dramatic shift of funding and human resources from institutional to community care (Bell, 2003; Lawrence, 2002; Ratcliff & Kirkby, 2001; Shea, 2001; Skerritt et al., 2001). The basic, and universally accepted, model of care is one of

assessment and management of all but the most acute mental illnesses in the persons own home and community setting.

But, there has also been a strongly criticised change in the definition of appropriate problems that can be seen by public mental health services. The terminology of the first National Mental Health Plan emphasised that the population receiving services should be the 'seriously mentally ill' (SMI) (Australian Health Ministers, 1995). This phrase has remained largely undefined and, as a result, the term has been widely, and perhaps opportunistically, interpreted by service administrators to mean people suffering from psychotic or major mood disorders (Goldberg, 2000; Smith, 2003).

The effect of this has been a progressive exclusion of people with 'common mental disorders', such as depression and anxiety, from many mental health services. There has also been a subtle denigration of non-SMI disorders as falling into a 'worried well' category and thus less deserving of the specialist care of a mental health service (Goldberg, 2000). According to some commentators this is a major crisis in mental health service waiting to happen as fewer and fewer people with serious non-psychotic problems are treated (Smith, 2003).

In addition, the broad structure of mental health services has become more similar throughout Australia in recent years. Most services are regionalised and made up of specialist teams or units defined by broad diagnostic and age range categories. At the broadest level most modern mental health services will have separate adult mental health teams and child & youth teams.

These teams will often be further divided by the major functional distinctions of outpatient, inpatient, and forensic teams. These distinctions and specialisations are particularly found in metropolitan Australia where the population of professionals and clients is sufficiently large.

In rural and regional Australia, the team structure becomes less fractionated and more generalised. Thus, most regional mental health services will identify separate teams on the basis of the age of the clients and may have distinctions on the basis of whether the patient is an inpatient or an outpatient (Judd, Fraser et al., 2002). In reality, more often than not, staff on outpatient teams will serve double duty as staff on inpatient teams. This is particularly the case for rarer specialisations such as psychiatry and clinical psychology.

2.1.1.1 Models of service in rural settings

Models for the delivery of mental health care to rural areas throughout the world have, in the main, been simple adaptations of urban service delivery models (Wagenfeld, 1997; Wagenfeld et al., 1997). In Australia, the main type of rural service is provided as 'outreach' from regional and metropolitan centres. This usually involves mental health staff members travelling on a regular circuit to outlying towns for a limited amount of time (Owen, Tennant, Jessie, Jones, & Rutherford, 1999; Tobin, 1996). This type of model is quite inadequate to cope with emergency or crisis situations and in rural settings the mental health crises (suicide, psychotic episodes, etc) are generally managed by local health/welfare staff or transferred to regional/metropolitan inpatient facilities (Fuller et al., 2002; Gibb, Livesey, & Zyla, 2003; Judd, Fraser et al., 2002; Judd & Humphreys, 2001).

Needless to say rural people often feel that their needs are not met within this type of model and that they lead to inequities in distribution of mental health services in Australia (Bjorklund & Pippard, 1999; Deans, 1992; Judd, Fraser et al., 2002; Perkins, 1999). It has been argued that services to rural areas need to be available, accessible and congruent with the community (Fox et al., 2001; Human & Wasem, 1991; Philo, Parr, & Burns, 2003)

but few regional mental health services have the capacity to provide the level of commitment that this would require.

The development of telepsychiatry has seen the extension of this model with mental health professionals providing consultations and assessments on a more 'as needs' basis without having to travel (Large, Paton, Wright, Keller, & Trenaman, 2000). This is often promoted as giving the regional/metropolitan service a capacity to respond to emergencies. It is clear however that attempts to transfer or adapt any model of comprehensive and integrated case management within this framework would be very expensive and probably unaffordable (Badger, Robinson, & Farley, 1999).

Despite there being a growing evidence base as to the efficacy and effectiveness of psychological treatments the shortages of specialist professionals in rural areas makes it very unlikely that such treatments can be effectively deployed (Katon & Gonzales, 2002). It has been estimated that in NSW, Australia, about 100 psychiatrists would need to relocate from metropolitan Sydney to regional centres to provide parity in the ratio of psychiatrists to population (Large et al., 2000). Even if this most unlikely transition were to occur, the 'traditional' model would still

be utilised as the destination for re-locating professionals tends to be the large regional centres not rural or remote communities.

In rural communities the primary care setting is where most services are delivered and it has been argued that this is the most appropriate setting for the development of models of mental health care to rural populations (Holmwood, 1998). People in rural communities generally indicate that they are more likely to use local services provided locally which do not identify them as in need of 'psychiatric' treatment (Fuller et al., 2000). As most people identify their issues as psychosocial problems, or problems of living, a psychosocial model of mental health care delivery is probably more appropriate in these communities (Badger et al., 1999). Thus models that integrate mental health care with locally provided medical services are most likely to be successful at providing accessible and congruent care (Bird, Lambert, Hartley, Beeson, & Coburn, 1998; Geller & Muss, 1996).

In addition, a significant amount of mental health work is carried out by locally available human service professionals (GPs, nurses, police, ministers of religion, etc). These people have been identified as an 'informal' mental health service network that is both under-recognised and under appreciated (Fox, Merwin, & Blank, 1995; Fried, Johnson, Starrett, O'Calloway, & Morrissey,

1998; Holzer & Ciarlo, 1999). More often than not human support individuals are identified and utilised by community members at times of emotional and psychological crisis (Fuller et al., 2002). Yet very often the regional mental health services are unaware that these networks exist or deal with them as difficulties rather than resources (Bergstrom, 1982).

But, the reality is that a visiting mental health service needs to develop services in collaboration with the exiting networks of care, and probably to an even greater degree than in metropolitan settings (Fuller et al., 2002). The local human service professionals are trusted by the community and essentially represent a significant source of information and credibility for any other service agency. Recognition of the importance of these networks has led some US agencies to encourage the formalisation of such informal carer networks within rural mental health service delivery settings (Fox et al., 1995; van Hook & Ford, 1998; Yuen, Gerdes, & Gonzales, 1996).

2.2 TASMANIA IN CONTEXT

There is very little information on the mental health status of the population of Tasmanians in general, let alone the mental health status of Tasmanians living in specific localities or regions.

The data set from the National Survey of Mental Health &

Wellbeing specific to Tasmania is too small to disaggregate

sensibly so, although nearly every other state has state specific

data from this survey, there is none specific to Tasmania

(Australian Bureau of Statistics, 2004 (Personal Communication)).

There are some local sources of data and the 2001 National

Health Survey provides data analysed down to the state level

(Australian Bureau of Statistics, 2002c, 2003c). In addition, the

Australian Social Health Atlas provides breakdowns of information

to the state level and goes further and provides summaries at the

level of electoral boundaries (Glover et al., 1999a).

These are diverse data sets and can only be loosely

compared to each other. Additionally, none of these data sets are

specific to the aims of this research so it is difficult to do more

than sketch some links between the population level data and the

hypotheses in the study. Nonetheless, there is sufficient detail to

get a reasonable understanding of the scope and nature of health

issues in Tasmania relative to the rest of Australia.

2.2.1 Demography

As most Australians know, Tasmania is an island state

located south of the mainland. Although the island is not

geographically very distant from the nearest mainland capital city (Melbourne), and it is possible to travel there in a relatively short space of time by air, there is nonetheless a significant level of isolation that comes from being resident in Tasmania. Some of this is historical, as Tasmania was the second colony established soon after the establishment of Botany Bay and, for many years, depended on supply transports from Sydney cove for survival. In some situations supplies were not forthcoming and there were many occasions when the existence of the fledgling colony was threatened by starvation (Brown, 1972). Some comes from the fact that transport by air or sea to the mainland has only recently, in the last thirty or so years, become affordable to the majority of the population.

Another factor in the sense of isolation for inhabitants of Tasmania is the geography of the island itself. It is difficult to realise, unless you have travelled in Tasmania, how inaccessible some of it is. A map is provided below (Figure 2.2.1) to show some of these features.

Figure 2.2.1: Relief map of Tasmania, showing topography and transport. Tourism
Tasmania (www.discovertasmania.com)

It is only quite recently, in the last 3 decades, that some centres have been linked to the state roads system and there continues to be only one major highway linking North to South through the centre of the state. The main reason for this is that the central midlands of the state are surrounded on both sides, nearly the length of the state, by mountain ranges. These ranges effectively divide the west and east coasts from the centre and additional ranges cut the North-West and North-East regions from the North coast. Although there are now roads through most of the ranges, it is important to recall that these roads were only built in the 1950s, or later, with the building of the hydro-electric development scheme, and many were virtually impassable through winter months up until the 1970s.

These features have led to significant levels of regional identity formation within the state. There is a well known, and classic, rivalry between North and South, Launceston and Hobart, which seems to have started at the very foundation of the colony when Governor King, in New South Wales, sent William Paterson to establish a colony on the Tamar (later Launceston) only a few months after having sent Lieutenant John Bowden to establish the colony at Risdon (later shifted to the Derwent) in the South. But, this distinction is apparent at even more local levels, where people resident in the North East corner consider themselves

isolated from and neglected by the regional centre of Launceston (Dale, 2000).

The population of the state is also quite dispersed. In 2001 there were 473,000 people living in Tasmania and some 58% (275,000) of these lived outside of Hobart. A large number of people in Tasmania live in small towns or rural locations away from the three main regional centres with nearly 21% (95,000) located outside of a metropolitan boundary. Thus, Tasmania is one of the most rural of states in Australia even though it is one of the smallest (Glover, Watts, & Tennant, 1999b: Table A1.1).

Tasmania also tends to have substantial social and economic disadvantages which are significant factors in poorer overall health status (Glover et al., 1999a). The Social Health Atlas is an important source of information in this regard, as it uses a range of socioeconomic indicators and reporting at the level of state, regional, and statistical local areas as well as comparing the metropolitan population to the 'rest of the state'. As the information is provided in maps, as well as in tables, the Atlas provides an excellent visual reference. Using the information provided, it is also possible to compare the North and North-Eastern parts of the Tasmania, with the rest of the state and Australian averages.

The indicators of social and economic disadvantage utilised by the Social Health Atlas includes unemployment, numbers of semi-skilled and unskilled workers, rates of people who left school before age 15, and the ABS summary of relative economic disadvantage.

The rate of unemployment in Tasmania, at the time of the census data used by the Social Health Atlas, was 11% compared to an Australian average of 9.2%. There was considerable variation across the state with Greater Hobart having a rate (9.7%) comparable to the Australian average whilst the rest of the state had an average of 11.9%. The unemployment rates in the Central North and North Eastern areas, which are the Statistical Divisions closest to the main regions involved in this study, were higher again than the national, state, and rest of state averages at 12.1% (Glover et al., 1999b: Table A1.2).

The numbers of people who were skilled or semi-skilled in Tasmania (19.6%) was slightly higher than the national average of 17.4% and the percentage for the Greater Hobart area was somewhat lower (14.5%). The rate for the rest of the state excluding Hobart (23.2%) was much higher than the national average and slightly higher than the national average for outside urban centres (21.9%). The rates for the Northern (23.1%) and

North-Eastern (29.8%) regions of the state were considerably

higher (Glover et al., 1999b: Table A1.2).

The standardised ratio (SR) of people who left school before

age 15 in Tasmania was higher (111) compared to the national

level (100) though Hobart was about the same as the national

level (98). The rest of the state had a much higher SR (120) than

the average and the two Northern regions had slightly higher

rates (124) again (Glover et al., 1999b: Table A1.2).

The ABS Index of Relative Socio-Economic Disadvantage

provided a measure which combines the various indicators into a

single standardised number so that the higher the figure the less

the disadvantage. The Australian averaged rate is 1000 and

constitutes the benchmark, or average, level. Tasmania as a

whole had a lower level on the index (974) than the average

though Hobart was at an equivalent level (1001). The Central

North (964) and North-East (931) regions had lower indexes than

the rest of the state and than the national average (Glover et al.,

1999b: Table A1.4). This is visually summarised below, in Figure

2.2.2.

In summary, although Tasmania is a relatively small state it

tended to have higher levels of socio-economic disadvantage than

the rest of Australia. Within the state it was also clear that the metropolitan areas tended to be less disadvantaged than the more rural or isolated parts of the state. As there is a strong link between disadvantage and poorer health status it was not surprising that many of the health indicators in Tasmania also showed that the state had some of the lowest levels of health status in Australia (Glover et al., 1999a; Public and Environmental Health Service, 2003).

Figure 2.2.2: ABS Index of Relative Socioeconomic Disadvantage, Tasmania 1996
Source: (Map 3.29: Glover et al., 1999a))
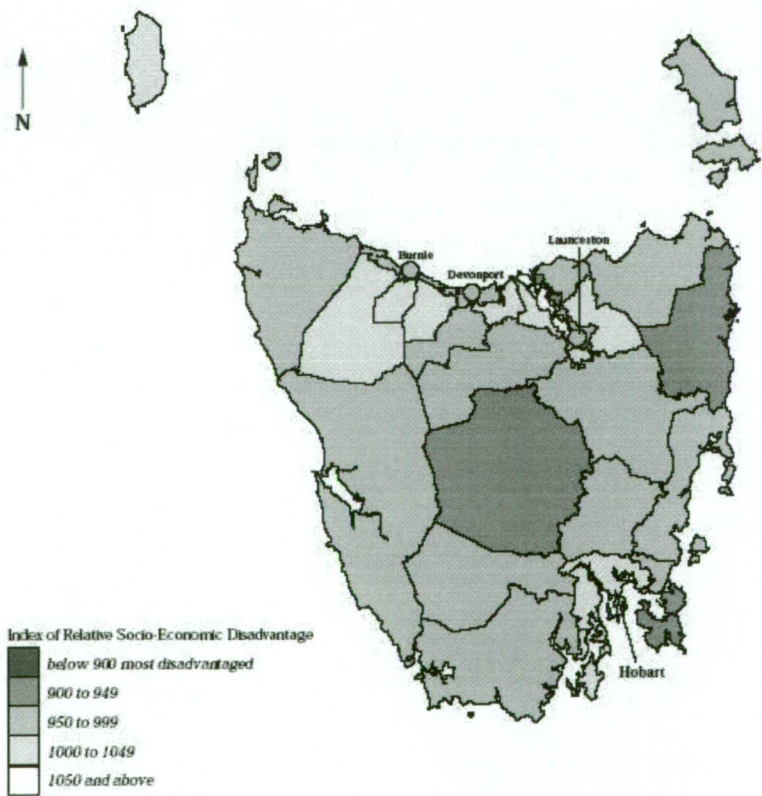
On a global scale Australia in general, including Tasmania, has very high levels of health and wellbeing. But, in comparing

Tasmania to the rest of the country, the Tasmanian Public Health Report for 2003 points out that there are major disparities in health status between Tasmania and the rest of Australia (Public and Environmental Health Service, 2003).

2.2.2 Health issues

As there is a known link between peoples self-reported health status and the likelihood that they will engage in healthy behaviours and help seeking, the Social Health Atlas included a measure of self-reported health status. The metric used in the Social Health Atlas was a reanalysis of self-report health data, which in one form or another is a standard part of the ABS National Health Surveys, collected for the 1995 and 1998 National Health Surveys.

Using standardised ratios, where the average is 100 and any figures over or under this level reflect the percentage difference between the two scores, Tasmania overall had a 12% higher ratio (112) than the national average and Hobart had a slightly higher (9%) number of people reporting fair to poor health. For the rest of the state 15% more people reported fair/poor health (SR=115) and the Northern and North-East regions both had the same (SR=115) ratios.

Thus, Tasmanians in general were more likely to report fair to poor health than the national average and those people living in the rural regions were more likely again to report their health as fair to poor (Glover et al., 1999b: Table A3.1).

Interestingly, the Physical Component Summary (PCS), which was a summary of self report measures relating primarily to physical health, for Tasmanians was much the same as the national average. The psychological component was not reported but it is plausible, given the lack of difference after its removal that ratings of psychological wellbeing made up the main difference between Tasmanians and the Australian average.

Death rates for males aged 15 to 64 in Tasmania were 10% higher than the national average and 14% higher for the rest of the state excluding Hobart. Of the Northern regions the North-East had a 20% higher rate than the national average (Glover et al., 1999b: Table A3.2). The death rates for females in the same age groups were higher than the national average by 10 to 15% and in the North-East the rate was higher than the national average by 52% (Glover et al., 1999b: Table A3.2).

Death rates due to circulatory system diseases were 27% higher than the national average for the rest of the state

excluding Hobart and 36% higher in the North-East (Glover et al., 1999b: Table A3.3). Mortality due to respiratory disease was 33% higher in the rest of the state and 61% higher in the North-East (Glover et al., 1999b: Table A3.4). Death due to accidents, poisoning, and violence were 29% greater than the national average in the rest of the state, 28% higher in the Central North, and 96% higher in the North-East.

When the age of people dying due to accidents, poisoning, or violence was combined, the Social Health Atlas reported that deaths for people aged 15 to 24 years in Hobart were 27% greater than the national average, for the rest of the state they were 44% greater than the national average, and for the North-East they were 100% greater (Glover et al., 1999b: Table A3.4). This is well illustrated in Figure 2.2.3.

A summary of these mortality statistics identified that the Years of Potential Life Lost for people aged 15 to 64 was 8% greater than the national average for Hobart, 17% greater for the rest of the state, and 43% greater for the North-East (Glover et al., 1999b: Table A3.5). The State of Public Health Report for 2003 noted that the general health of Tasmanians was significantly worse than that of mainland states particularly

because of chronic conditions (Public and Environmental Health

Service, 2003).

Figure 2.2.3: Deaths of people aged 15 to 64 years from accidents, poisonings and violence, Tasmania, 1992 to 1995. Source: (Glover et al., 1999a: Map 5.20.)
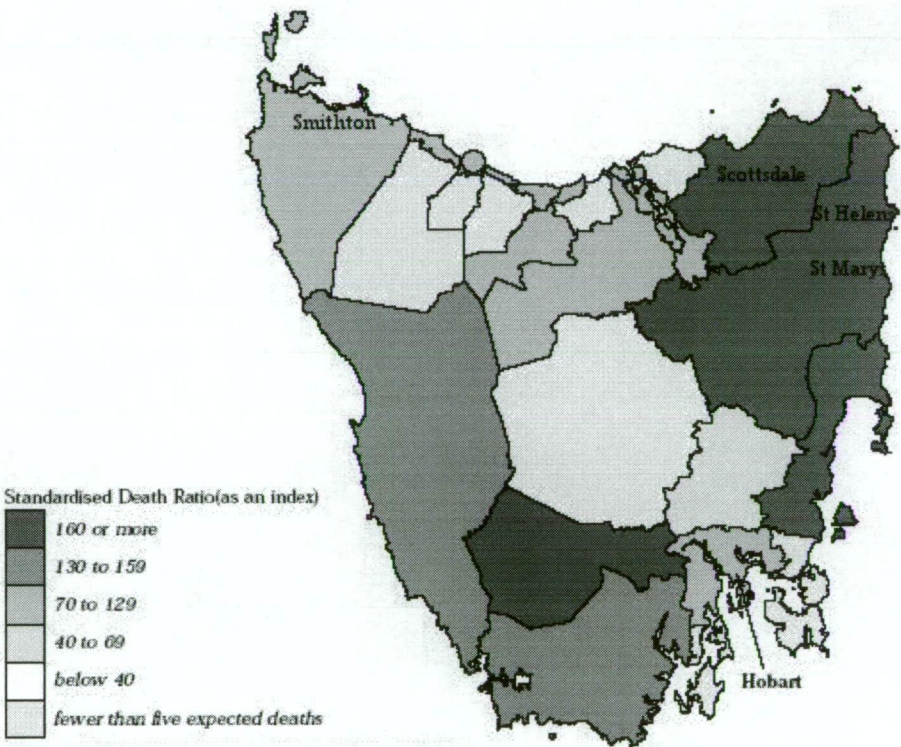
The 2001 National Health Survey also found that

Tasmanians had higher than the national average rates for long-

term chronic physical conditions and that there were much higher

rates of circulatory system diseases, hypertensive illnesses, and

rheumatic and arthritic conditions (Australian Bureau of Statistics,

2002b).

The general health of Tasmanians can be said to be

generally lower than the national average. This is a situation that

has been clear from at least mid-1990 and national surveys show

continuing disparities. The causes for these differences are

complex and relate to the geographic isolation and lower socio-

economic status of the Tasmanian population. Tasmania is also a

rapidly aging state which, until as recently as early 2004, had a

substantial annual out-migration which resulted in a net

population decline. This was exacerbated by the fact that most

people leaving the state were the young. Obviously an older

population will have significantly more health problems.

The pattern of poorer health for people in non-metropolitan

areas found on the Australian mainland is apparent in Tasmania.

The very high rate of death for young people from accidents and

violence identified in relation to young rural men (Australian

Institute of Health and Welfare, 1998) was also apparent in

Tasmania.

One of the prime motivations for the establishment of the

rural mental health service, evaluated in this study, was an

unusually high rate of suicides in the North-East region over a

number of years (Malcolm, 2000). Although other regions of

Tasmania, reported in the Social Health Atlas, were not

considered in this quick summary, most of the regions involved in

the research study had poorer health status and higher risks of death at a young age than the state or national average.

2.2.3 Mental health

It is difficult to get a comprehensive picture of the mental health status of Tasmanians. The National Study of Mental Health and Wellbeing (NSMHWB) was not sufficiently large to enable a disaggregation of the data down to the regional level, let alone Statistical Local Area, and can only provide a state estimate. The NSMHWB identified that 15% of Tasmanians had a mental illness which was 3% lower than the national average. Of these 8.4% were anxiety related disorder compared to 9.7% for the national average and 7.5% were due to affective disorder compared to a national average of 5.8% (Australian Bureau of Statistics, 1998). On these figures it would seem that Tasmanians had higher rates of depression and mood disorders than the Australian average and lower levels of anxiety and stress related disorders.

The National Health Survey (NHS) for 2001 found that 9.6% of the Australian population self-reported a mental health problem. Tasmanians had the highest rate of self-reported mental health problems of any state, at 10.1%, although this was only slightly higher than the national average. As the authors of the

NHS point out, the self-report measure cannot be taken as an accurate measure of actual rates of disorder as it does not represent formal diagnosis. The NHS also found that 14% of Tasmanians scored High or Very High on the Kessler 10 screening instrument (Australian Bureau of Statistics, 2002b: Table 12) a level which indicates significant risk of having a psychological disorder.

Tasmania has also consistently had one of the highest rates of death by suicide than any other state over the past several decades. Figure 2.2.4 provides a compilation of national suicide statistics and provides a comparison of the Tasmanian crude rate with the national average crude rate for the 10 years from 1992 to 2003 (Australian Bureau of Statistics, 2000, 2003a, 2003b, 2003d)

The most detailed breakdown of these statistics is by regional areas in Tasmania which does not take into account the issue of rurality. Generally the Southern region of the state, including Hobart, has accounted for 50% of all suicides in the state with the Northern region accounting for about 30% and the North-West for 20%. During late 1980s to mid-1990s the Northern region had the highest rate of suicide in the state but

from the mid-1990s the North has recorded the lowest rates of

suicide (Habner & Vaughan, 2002).

Figure 2.2.4: Australian & Tasmanian crude suicide rates, 1992-2002.
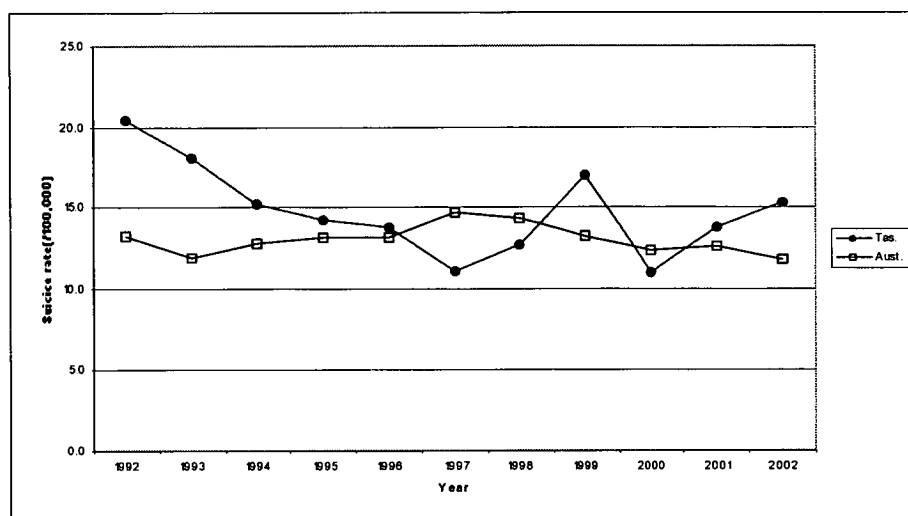
However, the numbers involved make it difficult to draw

any strong conclusions and, even at the state level, the total

number of deaths involved is comparatively small which makes

comparisons tenuous at best (Habner & Vaughan, 2002).

Nonetheless, it can at least be said that Tasmania reflects the

findings of many studies, that death by suicide is most common

amongst young or elder males (Habner & Vaughan, 2002; Public

and Environmental Health Service, 2003), and that deaths due to

accident, violence, or suicide are more likely in non-metropolitan

settings (Glover et al., 1999a).

The Social Health Atlas also provides data on admissions to hospital for psychiatric diagnosis. Admissions for psychosis were most common for metropolitan Hobart and least common for the regional and rural areas of the state. This was pretty much in line with other states in Australia, though the standardised rate for the rest of the state was quite a bit lower than other states and territories (Glover et al., 1999a). This may reflect that the main psychiatric hospital for the state was in Hobart and that there may have been 'geographic drift' of patients with severe disorders to metropolitan areas. Or, this data may reflect a generally lower incidence of psychotic disorders in the rural areas. There is no way of telling from the data alone.

Data on admissions for neurotic and personality disorders showed a similar pattern. A greater number of patients were admitted from metropolitan Hobart, with this being the highest standardised rate in Australia, and there were far fewer admissions from the rest of the state. However, in looking at the rest of the state, admissions were very elevated from the North-East region as is graphically illustrated in Figure 2.2.5.The rates for admissions in the Scottsdale area were 30+% higher than the average and for the East Coast (St Helens/St Marys) they were between 10% and 30% higher (Glover et al., 1999a).

Figure 2.2.5: Admissions to hospital for neurotic and personality disorders. (Glover et al., 1999a).
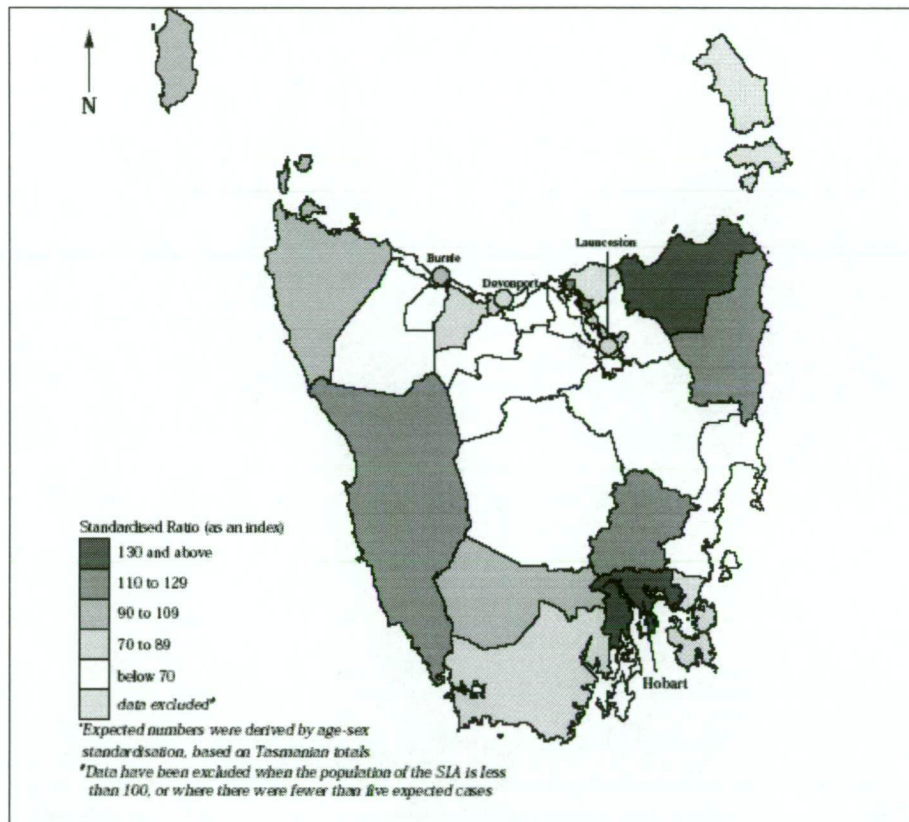
Although the sources for this information are diverse, both in time and in measures utilised, it seemed clear that Tasmania was no special case when it comes to psychological wellbeing. It was not more or less protected from the distress and disturbance brought about by mental illness. Obviously any conclusions or opinions formed from the data must be cautious, as the numbers involved are too small for certainty; nonetheless trends in the data are apparent. The data suggest that the non-metropolitan areas of the state were less healthy, both physically and psychologically, in general terms than the main centres.

Of particular interest, was the data from the Social Health Atlas which provided confirmation that the geographic regions involved in the current research study had higher levels of socio-economic disadvantage and were burdened with higher rates of both physical and psychological disorder.

2.3 GAPS AND DIFFICULTIES IN RURAL SERVICE DELIVERY

Generally the application of outreach services, whether using telehealth or not, is a style of service delivery determined by the financial and workforce constraints of the centralised mental health service. It is unlikely that this model of care will have been developed in consultation with the communities that receive the service, and more likely that communities will feel that the model of service is imposed (Bjorklund & Pippard, 1999). Many rural consumers expressed this view during the consultations for the establishment of the Tasmanian Rural Mental Health Plan (Ryan & Robinson, 2001). The problems with this style of service delivery have generally been acknowledged although alternatives are often difficult to find (Bird et al., 1998; Winefield et al., 2003).

The Tasmanian Rural Mental Health Plan (Mental Health Plan Steering Committee, 2001) was partly spurred by a grassroots belief that there had to be better ways of providing mental health services in rural Tasmania. Inspired, to a large degree, by the model of service delivery described in this study, the Tasmanian Community Advisory Group (TasCAG) was instrumental in driving the establishment of the Mental Health Plan Steering Committee (Boote & Cook, 2004). The community consultations that ultimately led to the development of the Rural Mental Health Plan were based on the research described in this thesis. The present author contributed most of the background literature, and developed an analysis of the key models for service delivery in rural areas, for consideration in broad ranging community consultations. This provided a natural opportunity for the research effort to contribute to the development of a state-wide initiative, and also to gather a valuable insight into the experiences and views of people in rural communities on mental health.

Perhaps one of the greatest difficulties with the standard type of service delivery is that it cannot take account of the variations between communities (Ryan & Robinson, 2001). The service model has its own imperatives and the communities served must be dealt with as essentially homogenous. Doing

otherwise would obviously raise questions of equity and fair allocation of service time (Bjorklund & Pippard, 1999). Another major problem inherent in this model is staff turnover. Most staff do not like outreach work and there is a relatively high degree of 'burn out' for circuit work. As a result many rural communities view outreach services with suspicion because there is instability in the contact person (Fuller et al., 2000; Fuller et al., 2002). High turnover of staff also disrupts the ability of the mental health service to consultatively plan service development and further heightens the community perception of imposed services.

Another difficulty for outreach mental health services in Australia is the current focus on people with serious mental illness. Rural communities do not have access to as broad a variety of other specialist services (drug & alcohol, Relationships Australia, private counsellors, etc) as may be available in regional and metropolitan centres. Therefore a visiting mental health worker may be expected to deal with a broad range of presenting problems. If the visiting service uses the same gate keeping criteria as the central service, rural clients are doubly disadvantaged. In the authors experience as a mental health clinician providing rural outreach services, and during consultations for this research project, it was a frequent complaint in consultations with GPs that the presenting problems of rural

patients were not taken seriously enough by the regional mental health service. Many GPs felt that mental health services do not provide adequate support for the clients that they are most concerned about and that it is the local health workers who have to be available for the crises. The experiences of the local Tasmanian GPs are echoed in many studies on rural workers experiences of regional and metropolitan mental health services (Aoun, 1997; Bathgate, Bermingham, Curtis, & Romans, 2001; deGruy, 1996; Fuller et al., 2000; Fuller et al., 2002; Verhaak, 1993).

There are other difficulties with providing mental health services in rural areas which are probably independent of the model used. Perhaps the most significant of these is the acceptability of the service to the local community. If a service is not trusted by the locals then it will not be utilised. This lack of trust will be based on the people running the service and their reputations, though sometimes it will be more about the service that is being delivered. In many rural communities there is a general ethic of self-reliance and endurance of hardship. This is often particularly applied to emotional or psychological difficulty. Therefore, rural people may be less likely to utilise any mental health service unless it is pitched in very particular terms (Fuller et al., 2000). Confidentiality is also related to this issue as it is

virtually impossible to access a service in a rural community without this being common knowledge.

A major problem for the planning and delivery of mental health services in rural areas is a general lack of an empirical approach to the issues (Norquist, Lebowitz, & Hyman, 1999). There is very little national data on the issue of mental health in rural areas and virtually no mental health status data on specific rural localities. Reporting by state health services usually only includes indirect measures of mental health such as inpatient admissions for mental health problems, suicide rates, hospitalisation due to violence, and mortality due to homicide. It is unusual for this to be analysed down to the local government or Statistical Local Area level so, even if it were useful, the data is not helpful for planning at the level of the specific community.

The summary data that is available may be appropriate for many medical disorders as the aggregation is most likely to represent the population prevalence of the disorder. But, as mental illnesses are generally underestimated by health service data, since the majority of people do not seek assistance, this type of information is of limited value. It is most unusual for mental health services to generate their own epidemiological data on rural catchments in their area, but there is a case to be made

that this would be a most appropriate activity, that they should in fact undertake, for effective health service planning.

2.4 SUMMARY

The provision of services in rural areas is constrained by issues of accessibility and population density. Accessibility is a multi-dimensional concept that has been, too often, simply interpreted to relate to geographic distance. In reality, accessibility will depend on such things as consumer attitudes to the service offered, health-related knowledge and beliefs, cost, perceptions about availability, and perceived need for care, among just a few possible variables (Fuller et al., 2002; Humphreys, Mathews-Cowey, & Weinand, 1997). Population density determines the range and specialisation of services that can be offered. As density decreases so the available services become more general. These factors form the basis for most of the dilemmas faced by service providers and will be critical to service planning yet, the complexity of evaluating them makes the task very complicated.

Tasmania has always been recognised as facing particular socioeconomic and health challenges due to its isolation. Recent population surveys have shown that the level of socioeconomic disadvantage and health risks were higher compared to the

Australian average. The indices of disadvantage and health risks were higher again in the rural locations involved in the current study. This was shown to be the case for mental health problems as well as health in general. The difficulties of providing accessible and equitable health services in a state like Tasmania highlight many, perhaps all, of the dilemmas that arise from the twin factors of population density and accessibility.

Yet, partly as a result of this study, and largely because of a strong enthusiasm from people in the rural communities, Tasmania has begun to address some of the challenges of providing equitable access to mental health service in rural areas. The Tasmanian Rural Mental Health Plan was produced by a group of committed organisations and individuals and forms the basis for the future development of a state-wide Integrated Rural Area Mental Health Service.

Chapter 3: Psychological disorder: research, evidence and issues

In truth, knowledge is a great and very useful quality; those who despise it give evidence enough of their stupidity. Yet I do not set its value at that extreme measure that some attribute to it.

Michel de Montaigne (1533-1592)

3.1 OVERVIEW

This chapter will present the literature relating to the epidemiology of mental health problems. It will discuss international and Australian research on psychological problems in the general population and in primary care populations. In looking at this research, the discussion will compare and contrast the research that is available on the epidemiology of mental illness in rural settings. The discussion of primary care settings will also review the literature on the recognition and treatment of mental health problems by GPs. Finally, the issue of research on mental health in rural areas will be explored.

3.2 SCOPE OF PSYCHOLOGICAL PROBLEMS IN POPULATIONS

In recent years there has been a fundamental shift in our understanding about the relative importance of mental health issues within the health care framework of society. With the progressive sophistication in the methodologies and tools for conducting epidemiological surveys in mental health over the last two decades (Judd, Jackson et al., 2002) there have been a number of national population surveys which have substantially increased our knowledge about the general prevalence of

psychological disorders and distress. The so called 'third generation' studies tend to use two-stage sampling methodologies, because of the development of reliable screening instruments, which allow very large numbers of subjects to be screened for psychological disorder and then representatively re-sampled for more intensive diagnostic procedures.

Over the past twenty years there have been a number of large, and generally ongoing, epidemiological studies of mental illness in the general population. Later studies have focused on the epidemiology of psychological problems specifically in primary care populations. Australia has only relatively recently joined other developed nations in this research and there are a number of well-designed and up-to-date studies of psychological disorder in the general Australian community and primary care. Although the research is generally well known and widely published, an overview of some of the international data and a more detailed description of more recent Australian studies may be useful.

3.2.1 International and local studies

3.2.1.1 USA & UK

The two main studies in the US, the National Institute of Mental Health epidemiological catchment area (ECA) and the

national co-morbidity survey (NCS) highlighted the relatively high levels of mental illness in the general population. The ECA found the 12-month prevalence for any mental illness of 21% and the NCS found similar rates. The studies also identified relatively higher rates of 'emotional' disorder in women than men and the reverse for drug addiction. These studies also confirmed a relationship between mental illness and socio-economic factors such as employment status.

The UK has engaged in an ongoing national research program into mental health as part of its Health of the Nation strategy initiated in 1992. Using a household survey methodology the British Psychiatric Morbidity Survey found relatively high rates of disorder in adults aged 16-64 with 160/1000 suffering from any neurotic illness, 4/1000 suffering from a psychotic illness, and 69/1000 suffering from a drug or alcohol related disorder. Many more women than men experienced a neurotic illness and many more men than women had a drug or alcohol related condition. The survey also identified socio-economic factors with increased rates of mental illness for older people, single parents and single person households, and the unemployed.

3.2.1.2 WHO Burden of Disease

Another significant event in understanding the prevalence of mental illness has been the redefinition of the concept of burden of disease to include more than just mortality statistics. The 1996 Global Burden of Disease Report included such indicators as Disability Adjusted Life Years (DALY) which combined information about the impact of premature death and the impact of disability and other non-fatal outcomes of disease and injury (Mathers, Vos, Stevenson, & Begg, 2000).

The inclusion of an evaluation of the burden of disease explicitly recognised that traditional approaches to burden of disease had seriously underestimated the personal, social and economic costs of chronically disabling conditions comparative to fatal conditions (Judd, Jackson et al., 2002; Murray & Lopez, 1999), and that the issue of disability had been pretty much invisible to public health.

Within this framework the WHO Global Burden of Disease (1993) study showed that the burden of psychiatric conditions had been drastically underestimated. The study showed that mental disorders were a leading cause of DALY and Years Lived with Disability (YLD) amongst developed nations (Murray & Lopez, 1999). Of the ten leading causes of disability worldwide in 1990

five were psychiatric conditions, including unipolar depression

alcohol use, bipolar affective disorder, schizophrenia and

obsessive-compulsive disorder, accounting for 28% of Years Lived

with Disability (YLDs).

Unipolar depression was the leading cause of burden

measured using YLD. This study also projected that the relative

contribution of psychiatric conditions would grow at a greater rate

than other conditions and that by 2020 unipolar depression would

become the leading single cause of burden as measured by

DALYs.

A later study of the burden of disease in the Australian and

Victorian (Australia) populations in 1998/99 found a very similar

pattern - with mental disorders being significant causes of the

total burden of disease(Mathers et al., 2000; Vos et al., 2001).

Mental disorders were found to be the leading cause of YLD, and

accounted for nearly 30% of the non-fatal burden of disease in

Australia.

Depression was the leading cause of non-fatal disease

burden accounting for 8% of YLD. Mental disorders were the third

leading cause of overall burden accounting for 14% of DALY,

coming after cardiovascular disease (20%) and cancer (19%). In

specifically considering the mental disorders it was found that affective, anxiety and addictive disorders accounted for the greatest part of burden. In women the major cause of DALY was affective disorder (39%) and 87% of this was due to depression. Amongst men alcohol and substance abuse accounted for the most DALYs.

3.2.1.3 Australian National Survey of Mental Health and Wellbeing

The most significant household survey relating to mental illness in Australia has been the Australian National Survey of Mental Health and Wellbeing (NSMHWB) (Henderson, Andrews, & Hall, 2000) carried out in 1997. The study was comprehensive and included companion research looking at psychological problems in children and adolescents and morbidity issues for people with psychotic disorders. Prior to this research the information that was available for the Australian population was primarily based on comparisons with the data from other Western nations and on the estimates of experts in the area (Andrews, 1995).

The NSMHWB found that 18% of the population met the criteria for one or more common psychiatric disorders and this was associated with very high levels of disability. The most

common psychological problem was anxiety (10%) followed by depression (6%) (Henderson et al., 2000). The most common anxiety disorder was post-traumatic stress disorder (3.3%).

The numbers of people in the total population that these percentages represent was fairly staggering with some 3.5 million Australians likely to be experiencing a serious and disabling psychological problem. Anxiety disorders alone would represent 1.3 million people whilst depression would impact on 778,000 people. There was also a high rate of co-morbidity of disorders (68%) which can be seen as an estimate of complexity and chronicity(Hunt, Issakidis, & Andrews, 2002).

With such large numbers there is an obvious issue as to treatment. It has been estimated that although a large percentage of people need psychological treatment, only about 3% receive specialist treatment from existing mental health resources. This is probably because existing mental health services would be rapidly overwhelmed if the numbers of people above actually sought treatment.

In fact large numbers of people in the survey indicated that they were not receiving treatment (Issakidis & Andrews, 2002). Yet 25% of those not consulting had moderate to severe levels of

disability and were judged to be in need of treatment (Issakidis &
Andrews, 2002). Interestingly, the main reason that people did
not seek treatment was because they saw no need for help, which
suggested that the continuing burden of these disorders was
primarily due to a lack of knowledge about mental health
(Andrews & Carter, 2001).

The majority of people with psychological problems who do
seek help were seen by their general practitioner (Andrews,
Henderson, & Hall, 2001). However, there is a real question as to
whether GPs will recognise and treat these people appropriately
(Meadows, Liaw, Burgess, Bobevski, & Fossey, 2001). Many
patients either don't disclose or don't recognise their symptoms as
psychological. This complicates the issue of treatment.

Rates of referral to specialist mental health professionals
from GPs are relatively low and are usually for the most obvious
and severe psychological disorders (Andrews & Carter, 2001;
Hunt et al., 2002; Issakidis & Andrews, 2002; Meadows et al.,
2001). Utilisation of evidence based treatments by GPs for specific
conditions have also been found to be quite low (Issakidis &
Andrews, 2002).

3.2.1.4 Australian National Health Survey

The National Health Survey (NHS) was conducted in 2001 by the Australian Bureau of Statistics. The NHS was a continuation of the ABS Australian Health Survey series, begun in 1977, but was conducted following extensive review and consultation about the methodology, framework, and focus of Australian health surveys into the future. The 2001 NHS was the first in a triennial series of national health surveys to be conducted by the ABS and the Australian government Department of Health and Aging (Australian Bureau of Statistics, 2002c).

The survey was intended to cover the health status of both indigenous and non-indigenous Australians and, because of the extreme disparity in health status between the two groups, was conducted in two parts. The first part, the general survey, covered some 17, 938 households in non-sparsely settled areas of Australia. The survey collected information on one adult, all children aged 0 to 6 years, and one child aged 7 to 17 years in each selected household. In all 26, 863 people were surveyed.

Although indigenous people were included in the general survey, the number was comparatively small (483) and a second survey was conducted to supplement the information so as to increase reliability. The indigenous survey collected similar

information from an additional 3, 198 Aboriginal and Torres Strait Islander people. These respondents were located all over Australia but included a number in sparsely populated areas (Australian Bureau of Statistics, 2002a).

The methodology for sampling was based on stratified multistage sampling of private dwellings and was designed to provide relatively detailed estimates of health status for each State, Territory and for Australia as a whole. This strategy also allowed for estimates comparing health status between each States capital city and the rest of the State. With more populous states this approach also allowed for regional comparisons and estimates relating to large and evenly spread sub-populations.

Information from the general survey included details of long-term medical conditions experienced by respondents, recent injury events, consultations with health professionals, other actions people had recently taken in regard to their health (e.g. taken days away from work, used medication), aspects of their lifestyle and other factors which might affect their health, such as smoking, alcohol consumption, diet, exercise and immunisation. In addition to the interview questionnaire, adult female respondents were invited to complete a small additional questionnaire relating to specific aspects of womens health.

The general survey included specific measures of psychological distress (the Kessler Psychological Distress Scale) and asked respondents to report whether they had experienced a behavioural or mental disorder. However, respondents were not specifically asked whether they had received a psychiatric diagnosis so the results may have reflected some degree of self-diagnosis. This was not the case for medical conditions where respondents were asked whether they had a diagnosis.

In addition, respondents provided information about whether they had experienced any limitation to their role as a result of a mental health issue. In this context, role limitations referred to having accomplished less than desired, or having worked or performed other regular daily activities less carefully than usual, because of emotional problems.

Information was also collected on whether respondents had taken any forms of medication, herbal remedy or dietary supplement to assist with aspects of their mental well being.

The survey also collected quality of life information using a global indicator of satisfaction with life (the Delighted-Terrible Scale) where respondents rated how they felt about their life, as a

whole, on a 7-point scale ranging from 1 ('Delighted') to 7 ('Terrible') (Australian Bureau of Statistics, 2002c).

The indigenous survey was not exactly the same as the general survey. In particular the mental health aspect of the survey was not included. In addition, a number of other questions were removed because they were not relevant to respondents in sparsely populated areas.

In addition to collecting data on mental health status and psychological distress the NHS identified the geographic location of respondents using the Australian Standard Geographic Classification (ASGC) which is based on the Accessibility/ Remoteness Index of Australia (ARIA). This classification uses the following categories: 'Major cities of Australia', 'Inner regional Australia', 'Outer regional Australia', 'Remote Australia', and 'Very remote Australia'.

A number of publications and datasets have become available from the NHS. In addition to the summary report there has been a recent release (4 Dec 2003) of summaries relating specifically to mental health and the socio-demographic data in the survey (Australian Bureau of Statistics, 2003c). Of particular interest for this research was the availability of summary tables

for Tasmania, which were discussed earlier, as well as other

States, although the information provided was not as detailed or

complete as in the summary reports (Australian Bureau of

Statistics, 2002b).

3.2.1.4(a) <u>General Health</u>

The majority of respondents in the National Health Survey

reported overall good health with 82% rating their general health

to be good, very good or excellent. This was very similar to the

perceptions of general health from the 1995 health survey.

Perception of general health was affected by age and there was

an increase of 30% in the proportions of respondents who rated

themselves in fair to poor health from the 15-24 age group to the

75 + age group. The proportion of respondents reporting that

they were in fair to poor health increased with age. Despite the

self perception of health a very large proportion (78%) of

respondents reported that they had one or more long term

medical conditions. The most common long-term conditions were

problems with eyesight and back problems. Other common

conditions were arthritis, asthma, hearing loss, and hypertension.

Prevalence of long-term conditions increased with age with nearly

all respondents aged 75+ reporting at least one medical

condition.

The NHS also collected information on actions that people had taken recently for their health. Nearly a quarter (24%) of respondents had consulted with a general practitioner or medical specialist in the previous two weeks. Other health professionals commonly consulted were dentists (6%), chemists (4%), physiotherapists (2%), and chiropractors (2%). Women were far more likely than men to have consulted any type of health professional and for some health practitioners other than doctors the rates of consultation were 2 or 3 times greater.

Some adult respondents who were employed reported that they had had one or more days away from work in the previous 2 weeks due to their own illness or injury (11%) or to care for another who was ill (4%). These absences from work accounted for around 3.7 million days lost from work and although the proportion of females taking days away from work (16%) was higher than that for males (13%), more male days were lost (2.0 million) than female days (1.8 million).

3.2.1.4(b) Mental Health

In the NHS nearly 10% of respondents reported that they had a long term mental or behavioural condition. This was about half the proportion of people found to have a mental or behavioural condition in the NSMHWB. As has been noted the

self-reported survey data in the NHS for mental and behavioural problems were considered less reliable than data on other long term conditions because respondents were not specifically asked if they had a formal diagnosis.

The low rate of self-identified mental health concerns was similar in some ways to the low rate of people with a diagnosable condition who actually seek help. Essentially, this implied that people were not accurate at judging their own mental health.

The most common conditions reported were mood and anxiety disorders. Each of these was reported by 4.5% of the respondents. Again this was quite a bit lower than the rates found in the NSMHWB where anxiety disorders were found in 10% of respondents and affective disorders in 6%. As with all studies of mental health issues, gender was an important factor in the NHS with more females (10.5%) than males (8.6%) reporting any mental health problem.

More males than females reported behavioural or drug and alcohol conditions and more females than males reported affective or anxiety based disorders. Again, however, the overall numbers reporting any of these problems was very much lower than found in the NSMHWB. In the case of drug and alcohol conditions the

self-reported NHS percentage of 0.7% (Males=0.8%, Females=0.5%) were very different from those found in the NSMHWB (Total=7.7%, Males=11.1%, Females=4.5%).

In addition to self-report, the K-10 was used as a measure of psychological distress in the respondents. The K-10 was also used in the NSMHWB and constitutes a more 'objective' measure of mental wellbeing as it has been used as a very reliable case finding instrument in a number of studies.

The K-10 asks about negative emotional states in the four weeks prior to interview. The results from the K-10 are grouped into four categories: low (indicating little or no psychological distress); moderate; high; and very high levels of psychological distress. Based on research from other population studies, a very high level of psychological distress may indicate a need for professional help.

About two-thirds of the adult respondents were classified in the low levels of distress (64%). Another quarter were classified at moderate levels (23%), 9% were classified high, and 3% were classified very high. In comparison with the NSMHWB there was an increase in the numbers of people reporting moderate levels of distress (18% in 1997) whereas the rates for high and very high

distress were about the same (6% and 2.2% respectively in 1997).

Use of medication for mental or behavioural conditions provided a somewhat different picture with nearly one in five (18%) reporting the use of some psychoactive medication. The most commonly used medications were antidepressants (26%) followed by sleeping tablets (23%) and medication for anxiety (11%). Use of medication was higher among females than males (22% and 14%) for all medication types.

The NHS identified that mental problems and psychological distress has a considerable impact on other aspects of peoples lives. Nearly 37% of respondents reporting a mental or behavioural problem took time off from work or had days of reduced activity compared to only 17% of those without a mental condition. For those respondents with low levels of psychological distress on the K10, 14% reported taking days off or reducing activity compared to 23% of those with moderate levels, 36% of those with high levels, and 46% of those with very high levels.

In assessing role limitation nearly 50% of respondents who reported an emotional problem also reported that they had accomplished less than they desired in the past 4 weeks

compared to only 11% of those not reporting a mental or behavioural condition. This was also reflected in those who reported that they had cared less about work and other activities with 41% of those with a psychological condition reporting they cared less compared to 8% of those without a psychological condition.

Role limitation was also more severe for respondents with high levels of psychological distress on the K10. The percentage of respondents reporting that they had accomplished less rose from 3% for those with low levels of distress, to 23% for those with moderate levels, to 54% for those with high levels, to 78% for those with very high levels of distress. The same pattern of increase across levels of distress was seen for respondents reporting having cared less about work.

Having a mental or behavioural condition also significantly impacted on quality of life. Only 21% of those respondents who reported having a mental condition rated their quality of life as Delighted or Pleased compared to 45% of respondents not reporting a condition. In addition, 12% of respondents with mental conditions rated their lives as Unhappy or Terrible compared to just 2% of those without a mental condition. Another summary of this would be that people reporting mental problems

were 6 times more likely to also report that they had very poor quality of life.

Quality of life was also adversely affected for people with higher levels of psychological distress. The proportion of respondents who reported unhappy or terrible quality of life rose from 1% for people with low levels of psychological distress to 43% of those with high or very high levels. Respondents with high or very high levels of psychological distress were ten times more likely to report poor quality of life than people with low to moderate levels of distress.

3.2.1.5 Summary

Overall, the research that has been carried out both in Australia and overseas has shown quite decisively that psychological problems in the community are common and disabling. Surprisingly few people actually self identify that they have a significant mental health problem and this could be due to general lack of understanding about mental illness, but could also be considered as an index of stigma associated with emotional 'illness'. Although it is hard to quantify there is no doubt that the burden of psychological problems in the community at large is extreme and that people suffer highly degraded levels of quality

of life due to the lack of recognition and the subsequent failure to access treatment.

3.2.2 Evidence in rural settings

Despite the substantial bodies of evidence about rates of psychological problems in general populations there is a relative lack of data about rates of psychological disorders specifically in rural settings. Much of the information that is available is based on population studies that have primarily focused on urban settings but may have included a rural indicator.

There appears to be an unexamined assumption in this area that the data from primarily urban settings is generaliseable to rural settings. Even where comparisons have been made the definition of 'rurality' tends to be crude and usually consisted of a broad geographic or population distinction. Therefore even the most recent and comprehensive 'third-generation' epidemiological studies of psychological problems have to be evaluated cautiously when they explore rural-urban factors (Judd, Murray et al., 2002).

Yet there are good reasons to believe that 'rurality' may be a very important factor in the development of some psychological problems. A Canadian estimate of suicide rates in rural settings suggested that these were 10 times greater than in non-rural

settings (Gojer, 1992). The Australian Institute of Health and Welfare has found that health in general is much poorer in rural areas (Humphreys, 1999). Even excluding Aboriginal populations from these data, it was found that rural people have higher rates of mortality, lower life expectancy, and higher rates of hospitalisation than non-rural people (Australian Institute of Health and Welfare, 1998). People in rural/remote zones were also found to have much less access to both generalist and specialist medical services (Australian Institute of Health and Welfare, 2002).

Judd and Humphreys (2001) suggest that the lack of good evidence about mental health needs in rural areas required service planners to utilise proxy markers of mental health issues, such as suicide rates and rates of interpersonal violence. In this context they noted that rates of hospitalisation for interpersonal violence amongst rural males were twice those of metropolitan admissions. Rates of admission for males in remote locations were 3 to 5 times higher.

3.2.2.1 Direct epidemiological data

The Epidemiological Catchment Area (ECA) study in the US found no particular difference in the 12-month prevalence of psychological disorders between urban and rural subjects (21%

urban vs. 20% rural). The National Co-morbidity Survey (NCS) also found no significant difference and reported the urban/rural ratio of prevalence as 1.1 (Holzer & Ciarlo, 1999).

Using data from the British National Morbidity Survey (NMS) Paykel, et al. (2000) found quite different rates between urban and rural settings (16% urban, 12% semi-urban, 10% rural) with a crude odds ratio (OR) of 1.54 for urban to rural subjects indicating that urbanicity was associated with higher rates of mental illness. However, this OR fell to 1.33 when social and economic factors were taken into account. The authors note that there was a statistical but not a strong difference between urban and rural prevalence.

In looking at rural-urban differences in treatment for depression Rost, et al. (1998) found that there were no differences in the prevalence of depressive symptoms. Li Wang (2004) found a lower prevalence of depression in a rural Canadian sample compared to urban participants but no differences in level of disability for those experiencing symptoms. Li Wang also reported that rural participants were much less likely to have received any treatment for their condition.

There is good evidence that rates of psychotic disorders are much higher in urban compared to rural areas. Van Os and colleagues (2001) found a linear increase in prevalence as a function of urbanicity and reported rates 5 times higher in urban settings. These authors acknowledged that the rate could be due to 'geographic drift' as less well individuals move out of rural and into urban settings. But, they noted that 75% of their subjects reported being born in the locations where they were surveyed which provided some evidence that drift was not a strong factor.

In a UK study specifically exploring the issue of urban/rural rates of psychological disorder, Lewis & Booth (1994) found that people in urban settings were more likely to have psychiatric morbidity than those living in rural settings (34% urban vs. 25% rural, OR=1.54). The definition of 'rurality' in this study was quite crude as it was based entirely on the interviewer's judgment of how much space was observed around the person's home.

Parikh, et al. (1996) found no differences between rural and urban subjects on the Composite International Diagnostic Interview (CIDI) as part of a province wide comparison of psychological disorder in Ontario, Canada. They defined rurality on the basis of census data and concluded that rural settings did

not provide a 'protective' factor regarding the likelihood of developing psychological disorder.

One Australian survey utilised a similar methodology to the ECA study to determine the prevalence of psychiatric disorder and use of medical services in a rural population in South Australia (Clayer et al., 1995). These authors found a 6-month prevalence of 26% for any disorder. This was somewhat higher than the overall ECA estimates but lower than the overall estimate from the NCS (29%). The most common disorders were depression (10.8%), anxiety (9.8%), phobic disorders (7.8%), alcohol abuse (7%), and somatising disorders (5.3%).

In comparing this data to the ECA study the authors found that rates of depression were very much higher, phobic disorder and alcohol abuse were about the same, and rates of somatisation syndrome were very much lower. The difference in rates of depression may have been due to the ECA not including dysthymia in defining depression. In comparison with the NCS, rates of depression and alcohol abuse were slightly lower, anxiety was very much higher, and phobic disorders were very much lower.

Differences in definitions and methodologies make comparison difficult, but it was evident clear that prevalence in this rural Australian population was comparable to, or greater than, other population surveys.

A recent South Australian study used a telephone survey to evaluate the mental health status of a representative sample of people in that state (Taylor et al., 2000). The research used a range of measures that were not strictly comparable with measures used in other studies but, nonetheless, found that about 1 in 5 adults had a mental health issue. The study also specifically compared metropolitan and rural/remote centres and found a significantly lower risk of having a mental illness in the rural/remote centres (OR=0.57).

Judd and Humphreys (2001) have noted that the Australian National Mental Health and Wellbeing Survey had little to contribute in this area, as the distinction of metropolitan from non-metropolitan was too coarse to allow for a good analysis. A comparison of metropolitan to non-metropolitan prevalence found rates of 22% and 21% respectively (Meadows, Burgess, & Bobevski, 2002), but the authors also cautioned against utilising data from the NHWB survey in exploring this distinction and refer

to the survey as a 'blunt instrument' in trying to understand geographic distribution of psychological problems.

3.2.2.2 Indirect social issues data

Apart from issues to do with definitions of rurality, it needs to be recognised that mental illness often occurs in situations where there is social disadvantage, lower socio-economic status, and poorer general health. Using a broader brush to explore these conditions based on the rural/ metropolitan divide allows a larger picture to emerge about the environment in which stress and ill-health can lead to psychological problems.

Rural and remote zones are well recognised as experiencing greater levels of socio-economic disadvantage, less access to economic resources, and having fewer educational and occupational opportunities. The link between social disadvantage and health status has been well established and, insofar as people in rural and remote areas have lower socioeconomic indicators, they are more at risk of ill-health as a result.

Generally, people in rural areas in Australia have been shown to be less healthy and have less access to health related services than their metropolitan counterparts. Recent studies have shown a greater prevalence of smoking, alcohol

consumption for certain ages, restricted access to healthy food, and higher rates of cardiovascular disease(Australian Institute of Health and Welfare, 1998, 2002).

The data available for rural Australia is complicated by the drastically high mortality and morbidity rates for indigenous people but, even factoring this data out, people in rural areas have a generally poorer health status (Humphreys, 2002). Having said this, it needs to be noted that it is very hard to generalise from the data available, partly because the numbers are relatively small, but largely because there is so much variation within rural settings.

In recent studies it has been found that males in rural and remote locations were much more likely to die from injury and the death rates overall for males in remote areas were twice those in metropolitan areas. Death from motor vehicle accidents were also much more likely, the more remote the location, for both men and women (Australian Institute of Health and Welfare, 1998).

The report evaluating rural and remote health also noted a marked lack of supply of general practitioners and medical specialists in rural and remote zones. As a result nurses provided a higher proportion of health care in rural and remote Australia

than in metropolitan centres. Access to hostel accommodation for the aged was found to be lower in rural areas and nursing home availability decreased with remoteness. People in rural and remote areas used fewer Medicare recorded services but overall hospitalisation rates were highest for people living in remote zones (Australian Institute of Health and Welfare, 1998).

According to the AIHW report on rural and remote health, hospitalisation rates due to interpersonal violence increased with remoteness for both men and women though the strongest trend was for males. Men from remote zones had a 3-5 times higher rates of hospitalisation due to interpersonal violence than men from metropolitan or rural zones. Women from remote zones had 7-25 times higher rates of hospitalisation due to interpersonal violence compared with women from other zones. Domestic violence has been found to be a major, and hidden, problem for women in rural communities. The mental health effects of domestic violence and trauma are well established and this data strongly suggested that people in remote zones are likely to be experiencing higher rates of trauma related mental illness (Australian Institute of Health and Welfare, 1998).

Suicide rates in Australia are well known to be higher in rural and remote zones, particularly for males, than in

metropolitan areas. Since about 1994 the rate for people in rural areas has been trending up and in 1998 the rate for death by suicide was 17.1 per 100,00 for people in rural areas, 14.9 for people in other urban areas, and 12.9 for people in the Capital cities (Australian Bureau of Statistics, 2000). The mortality due to suicide underestimates the rates of depression, adjustment disorder, personality disorder, and relationship breakdown which often underlie suicide and suicide attempts.

Women in rural areas have also been found to be much more likely to be taking on the burden of social and health care for family and friends than is the case in urban areas (Humphreys, 2000). Often women in these settings take on roles that are more often taken on by social services in metropolitan areas. The stresses that come with caring often translate into poorer physical and mental health. Women in rural areas have identified mental health as a high priority on their list of needs (Australian Institute of Health and Welfare, 1998) and it has been generally acknowledged that counselling services for women in these circumstances are sorely needed.

Another indicator of health status that has been studied in Australia is general practice activity data. In a survey from 1998 to 2000, the AIHW found that there were meaningful differences

in the types of problems encountered by rural GPs and in the types of activities engaged in. Generally though, this survey found the main differences were between GPs in small rural and remote areas compared to metropolitan practices rather than in general rural practice (Sayer et al., 2000).

Although psychological problems were less often recorded as reasons for a health encounter in small rural areas depression was significantly more often recorded as the problem managed in large rural areas. Psychological medications, particularly anti-depressants, were also more frequently prescribed in large rural areas than in metropolitan settings. In addition, patients were more often referred to an allied health professional in small rural areas compared to all other areas (Sayer et al., 2000).

Given the numbers and methodology of this survey it is difficult to make too much of these figures. They do seem to reflect an increased mental health focus for some rural settings and an increased reliance on other health care providers for services and supports. Perhaps more than anything this data reflects on the issue of lack of access to services, and specialist providers in particular, leaving general practitioners more responsible for mental health care in rural settings.

3.2.3 Questions that remain

In broad terms, psychological problems have been shown to be much more common than had been thought in the past. Very large numbers of people have been found to experience significant degrees of psychological and emotional stress and very many meet formal criteria for the diagnoses of various mental illnesses. There is also a firm base of evidence that the degree of harm and burden represented by the mental and psychological disorders is high and, potentially, growing. Yet the degree of harm and the social and economic costs have largely remained hidden as governments and communities are only beginning to discover the full meaning behind the statistics.

For example, there is currently a major focus on depression, primarily because the burden studies have identified this to be a high priority, but an increasing number of studies are highlighting the costs of other psychological disorders and co-morbidities (Andrews, Henderson et al., 2001; Hickie, Koschera, Davenport, Naismith, & Scott, 2001; Hunt et al., 2002; Issakidis & Andrews, 2002). We are yet to see the commitment of funds in these areas that are required to properly deal with these issues.

It was also clear that the majority of people who have psychological problems do not seek or receive help - largely

because they did not consider that their problems were serious enough. Interestingly, in an unpublished analysis of the NSMHWB data, Meadows has been reported as finding that the proportion of Australians with an unmet need for care increased with remoteness and that this was primarily due to an ethic of self-reliance (Fuller et al., 2002).

Thus, many people who need help for a psychological problem do not even seek it out either because they don't recognise that they need help or because they think they should be able to manage by themselves. Disturbingly, it may be that people do not believe that they are 'mad' enough, and that the public perception of mental health primarily rests on images of the major mental illnesses like the psychoses (Fuller et al., 2000).

This has been reinforced by most mental health services in Australia reducing or refusing services to people who don't have mental illnesses that are 'serious' - which has largely been interpreted as psychoses or a major mood disorder. As a result many people with borderline personality disorders, anxiety, Post-traumatic Stress Disorder, adjustment disorders, grief reactions, suicidal thinking - in short the majority of conditions found commonly in the community – have been turned away from specialist mental health services (Goldberg, 2000).

However, even if these people were referred, they may not take up any assistance as there is some evidence that people will often resist or refuse referrals to specialist mental health workers and prefer to utilise the services of their own GP (Aoun, Underwood, & Rouse, 1997; Bathgate et al., 2001). But, as a result, the general practitioner not only becomes the first point of contact for people with significant mental health problems, they often become the only professional in a position to provide services. Under these circumstances, general practice often forms the basis for an informal or de-facto mental health service (Fox et al., 1995). There are some worrying indicators, however, that general practitioners may often not be the best trained or skilled professionals to deal with these issues (Cape, Barker, Buszewicz, & Pistrang, 2000; Goldberg, 1998; Higgins, 1994; Ormel et al., 1990; Pini et al., 1997).

The evidence suggests that these issues are the same, and perhaps more acutely experienced, in rural and remote Australia. Accepting, for the moment, the inadequate definitions of rurality that have been used in most major epidemiological studies, the best summary would be that there were no differences in the prevalence of non-psychotic mental illness in rural areas. But, there are significant differences in the types of health services available to people in rural communities and restricted access to

specialist services. This means that the same rates of problems need to be dealt with by a less specialised and less resourced workforce. Hence, the reported experience of many rural health workers that they were over burdened by the emotional and psychological disturbance of their clientele when their primary role may be physical health or education (Aoun, 1997; Aoun et al., 1997; Wagenfeld et al., 1997; Yuen et al., 1996).

But, there has been a definitional problem in most of the epidemiological research conducted to date where 'rurality' has been considered as an homogenous term and little effort has been made to refine the levels of analysis. This has meant that rural communities, which may have social, economic, and service advantages, are likely to have been aggregated with rural communities with higher levels of disadvantage. Obviously this aggregation would act to hide or dilute the effects of socio-economic disadvantage within a rural geography.

This must also partly be a resource issue since it would be a very expensive exercise to carry out representative sampling in areas where population density is not high. The major national epidemiological studies to date have included geographic indicators to capture some aspect of non-metropolitan populations

but the numbers and sampling strategies have not been geared to allow comparisons of different rural or regional communities.

This level of analysis probably requires the development of epidemiological research strategies by particular regions, or communities, as there are a number of population databases against which local research could be calibrated. This may be a fruitful area for the next generation of research studies in rural mental health.

3.3 PSYCHOLOGICAL PROBLEMS IN PRIMARY CARE

As has been mentioned, the majority of people with psychological disorders did not seek treatment. The data from the NMHWB study indicated that when people did seek help, 75% sought it from their general practitioner (Andrews, Henderson et al., 2001). This pattern of presentation has also been noted in other countries and a Canadian study found that more than 50% of patients who had a psychiatric diagnosis were supported by their general practitioner alone (Craven, Cohen, Campbell, Williams, & Kates, 1997). However the degree of psychological care provided in general practice may also have been under-estimated, for a number of reasons, which suggests that the issue could be larger than supposed.

A significant issue in this regard has been the question of the co-morbidity of physical disorder with psychological disorder as well as the emotional and psychological sequelae of physical ill-health. This is so common that it would be difficult, if not impossible, to estimate the relative amount of psychological care that patients with physical illness need. Yet, the general difficulty for modern Western medicine, of getting past the Cartesian paradigm has meant that even though psychological aspects of physical health may be acknowledged they would often not be recognised and have largely been under researched. Though there are growing bodies of research demonstrating links and connections between various physical disorders and psychological symptoms or conditions there has been very little application of this knowledge (Kisely & Goldberg, 1996a).

Another difficulty in defining the scope of the issues has been in defining and identifying psychologically significant conditions in primary care. A growing school of opinion has argued that the traditional psychiatric nosology of specialist psychiatry applies quite narrowly to mental illness (Kessler et al., 2003; Middleton & Shaw, 2000; Pincus, Davis, & McQueen, 1999). It has been argued that the descriptions and classification of all emotional and psychological disorders has taken place in the context of mental hospitals or services, and with select

populations of patients with distinct 'disease' states. By way of contrast, many patients presenting to their general practitioner may have a range of symptoms which do not fit diagnostic criteria but nonetheless experience significant disability and distress (Korten & Henderson, 2000; Olfson et al., 1996). A number of attempts have been made to identify diagnostic criteria for conditions most common in primary care but the status and recognition of these taxonomies is still in question (Spitzer et al., 1994; Stahl, 1993).

This leads to difficulties in defining which patients will be considered 'cases'. Proponents of the primary care nosologies argue that research diagnostic criteria have tended to be too restrictive and lead to severe under-estimation of the size and severity of the clinical load managed by general practitioners. On the other hand some worry that utilising the broader definitions of 'caseness' over estimates the problem and focuses on the less serious mental illness of the so called 'worried well' (Middleton & Shaw, 2000; Pincus et al., 1999).

These are questions that remain largely unresolved in the literature. In discussing the research paradigms and epidemiological evidence in relation to primary care populations it

is likely that the scope and degree of the problems identified will depend very much on the lens of the researcher.

3.3.1 History of a research paradigm

It is perhaps not surprising that so much of the care of people with mental illness falls to the general practitioner. The GP is usually the first health professional involved in most peoples worry about their health and wellbeing. In recent years in Australia this 'first line' role has become more formalised into a 'gate keeping' function to rationalise the provision of specialist health care services. Thus, GPs have been increasingly expected to become semi-specialised in a broad range of areas.

This phenomenon is not unique to Australia (Gross, Rabinowitz, Feldman, & Boerma, 1996; Oiesvold et al., 1998; Wittchen, Holsboer, & Jacobi, 2001), and there are a multitude of models being developed to rationalise the provision of health care, since all disorders present on a continuum and clinical decisions are required to identify cases of 'true' risk and highest need for care. No matter the other elements of the various models being developed, the GP stands in a unique position in relation to clients and four factors are common to all models of primary care practice (Druss, 2002).

In addition to being the point of first contact, the GP generally has a relationship with the client that extends over time. In some cases the relationship may be multi-generational and life-long. This provides the GP with a completely unique view of a patient's health and response to interventions. An extension of this is that the GP usually also provides a comprehensive level of care and so has a broader understanding of a patient's health, and often social, history. Finally, GPs are usually the central point for all medical care and are most aware of the full range of complaints and treatments that a patient is experiencing.

Although this picture may not be universally true for all GPs under all circumstances it seems to be at least a generally valid summary of the potential role that GPs can play in the delivery of health care. Although there is very good evidence that large numbers of clients with psychological problems see only their GP it also needs to be borne in mind that the majority of people with mental illness do not see anyone (Andrews, Issakidis, & Carter, 2001; Meadows et al., 2001).

This really implies that addressing the broader need for care will require moving beyond delivery of health care to individuals, to providing population based information and intervention campaigns (Bruce, Smith, Miranda, Hoagwood, & Well, 2002). The

pathways to care for people with psychological problems have not been clearly researched. It is likely that a multitude of factors will impact on whether people seek out care in the first place and, if they do, what degree of care and intervention will be provided (Laufer, Jecsmien, Hermesh, Maoz, & Munitz, 1998).

The primary determinant to whether a person seeks help with a problem relies on predisposing, enabling, and social factors. Predisposing factors relate to the person's personality, past experiences and individual culture (family background, social) around help seeking. These factors influence the likelihood that the person will recognise a need for professional care and how much they believe that a professional intervention will be of any use. Enabling factors relate to the availability, accessibility and cost of services and the evaluation that people make of these as it relates to their symptoms. Social factors have to do with the general level of knowledge in a community about the meaning of symptoms and the degree of stigma or fear attached to any potential diagnoses (Parslow & Jorm, 2000).

Once a patient seeks out care another level of predisposing and enabling factors come into play at the level of the GP. The GP's attitudes, interest in, and experience with psychological disorders will impact on their clinical assessment and whether

they recognise the symptoms as related to a mental health problem. The GP's experience of existing mental health service will influence their decision to make a referral as will their perception of the availability and accessibility of a service (Laufer et al., 1998). This is often a point of tension between GPs and mental health services as the criteria for clinically significant symptomatology are often quite different (Evans et al., 2002).

GPs frequently express frustration that their assessments of a client's needs are not taken into account by mental health services and that this impacts on their decision to use services (Craven et al., 1997; Crawford, Carr, Knight, Chambers, & Nolan, 2001; Geller, Beeson, & Rodenhiser, 1998). At this level too, however, the client factors also operate and one of the main barriers to specialist treatment for people who need it is refusal to accept a referral to a mental health service (Hartley, Korsen, Bird, & Agger, 1998).

In looking at the research on the presentation of psychological problems in primary care it has to be acknowledged that there is a great deal of complexity to the issue. Much of this complexity is introduced at definitional and methodological levels. There is the previously mentioned debate about appropriate taxonomy of mental health problems in primary care but this is a

subset of the wider debate in psychiatry on the dichotomous versus dimensional identification of mental disorder. Then there are issues as to appropriate methodologies for the assessment and identification of disorders in 'naturalistic' and community based settings.

Cross sectional approaches often miss the longitudinal nature of the GP relationship with patients and the development of a diagnosis over time. But, longitudinal studies are notoriously expensive and attrition rates often lead to questions as to the representativeness of a sample.

Generally, however, the types of problems seen in primary care will fall into one of four categories (Bower, 2002): (1) Patients with severe mental disorders (e.g. organic, psychotic and major mood) which are unlikely to remit spontaneously and who will be in need of ongoing primary and secondary care; (2) Patients with well defined disorders of lesser severity which are most likely to be relapsing (e.g. anxiety, depression, panic) for which there are effective psychological and pharmacological therapies. Bowers argues that such patients can receive effective treatment in primary care and do not necessarily need specialist referral; (3) Less well defined disorders for which there are no effective pharmacological treatments but fairly well established

psychological interventions (e.g. eating disorders, somatisation, personality disorders). These patients are rarely treated in primary care, and relatively infrequently within mental health services, and make up a difficult treatment group; (4) Patients with disorders which will spontaneously remit (e.g. Adjustment disorders, bereavement) who do not necessarily need formal treatment and may only require ongoing support.

Much of the research in this area uses measures of general psychological distress as a screen or risk indicator for experiencing a mental illness. It has been argued that, as distress is a common experience for patients whether their underlying disorder is persistent, relapsing, or transitory, such an approach tends to over identify psychological disorder in this population (Middleton & Shaw, 2000). Thus it could be argued that the research to date captures large numbers of people who have transitory problems and are not actually in need of treatment or intervention. Yet many GPs would probably argue that a large part of their work is consumed in trying to manage patients with non-specific symptoms and that they constitute a 'specialised' group of clients (Jenkins, 2001; Kroenke, 2000).

This is a complicated issue as it cuts into the argument about definitions of 'mental illness' and appropriate taxonomies. It

also raises the sociological issue of the medicalisation of 'normal' human distress as part of the development of medical hegemony. There are, however, good arguments for suggesting that mental health interventions and services should be developed within the primary care setting. Not only do patients prefer to seek services in these settings they are also much more likely to present early in the course of a disorder and thus improve the effectiveness of preventative interventions (Crawford et al., 2001).

The current lack of agreement on these issues makes the development and implementation of common models for service delivery problematic. As a result the potential for effective identification and intervention that is inherent in primary care settings tends to be diminished.

3.4 EPIDEMIOLOGY OF PSYCHOLOGICAL PROBLEMS IN PRIMARY CARE

It is quite apparent that in Australia the main burden for recognition and treatment of psychological problems falls to the general practitioner. Research internationally suggests that this is not an unusual pattern and that most psychological morbidity is treated in primary care settings (Craven et al., 1997; Hartley et al., 1998; Seivewright, Tyrer, Casey, & Seivewright, 1991). Early

estimates suggested that the rate of psychological problems in primary care settings ranged from 16% to 43% of patients. Barrett and colleagues (1988) found that 26% of their primary care sample satisfied research diagnostic criteria for a psychological disorder. A British study found a similar rate of 25% achieving a diagnosis (Kisely & Goldberg, 1996a).

In a study of sub-threshold conditions Olfson and colleagues (1996) found that 25% of their sample had significantly disabling symptoms of a psychological disorder but could not be specifically diagnosed. They found that 9% of the sample had depressive symptoms, 10% had panic symptoms, 7% had anxiety symptoms, 6 % had OCD symptoms, 4% had drug use symptoms, and 5% had alcohol use symptoms. More recently a study of older patients in primary care found that 32% of patients had an active psychological disorder in need of treatment and 18% a remitted psychological disorder requiring follow-up(Lyness, Caine, King, Cox, & Yoediono, 1999).

3.4.1 The WHO study of psychological problems in primary care

Recognition of these issues led the World Health Organisation to conduct an international study in the early 1990s of psychological problems in primary practice. The study covered

15 'first world' nations and included the screening of some 25,000

patients of primary care physicians. Some 5,438 of patients were

more extensively interviewed and nearly 3,000 were followed up

12 months later. Essentially, this study found that 24% of

patients had a well-defined, disabling and persistent psychological

disorder. A further 9% had symptoms of disorder that were just

short of diagnosis and 31% had a few symptoms (Goldberg,

1996; Sartorius et al., 1993). Of those with a diagnosable

disorder 10% had depressive disorder, 10% had anxiety disorder,

and 3% had a drug/alcohol problem.

There were high rates of co-morbidity between these with

40% of those with depression also having anxiety and 45% of

those with anxiety also having depression (Lecrubier & Ustun,

1998). The study also found a strong relationship between

psychological health and social or occupational disability with

psychological ill-health contributing an independent and greater

effect to disability than physical ill-health (Goldberg, 1996).

The study also found that primary care physicians were not

particularly accurate at detecting psychological problems in their

patients and that rates of appropriate treatment were generally

quite low (Sartorius et al., 1993). The study identified that about

32% of patients had a significant illness whilst GPs identified only

24%. Of these only 13% of patients were identified using both criteria. Also, of those patients identified as depressed only 21% were prescribed anti-depressants (Goldberg, 1996).

3.4.2 The SPHERE study of Australian general practice

In Australia a recent study (SPHERE) of several hundred GP practices assessed more than 46,000 patients for psychological disorder and whether these were being recognised and appropriately treated by GPs (Ellis, Smith, & Bushnell, 2001). This study found a very high rate of psychological disorder with 63% of patients showing some evidence of psychological disorder (Hickie, Davenport, Naismith, & Scott, 2001b).

These figure have been criticised as being due to an over sensitive screening tool rather than reflecting true rates of disorder and a later re-analysis of some of the data suggests that the screening instrument used in this study must be treated with caution(Clarke & McKenzie, 2003). The SPHERE project used the screening instrument to classify patients into two levels and Clarke and McKenzie's analysis indicates that the first level provides the most reliable estimate of psychiatric morbidity. Using this level only, the SPHERE project identified 25% of the sample

(about 12,000 patients) as having significant psychological problems. These rates are consistent with other studies.

The SPHERE survey found that only 44% of patients with a psychological disorder were diagnosed by their GP. As a result a relatively small number of patients (12%) received appropriate and evidence based treatments for their condition (Hickie, Davenport, Scott et al., 2001). The survey found that for those patients with the most significant level of pathology only 50% received any treatment and only 27% received evidence-based treatment. This study also found very high levels of co-morbidity with drug/alcohol use disorders which were also under recognised and under treated (Hickie, Koschera et al., 2001).

3.4.3 Other research

Throughout the 1990s there have been an increasing number of population-based studies looking at mental health issues in primary care. These studies have progressed from looking at the presentation of any psychological disorder to presentations of specific disorders, particularly depression. Many of these studies represent the next generation of epidemiological research in psychiatry and provide massive amounts of data not only on prevalence but also chronicity, quality of life, effects of co-

morbidity, types of treatments utilised and costs of non-recognition.

Overall, the research available supports the findings from the WHO and the SPHERE studies. Essentially, about one quarter of all patients presenting to GPs will have a diagnosable and treatable mental illness. Most of these disorders are made up of the so-called 'neurotic' disorders, depression and anxiety but patients have significant degrees of distress and disability. Rates of co-morbidity with other psychological and physical disorders are high and the degree of disability is directly related to presence of co-morbid conditions. The recognition of disorders by GPs is relatively low and the use of evidence-based treatments is also relatively low.

In addition, there is evidence that patients presenting with symptoms of psychological disorder but not achieving a diagnosis (i.e. a sub-threshold disorder) experience similar level of distress and disability to those with a formal ICD or DSM diagnosis. Olfson and colleagues (1996) have noted that patients with sub-threshold symptoms may be people recovering from major psychiatric disorder, transient adjustment to stressful life events, secondary symptoms of medical illness, or recurrent brief psychological conditions. They also make the point that the

presence of sub-threshold depressive symptoms is predictive of later symptomatology. Their research suggests that the percentage of patients who are generally excluded from research and bureaucratic analysis may in fact be a significant group whose numbers both increase the magnitude of estimates of the problem but who also need to receive appropriate intervention.

3.4.4 The particular issue of recognition and treatment

It has been well established for the past several decades that there is a mismatch between the number of primary care patients with mental disorder and the number of patients recognised or acknowledged by GPs as having mental disorders. A large number of studies have identified that GPs on average recognise between 30% and 50% of all 'true' cases of psychological disorder presented to them (Hickie, Davenport, Hadzi-Pavlovic et al., 2001; Higgins, 1994; Lecrubier & Ustun, 1998; Phongsavan, Ward, Oldenburg, & Gordon, 1995; Tiemens, Ormel, & Simon, 1996). The highest estimate of recognised cases has been identified as around 60% (Borowsky et al., 2000; Henkel et al., 2003; Holmwood, 1998).

In more recent research, the focus has shifted from recognising mental problems per se, to focus on GP recognition of

specific conditions - most particularly depression. This body of research has found very similar rates of recognition (Borowsky et al., 2000; Füredi et al., 2003; Lecrubier & Ustun, 1998; Roy-Byrne et al., 2000; Wittchen & Pittrow, 2002) though a very low rate of recognition of social phobia, of 24%, has also been reported (Weiller, Bisserbe, Boyer, Lepine, & Lecrubier, 1996).

It has been argued that this is a major cause for concern because the GP is the first, and often only, point of contact for the majority of people with mental disorders who actually seek help. If GPs are failing to recognise mental disorder then it is possible that management of the patient's condition is either inadequate or inappropriate (Schmitz, Kruse, & Tress, 2001).

Most of the research on recognition has also looked at the use of appropriate treatment and has found that even when psychological disorders are recognised very low rates of appropriate treatment and management are applied (Hickie, Davenport, Naismith, Scott et al., 2001; Lecrubier & Ustun, 1998; Schmitz et al., 2001; Sturm & Wells, 1995). This may lead to increased suffering for people and to increased costs as they are more likely to access health care for help with distress from the untreated condition.

In an attempt to improve the rate of recognition, there has been a focus on trying to understand the reasons why GPs are apparently so poor at detecting psychological disorder. The main factors that have been identified can be grouped into patient, practitioner and disorder characteristics.

In particular it has been found that GPs were more likely to recognise mental disorders in patients who were older (Pini et al., 1997; Raine et al., 2000), had more severe symptomatology (Borowsky et al., 2000; Raine et al., 2000), had a significant physical illness (Pini et al., 1997; Raine et al., 2000), were unemployed (Pini et al., 1997), and amongst women (Pini et al., 1997; Raine et al., 2000). GPs were less likely to recognise disorder in patients who were non-white (Borowsky et al., 2000; Raine et al., 2000) , young males (Borowsky et al., 2000), or in patients presenting their symptoms in a normalising way (Kessler, Lloyd, Lewis, & Gray, 1999; Pini et al., 1997). There was some evidence that GPs were more likely to recognise psychological disorders if they were interested in mental health (Parslow & Jorm, 2000) and believed that a psychological disorder was a significant problem that could be treated (Dowrick, Gask, Perry, Dixon, & Usherwood, 2000; Hartley et al., 1998).

Finally, it has been argued that a major barrier to recognition is the inadequate psychiatric classificatory schemes that are applied to primary care. Thus, rather than GPs not recognising cases, Hickie (1999) has argued that the DSM and ICD systems were over specialised for primary care populations and missed the identification of cases meaningful to primary care practice.

However, the most researched proposition to date is that GPs have not been adequately trained in the recognition of mental health problems. This has led to a considerable effort to establish whether training in recognition leads to better identification and therefore better management. The evidence to date, has been that training has little if any effect on recognition (Croudace et al., 2003; Thompson et al., 2000; Upton, Evans, Goldberg, & Sharp, 1999; van Os et al., 1999) and that, even where there was better recognition and appropriate treatment, it did not necessarily lead to better outcomes (Bashir et al., 2000; Dowrick, 2001; Simon, Goldberg, Tiemens, & Ustun, 1999; Tiemens et al., 1999). Some studies, however, have reported that training in general interviewing and problem identification skills improved detection (Bashir et al., 2000; Cape et al., 2000; Scott, Jennings, Standart, Ward, & Goldberg, 1999) though these studies have not established that this makes a difference in clinical outcome.

However, the issue of recognising psychological disorders in their patients is a relatively complicated area for general practitioners, not least because many psychological disorders present with physical symptoms and it is a complicated and time consuming exercise to differentiate them (Craven et al., 1997; Kisely & Goldberg, 1996b). There have also been arguments as to the appropriateness of traditional psychiatric nosology to psychological disorders in primary care (Hickie, 1999; Olfson et al., 1996). This particularly raises the issue of research methodology and definitions that have been used to research this area and it has been suggested that GPs may be identifying clients using criteria that were distinct from the category assumptions of psychiatric classifications.

For instance, it has been suggested that GPs may be using informal classifications based on the usefulness of treatment to the patient and, if they judged that treatment was not likely to be successful they were not likely to formally diagnose a condition (Cooper, 2003). In a reanalysis of a large dataset from a study looking at the impact of training on improving recognition, Thompson and colleagues (2001) argued that dichotomous classifications ignored the reality that psychological disorders presented as a spectrum of symptoms and that disorders were actually dimensional in nature. Using multivariate analyses, they

showed that rates of recognition increased as symptom severity increased and that numbers of 'cases' dropped as severity increased. This essentially meant that the rate of identification was very sensitive to the cut-off score chosen to form the dichotomous categories.

Thompson's (Thompson et al., 2001) reanalysis also found that 30%-40% of 'missed' cases were patients with scores only one point above the cut-off. This again illustrated that the choice of a cut-off score could drastically increase or decrease the rate of recognition.

Finally, they argued that other studies make an error in comparing 'recognised' cases to the number of 'true' cases within a population of consultations. They suggested that the number of cases recognised should be divided by the total number of patients seen by the GP. That is, rather than comparing the number of 'recognised' cases to the number of possible mental health cases, the appropriate comparison is to the total range and type of patient that a GP might see in their practice. When they applied this logic to their own data they found that only 13% of 'possible' cases and 3% of 'probable' cases were missed (Thompson et al., 2001).

There has also been the argument that the cross-sectional methodology used in most studies does not capture the ongoing nature of the relationship between GPs and their patients. In a recent reanalysis of a small sample of primary care patients, Kessler and colleagues (Kessler, Bennewith, Lewis, & Sharp, 2002) followed up 178 patients to see whether undetected depression or anxiety were identified later on. The recognition rate for the initial study was 39%, but three years later only 14% of patients with depression still had not been diagnosed or treated. This supported an argument that the figures for misrecognition were somewhat of an artefact of the single-point methodology and largely ignored the longitudinal nature of the GP-patient relationship.

It seems clear that there is a subtlety to this issue that has largely been missed to date. Certainly many of the authors who have identified that training to improve recognition either doesn't work, or seemed generally not connected to outcome, have started to suggest that more effort needed to be focused on the nature of primary care practice and the natural history of mental disorder in primary care (Bashir et al., 2000; Cooper, 2003; Katon et al., 1995; Thompson et al., 2000). That, in short, there was no simple or quick fix approach and that the issue of mental health in

primary care needed to be much better understood (Ellis et al., 2001).

There has also been a growing recognition that more effort and understanding of the integration of primary care with specialist mental health care needed to be developed, as facilitation and/or consultative models seemed to have the better outcomes (Aoun et al., 1997; Bashir et al., 2000; Geller et al., 1998; Thompson et al., 2000; Tiemens et al., 1999).

3.5 RURAL PRIMARY CARE SETTINGS

Even fewer studies have considered differences in prevalence of psychological problems between rural and urban primary care practices. There is also a broad variation in measures and methodologies between these studies which make it difficult to compare and synthesise the findings.

3.5.1 Epidemiology

In a study of 350 consecutive attendees to two rural primary care practices in Virginia, USA, Philbrick and colleagues (1996), found that 34% of the sample were given a diagnosis using the Primary Care Evaluation of Mental Disorders (PRIME-MD). Of these 19% received a threshold diagnosis and 15%

received a sub-threshold diagnosis. The study found no differences in the level of functional disability between threshold and sub-threshold diagnoses. PRIME-MD is a relatively new tool designed specifically for identification and diagnosis of psychological problems in primary care settings. It was developed to counter a range of criticisms of diagnostic instruments that are primarily psychiatric. However, it has not been as extensively utilised as other measures and this makes comparisons with other studies more difficult (Parker & May, 1997).

In another study that focused on rural primary care practice in India and Pakistan the authors found widely varying prevalence rates between 12% and 39%. This study utilised similar methodologies and measures to the WHO study but the population was third-world and arguably quite distinct from rural first-world populations (Chisholm et al., 2000).

Utilising a methodology of surveying general practitioners, in rural general practice in Western Australia, Aoun, et al. (1997) asked GPs to identify the extent of psychological morbidity in their practice and patterns of treatment. Twenty-two general practitioners from five surgeries collected information on 428 patients including socio-demographic characteristics, reasons for encounter, diagnoses, social problems, chronicity, counselling,

medication and use of referral services. The most common diagnoses were depression (42%) and anxiety (21%) but social problems were also common.

Overall, they estimated an annual prevalence of psychological morbidity of 1.3%. They also found that the characteristics of those patients identified with psychological problems were stereotypically female, middle-aged, separated/divorced, and relatively well educated. Young, employed males were rarely identified as having psychological problems although this probably also reflects the general failure of young men to consult doctors.

There are a range of problems with the approach in this survey. The fact that GPs may be relatively poor at recognising psychological disorder in their patients means that the estimates of prevalence need to be viewed as under-estimates of the actual rate. In addition, the structured questionnaire utilised a set of diagnostic categories only broadly comparable to other studies. This study should primarily be seen as an attempt to begin to delineate the issues in primary care in rural Australia but its methods do not allow comparison with the existing body of research in primary care settings.

The SPHERE project included a broadly representative sample of GP practices throughout Australia. This included quite a number of rural and regional practices. As yet there are no published comparisons between rural and urban practices on the rates of disorder. Hickie does say, however, that no differences in prevalence were detected overall between the rural and urban settings (Hickie, Davenport, Hadzi-Pavlovic et al., 2001). No details as to the definitions of rurality used in this study have been available to date.

3.6 RESEARCH DIRECTIONS

3.6.1 Rural research

In recent years there has been a growing recognition and commentary about the lack of research focusing on issues of rurality and psychological problems (Fraser et al., 2002; Judd et al., 2001; Judd, Murray et al., 2002; Owen et al., 1999; Patterson, 2000). Some authors have expressed considerable surprise at this gap given the long history of interest in geography and psychiatric epidemiology beginning in the nineteenth century.

Holley(1998) points out that this area of study was sufficiently developed in the 19th Century for the coining of 'Jarvis' Law'(1866) - that admission to hospital increased in direct

proportion to the patient's distance from the hospital - a law which appears to still be in effect despite 100 or more years of reform in mental health service delivery. There is currently very little data on health status and geography in Australia and some authors consider that the existing level of analysis is too broad to be of much use to health planners and providers (Humphreys, 1999).

A comprehensive overview of rural health research in Australia from 1990 to 1999 suggested that the main focus of publication on the topic of mental health has been commentaries and literature reviews. Compared to other health topics the percentage of publications relating to research was fairly low (Patterson, 2000). In a report commissioned by the Australian government on research priorities in mental health, Jorm and colleagues (Jorm, Griffiths, Christensen, & Medway, 2002) identified that 2.5% of articles published and 1.8% of competitive research grants dealt with rural and remote issues.

Patterson (2000) particularly highlights that much of the research in rural health has been in needs assessment and comparatively little in strategic development and evaluation of health service interventions. Jorm et al. (2002) found that this was a minor area of research focus with, 6% of publications and

5% of funding devoted to these areas. This focus of publication, and presumably research effort, at the initial stages of research development was also noted by Fraser, et al. (2002). Apart from there being a generally inadequate research base for policy development in this area, it is also the case that the type of material being published is more editorial than basic or strategic research.

Many authors have also pointed out that the existing research base fails to adequately cover the issue of rurality. It is contended that most researchers have failed to appreciate the heterogeneous nature of rural and remote populations and have used crude geographical definitions of rurality that ignore the more complex socio-economic factors that exist within and between rural communities (Fraser et al., 2002; Holley, 1998; Holzer & Ciarlo, 1999; Judd, Murray et al., 2002).

Judd and colleagues are particularly critical of national household surveys that have been completed to date which have ignored the issue of rurality in the planning of the research so that any comparisons are post hoc (Judd, Jackson et al., 2002). They particularly note that the crudity of the definitions of rurality inevitably lead to an aggregation of data that is more likely to obscure differences than allow a proper exploration of the

question of whether rurality matters (Fraser et al., 2002; Judd, Jackson et al., 2002).

One effect of the lack of sophisticated social and geographic models of health status and need is that the distribution of health resources is based on estimates of prevalence and bedded in an assumption that all isolated settings are the same (Holley, 1998). There is also an impact on the development of mental health policy which some authors have characterised as single focused and failing to take account of the needs and wants of the communities being served (Fraser et al., 2002).

There seems to be a real need in Australia, but probably internationally as well, for a more comprehensive research agenda in rural mental health. The Federal government has committed itself to improving access to mental health services for Australians in rural and remote settings but this will require significantly more focus on service-based research. Judd notes that there is currently no national rural mental health strategy and calls for one to be developed so that research and practice can take place in a more informed context (Judd & Humphreys, 2001). Several authors have noted the particular lack of research on effective service delivery models in rural areas and indicate that focusing on this should be a priority (Fraser et al., 2002;

Judd & Humphreys, 2001; Judd, Murray et al., 2002; Yuen et al., 1996).

3.7 SUMMARY

This chapter has covered a vast body of research with a broad number of loosely connected strands. The main points were that mental health is now recognised and identified as a major population health issue at both the community level and in primary health care. Importantly, many people do not recognise or acknowledge that they have psychological problems and there is a very large pool of people who remain untreated. These people suffer elevated levels of social, economic and personal hardship as a result, and most symptoms are able to be ameliorated with appropriate treatment.

In addition to people themselves not recognising their mental health status, there was considerable evidence that GPs were poor at recognising mental health problems and, perhaps consequently, poor at providing appropriate treatment. It has to be said, though, that the level of analysis that has been focused on this issue has recently been criticised as narrow and inadequate and there is some interesting evidence that suggests that the broad pessimism about this may be unwarranted.

There is evidence that rates of psychological disorder in rural settings are either not very much different or slightly lower than for urban settings though the whole issue of defining 'rurality' in order to distinguish the populations is a vexed one. There is no doubt at all that levels of health in general and access to specialist care is much reduced in rural settings which at least implies the potential for increased burden of mental health problems in rural settings. Despite the generally inadequate state of knowledge about basic issues of mental health in rural areas, and understanding of which patterns of service delivery may be effective, there is no coherent national plan for research and development in this area in Australia. At this point in time it also appears that this state of affairs is unlikely to change very quickly or very much.

Chapter 4: Community based service delivery

*Let the good service of well-deservers be never
rewarded with loss. Let their thanks be such as may
encourage more strivers for the like.*
Queen Elizabeth I(1533-1603)

*Let not the tie be mercenary, though the service is
measured in money. Make yourself necessary to
somebody. Do not make life hard to any.*
Ralph Waldo Emerson(1803-1882)

4.1 OVERVIEW

In this chapter, the issue of how mental health services have been delivered to date is reviewed, and some of the challenges that these models pose for rural communities is highlighted. This is followed by a more detailed literature review relating to consultation-liaison models of mental health care in community settings. By way of contrast, this is followed by a review of a model, primarily adopted in the UK, which involves the attachment of a mental health professional to a GP practice. The parallels between this approach and the model evaluated in this study should be apparent. Next the current initiatives of the Australian government in promoting better mental health care are explored in the context of the previous discussion on service models. Finally, the model which is the subject of this study is presented in more detail and consideration is given to the specific research issues that may be considered in evaluating the model.

4.2 SERVICE DELIVERY

The development of mental health services in Australia has recently been mostly focused on the provision of care for the 'severely mentally ill'. This term has generally not been explicitly defined but most services have interpreted it to mean patients

with psychotic or major mood disorders, and that it has been used to exclude clients with 'neurotic' disorders, 'personality' disorders, problems of social circumstances or relationships, and people with drug and alcohol problems (Goldberg, 2000; Smith, 2003). Although there are strong arguments that such a focus is necessary to ensure that the most severely unwell receive care and attention (e.g. Gask, 2000), it nevertheless leads to a situation where the greater number of clients with psychological disorders are excluded from treatment.

Andrews (1997) questions the logic of the current approach, in suggesting that resources might be most appropriately focused on the provision of treatment to the most frequent and most burdensome conditions with the best response to treatment, that is not the psychotic and major mood disorders. Whether Andrew's ideas can be seriously considered or not, there is nonetheless an increasing awareness that many people in the community do not have access to mental health treatment. There is also a growing interest in identifying and evaluating models of service delivery that can address the main population of clients with 'common' mental disorders.

Although there is a growing literature, including one Cochrane review, on models of mental health service in primary

care there is very little in relation to service delivery in rural settings. Yet, existing models of service delivery in rural areas are in need of both review and evaluation (Judd, Fraser et al., 2002). But, in considering the models that have been developed for service delivery in rural areas it must be remembered that they have developed within the context of workforce restraints in rural areas.

4.2.1 Rural workforce issues

The lack of health professionals in rural areas means that there has been a reduced capacity to meet the mental health needs of rural people. Taking into account a same, or similar, prevalence of psychological problems to urban areas, this reduced capacity effectively builds a substantial barrier for people with psychological problems in rural areas (Clayer et al., 1995; Holzer & Ciarlo, 1999; Thurston-Hicks, Paine, & Hollifield, 1998).

In their study of health service utilisation in different rural settings, Rost et.al. (1998) found that rural patients with depression, when compared with non-rural patients, were three times more likely to be admitted for inpatient treatment and three times more likely to be admitted for general medical management. This suggests that there is a general over utilisation

of inpatient treatment for people from rural areas. In a similar study exploring health service utilisation, Yuen, et al. (1996) found that patients in rural settings were more likely to receive psychological care from a generic health provider and more likely to be hospitalised for specialist mental health treatment. Thus a picture emerges of patients in rural areas requiring specialist treatment receiving it either from generalist providers or needing to be treated out of their communities as inpatients.

A consequence of the location of services outside of the patient's community is that rural people seek assistance most commonly from their GP (Clayer et al., 1995) and are quite reluctant to pursue specialist assessment and treatment for psychological problems (Holzer & Ciarlo, 1999). Patients in rural and remote settings expect the GP to have a significant role as a provider of specialist psychological services primarily because of the lack of services but also because of the established personal relationship with the GP and the general stigma associated with treatment by a mental health specialist (Fuller et al., 2000; Geller et al., 1998).

Rural patients often resist GP referrals to specialist mental health services and rural GPs often report disappointment with making the referral because of lack of service and inadequate

follow-up (Badger, Ackerson, Buttell, & Rand, 1997). In an analysis of health service utilisation data from the Australian Survey of Mental Health and Wellbeing, Parslow and Jorm(2000) found that utilisation was generally related to need except when socio-demographic factors were taken into account. They make the point that in a fair and equitable system only morbidity levels would determine access to services.

Meadows, et al. (2002) found that patients with psychological needs, in rural or disadvantaged urban settings, were more likely to be seeing their GP than a psychiatrist. This contrasted with the likelihood of seeing a specialist physician for a physical problem where there were no differences based on rurality. They speculate that this could indicate either that there are problems for GPs in either identifying or referring patients. It also seems clear that issues to do with patients not accepting referrals, lack of access to appropriate services and GP dissatisfaction with psychiatrist referrals (Aoun, 1997) would contribute to this difference.

A major issue in the availability of specialist psychological treatment in rural areas is the lack of specialist staff in rural locations. Recent data for Australia indicates that very few specialists are resident in rural/remote settings with only 8% of

psychiatrists and 12% of psychologists living outside of urban settings (Fraser et al., 2002; Judd & Humphreys, 2001; Judd et al., 2001).

A UK study (Thomas & Corney, 1993) found that urban GPs had a greater number of links with mental health specialists than non-urban GPs with the biggest discrepancies being between relative access to psychologists (53% vs 14%) and psychiatrists (35% vs 6%). The difficulties with accessing specialist services in rural areas means that costs for treatment of psychological problems is higher in rural settings because of the use of more expensive inpatient interventions (Rost et al., 1998).

There are also increased costs to the community that arise from the difficulty of being able to implement best practice models of early identification and intervention based on care in the person's own community (Judd & Humphreys, 2001). The difficulties with access to services also increase costs indirectly by throwing much of the burden for professional care on to GPs who often try to meet the need by extending their own role (Aoun, 1997). Though this may be an appropriate and sensible use of GP skills the lack of alternatives often means that the important roles for GPs of early detection and primary prevention take second place to 'band aiding' complex or severe psychological problems.

Some authors have also suggested that there may be an unrecognised level of need for psychological services in rural areas that is not tapped by standard methodologies. Humphreys (2000) carried out a qualitative assessment of health status and health service utilisation amongst 120 families in 4 rural Australian communities. The communities surveyed differed on access to range and type of health services. Humphreys found that most families relied on their own resources in dealing with health issues even when they had conditions that were sufficiently serious to warrant specialist attention.

Most people stated they did not seek services simply because they did not think the problem to be serious enough. Although the study was not specifically aimed at psychological problems it found that 4% of the 'major' health problems identified by families were psychological. Humphreys (2000) also noted that most people did not acknowledge the life stresses that they were experiencing as a health problem and tended to see these as just something to be coped with. He noted that the health diaries of these families showed high levels of socio-economic stressors for which families were not seeking help. This study suggests that there may be a level of hidden need for psychological intervention in rural families but there is no

comparative data currently available to evaluate this question (Judd & Humphreys, 2001).

4.2.2 Models of collaborative community care

Although there is a considerable amount of research into the effectiveness of different treatments for psychological disorder there is generally less of a focus on the effectiveness of different service delivery models. Yet this is a critical area of research for rural settings as the mode or style by which particular treatments can be made available will impact on the equity and effectiveness of intervention overall. In Humphreys' (2002) terms, specialised services focusing on low incidence conditions have a high threshold and are generally only accessible within concentrated population areas.

From this point of view, the location and availability of a service is directly linked to choices about the type of client to be treated, mode of service delivery, and personnel providing the treatment. The more restrictive and specialised these criterion the less accessible and transportable is the service to rural settings. The decisions of current mental health services appears to be to focus on specialisation and this really promotes models of service

delivery that are less able to provide assistance outside of metropolitan or large regional settings.

Yet there are models of service delivery that have been developed to specifically provide for mental health intervention in primary care settings. The two most commonly identified are consultation-liaison and attachment of mental health professionals to GP practices. These models of service delivery are having direct impacts on the development of mental health services in the UK, some effects in the US, and we are just starting to see the impact of the research on service delivery in Australia.

There are advantages and disadvantages to each of these approaches and the next sections review some of the evidence for the effectiveness of these models in providing psychological treatments. In doing so it necessary to reemphasise that none of this literature specifically considers the application of these models to rural settings.

4.2.2.1 Consultation-Liaison models

Consultation-liaison models of mental health service are arguably the longest standing response of specialist mental health services to the growing demand for mental health services in the general community. In the UK the development of community

mental health services initially involved the establishment of community clinics to provide direct service delivery but it soon became clear that the demand for services outstripped the resources available.

As a substantial amount of demand came from GPs a model of supporting GPs in their management of mental health patients was developed. This consultation-liaison model essentially required the more specialist medical doctor (the psychiatrist) to review cases with GPs and offer advice on diagnosis, medication, and ongoing management. It was essentially an adaptation of models of specialist medical practice which maintained the psychiatrist in a position where they could 'service' a greater number of clients by virtue of seeing very few directly. The model has evolved in time to include a role for psychiatrists in training and educating GPs in the recognition and management of psychological disorder and to some extent the functions of liaison have been devolved, or expanded depending on your point of view, to include non-medical mental health professionals.

But it is actually very difficult to find a single or common definition of consultation-liaison models let alone a common understanding of their historical development. Certainly most developed countries in the Western world have established

consultation-liaison functions within mental health services and many have even established specialist consultation-liaison teams for general and specialist medical care settings. But there seems to be little evidence for the effectiveness of consultation-liaison practices and no common understanding of supposed mechanisms for change (Katon & Gonzales, 1994). In a recent attempt to review the history of consultation-liaison models and evidence for their effectiveness, Bower and Sibbald (2000) concluded that there was no common definition of consultation-liaison practice and that actual practice was not in accord with existing descriptions.

The work of Katon is often cited as providing evidence that consultation-liaison models are effective at improving outcomes for specific disorders and psychological well-being in general. Katon and his team have established that a multi-faceted model of primary care intervention has been more effective than usual care in outcomes for primary care clients with depression (Ceroni, Rucci, Berardi, Ceroni, & Katon, 2002; Katon et al., 1996; Katon et al., 1999; Von Korff et al., 1998) panic disorder (Katon, Roy-Byrne, Russo, & Cowley, 2002; Roy-Byrne, Katon, Cowley, & Russo, 2001; Roy-Byrne et al., 2000), relapse prevention in depression (Katon et al., 2001), and depression in later life (Unutzer et al., 2002).

The model of service developed by Katon and his team has been described as 'Collaborative Care' or 'Stepped Collaborative Care'. It involved a multi-faceted approach targeting the patient, the GP, and the process of management. In general terms, patients cared for within this model were identified by GPs and seen by a psychiatrist in the primary care setting. The psychiatrist reviewed the patient and prescribed medications as appropriate as well as providing feedback and information on the case formulation to the GP. In addition, the patient received comprehensive education about their condition, the importance of medication and its appropriate use, and a summary of cognitive-behavioural techniques for management of symptoms. They also received two follow-up phone calls from the psychiatrist as well as a second face to face consultation (Katon et al., 1996; Katon et al., 1999). In later versions of this model, Katon and colleagues have expanded the professional base to include psychologists, mental health nurses, and social workers, as specialist service providers (Katon et al., 2001). They noted that the same results were seen regardless of the profession of the mental health worker.

Interestingly, Katon's research team has generally reported the same pattern of results in their data. A significant positive effect has been noted, for clients receiving the intervention, at 3

or 6 month assessments, with clients showing reductions in symptoms compared to usual care client. But, at the 12 month assessment, the differences between the treatment and control groups has been reported as no longer significant (Katon et al., 1996; Katon et al., 1999; Roy-Byrne et al., 2001). Katon and colleagues have also noted that the positive effect was generally seen only in clients with major depression and that there were no clear benefits for clients with minor depression (Katon et al., 1999; Von Korff et al., 1998).

It is clear, from most of the data that this research team has reported, that clients in the usual care group got better over the 12 month time frame and the intervention confered only a slight advantage on the treatment clients. Certainly one criticism of many studies in this area has been that they do not take account of the longitudinal course of the psychological problems and use unrealistically short follow-up time frames. Katon's studies have, at a minimum, demonstrated that the natural course of depression and panic disorder in primary care is toward improvement and resolution.

Katon has argued that the collaborative care intervention provides both clinically significant and cost-effective outcomes, and provides a comprehensive approach to consultation-liaison in

primary care with major depression and panic disorder (Katon et al., 2002; Von Korff et al., 1998). However, Badger and colleagues (Badger et al., 1999) have argued that this approach is so resource intensive that it would likely to be of little value in rural settings which do not have the resources.

There is also a question as to whether Katon's model is an implementation of a consultation-liaison approach. Bower and Gask (2002) identify that current research on consultation-liaison generally uses models based on the management of chronic disease (CDM) and involve multi-faceted and multi-systemic interventions aimed at changing the client's behaviour and the organisation of the care system. They point out that these models do not rely on any single professional, as the interventions are systemic. They also highlight that these research models bear little resemblance to the actual clinical practice of consultation-liaison and so are of limited value in evaluating the effects of common consultation-liaison practice.

In Australia, there have been a number of evaluations of consultation-liaison approaches particularly since the Federal government introduced shared care initiatives for mental health clients to encourage more GPs to be involved in the management of patients with 'serious mental illness' (Australian Health

Ministers, 1995, 1998). In reporting the 'Consultation Liaison in Primary Care Psychiatry' (CLIPP) model, Meadows (1998) identified that it was cost-effective in relation to medical care costs and that clients were satisfied with their level of care. However, Meadows does not provide any information on clinical outcome for these clients and the evaluation did not use a controlled design to be able to make comparative sense of the data.

Another Australian research team found a consultation-liaison approach to be generally ineffective, compared to age-matched and demographically matched controls receiving usual GP care, at improving clinical outcome and GP knowledge and skills (Carr, Lewin, Reid, Walton, & Faehrmann, 1997). Carr and colleagues found two thirds of the C-L referrals were for minor or transient psychological problems and that, as these cases resolved on their own, there was no evidence of improvement from C-L involvement. Carr suggests that C-L may be more effective with the 1/3 of more severe cases but suggests that this is an issue for further research.

Following from their research this team has moved on to develop another model of mental health service delivery based on that described by Kates (Kates et al., 1997; Kates, Crustolo,

Farrar, & Nikolaou, 2002) and similar to co-location or attachment models to be described in the next section (Bower et al., 2003).

In the model described by Harmon, Carr and Lewin (2000), mental health nurses from a mental health service were allocated to particular GP practices covering urban and rural parts of the Central Coast in New South Wales. The function of the nurses was to accept direct referrals from GPs and provide assessments, consultation and feedback. They also provided brief psychotherapy and management if the GP was not able to provide this and liaison in relation to more complex or severe case of mental illness. In some ways the model can be conceptualised as a hybrid C-L team with a degree of 'ownership' of the assigned mental health nurse by the GP practice providing a conceptual link to the attachment models.

Harmon et al. (2000) provided some interesting information on the structure and management of this sort of model, and particularly emphasised the need for the GP to retain primary responsibility for the clients, and for a shared care arrangement to be promoted. The authors particularly noted that this model seemed to suit both rural and urban GP practices. However, the methodology used was more of a clinical audit, and the authors have provided no information on clinical outcome for clients or

evidence that this model of intervention was any more effective than usual care.

4.2.2.2 Attachment of mental health professionals to primary care settings

Another approach that has been extensively developed in the UK and is starting to gain ground in Australia is the location, or attachment, of mental health workers or counsellors to GP practices. The role of the worker in this situation is to accept referrals directly from the GP and to support the GP in the care and management of the case whilst providing psychological intervention (Bower, 2002).

This model appears to have some similarities to a Canadian model described by Kates (Kates et al., 1997; Kates et al., 2002) except that the mental health workers in this model were provided by the local mental health service. In the UK the arrangement of these relationships seems to have grown of its own accord with little pro-active involvement from existing mental health services although there are examples of models similar to Kates' (Sharma et al., 2001).

So marked has the usage of attached mental health professionals been, some reviewers have estimated that between

30%-50% of all UK GP practices employ one or more counsellor or mental health professional (Bower et al., 2003; Corney, 1996; Thomas & Corney, 1993), that the UK government introduced changes to fund holding arrangements for GPs which would allow them more flexibility in being able to employ their own mental health staff.

However in 1999, due to growing concerns about the lack of regulation of the counselling workforce, including different rates of pay, experience, and qualifications, the UK government switched the funding model so that it was held and administered by regional Mental Health or Primary Care Trusts (Bowers, Holmwood, & McCabe, 2002). The most common professional employed in these situations appeared to be mental health nurses or counsellors. Psychologists and social workers were also employed in these positions, but less frequently (Corney, 1996).

The rapid growth in this model of primary mental health care has also prompted concerns amongst some commentators as to the relative effectiveness of these models, and whether such a mental health workforce can provide a comprehensive and meaningful coverage of mental health problems in primary care (Bower, 2002).

Certainly Gournay and Brooking (1994) could find no evidence that attached mental health nurses made any significant contribution with this client group, compared to usual GP care. They subsequently argued, quite forcefully, that this model promoted the treatment of mild or transient psychological disorder and diverted resources away from the patients with serious psychological disorder. They strongly advocated that these models should focus on the care of clients with serious mental illness (Gournay & Brooking, 1995).

The model described by Kates (Kates et al., 1997; Kates et al., 2002)) appears to have been more effective by some criteria. In this model, mental health staff employed by local mental health services were allocated to, and located in, 36 GP practices on a permanent basis on a ratio of 1 mental health worker per 8,000 patients. The mental health workers were primarily mental health nurses or social workers, although some psychologists were used as well. A psychiatrist was available from the local mental health service on a regular basis for consultation and supervision. The aim of this model was to provide joint collaborative care with the GP to support, and not replace, the ongoing case management and care by the GP.

Kates et.al. (1997) reported that GP referral to local mental health services decreased on average 45%, though different practices decreased referrals to a greater or lesser extent, and the range was from a minimum decrease of 20% to a maximum of 91%. In addition, they estimated that there was a 900% increase in the numbers of patients with mental health problems being treated by the GP. They also reported a slight reduction in inpatient admissions. They reported that 70% of referred patients were clinically improved on standardised rating scales. They also reported that clients and GPs were highly satisfied with the service and concluded that the model made mental health care significantly more accessible and increased the likelihood of detection and recognition of psychological disorder by the GP (Kates et al., 2002).

However, the methodology of the study reported by Kates et.al (1997; 2002) was basically an unmatched pre-post assessment and the authors failed to take into account the high spontaneous resolution of psychological problems in primary care.

In this regard, Mellor-Clark (2000a; 2000b) has argued that there was a significant issue as to what should constitute evidence for effectiveness of psychological interventions in primary care. He supported the application of rigorous methodologies, such as

randomised controlled trials, but pointed out the limitations of this approach in that these methodologies are limited to establishing efficacy not effectiveness.

Hemmings (2000), writing in the same journal issue, provided an excellent discussion of this vexed question and highlighted a range of conceptual flaws inherent in using only RCT data to evaluate effectiveness of clinical interventions in field trials. This is a debate that is current in the broader area of psychotherapy evaluation, as the focus of evaluation shifts from internal to external validity of therapy, from efficacy to effectiveness methodologies and the assessment of treatments in real world field trials (Howard, Moras, Brill, Martinovich, & Lutz, 1996; Morrison, Bradley, & Western, 2003; Newman & Tejeda, 1996). In introducing several review papers on the issue, Mellor-Clark summarised by suggesting that counsellors in primary care should be seen to be modestly efficacious and effective.

There have so far been two systematic reviews of counselling in primary care published to date. Using strict meta-analytic criteria for reviewing controlled trials, as established by the Cochrane Collaboration, Rowland and colleagues (2000) could find only 4 studies for inclusion. The authors noted that the included studies were all flawed to some degree and particularly

insofar as the follow-up periods were generally short, 3-9 months. A number of outcome measures were used including the Symptom Checklist 90 (SCL90R), the General Health Questionnaire (GHQ), the Beck Depression Inventory (BDI), and the depression subscale of the Hospital Anxiety and Depression Scale (HADS).

The summary of these trials suggested that clients receiving intervention from counsellors in primary practice were significantly more likely to have recovered at follow-up compared with usual GP care. The authors noted, however, that the small numbers of trials made this conclusion less certain, and that further multi-centre trials were necessary.

In a recent Cochrane review, the same group of authors effectively updated the previous review by including an additional three studies (Bower et al., 2003). They concluded that counselling in primary care had modest benefits, compared to usual GP care, in the short to medium term, but that there were no differences in outcomes after 12 months. Despite this, they considered that counselling would be a beneficial addition to primary care practice.

They also concluded that counselling interventions did not appear to have increased costs, so the identified benefit was essentially cost-neutral. For future studies, they recommended that there should be more focus more broadly on 'care' not just 'cure', by which they meant the degree to which counselling interventions improved the overall quality of life for patients. They emphasised that outcome studies which focused simply on resolution of symptoms could only provide a partial picture of the impact of this type of intervention. They also noted that there were very few studies that followed the patients long-term, and that more effort was needed to include a longer time frame in research in this area.

A study not considered by either Rowland (2000) or Bower(2003) for inclusion in the review, by Bedi and colleagues (Bedi et al., 2000), used a randomised controlled preference trial (RCPT) to evaluate the effect of counselling on depressed primary care patients. The design was an adaptation of standard randomised controlled trials in that it allowed the researcher to evaluate whether a preference for one treatment over another affects outcome[1].

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[1] In this design, participants were first offered a choice of the active treatment or the alternative treatment(s). If the participant expressed no preference their allocation was randomised. This enabled a comparison of the relative effect of choosing a treatment over randomised assignment.

In addition to finding that choice of one treatment over another made no difference to outcome, the authors found that counselling was as effective as a usual care regime involving the prescription of anti-depressants. They concluded that counselling of depressed primary care patients was an effective treatment and should be more widely considered as a treatment of choice. Despite some methodological limitations, not least that the follow-up period was only 2 months, this was a rigorous study with reasonable numbers and the finding can be considered basically sound.

In another study, also not cited by Bower (2003) or Rowland (2000), and using RCPT methodology, Ward and others (2000) looked at the relative effectiveness of non-directive counselling, cognitive behaviour therapy, and usual GP care in patients with depression. They found that both psychological interventions were more effective than usual care in the short and medium term. But, in an echo of Katon's (Katon et al., 1996; Katon et al., 1999) findings, and the conclusions of Bower and colleagues, they found that all three groups had recovered to the same degree at 12 months. They concluded that the psychological interventions may have speeded recovery but conferred no special advantage in the longer term.

Bower and colleagues (2003) noted that there was currently little systematic evidence for cost-effectiveness of counselling[2] in primary care. Reporting the results of an earlier study they had concluded that there was tentative support for counselling being more cost-effective than usual care in patients with psychological disorder but noted that their study had low power (Bower et al., 2000). They also noted that the cost-benefit effect was only evident in the medium term and disappeared by the 12 month assessment.

In a non-systematic review of the literature, the NHS Centre for Reviews (NHS Centre for Reviews, 2001) concluded that there was evidence that counselling was effective in the short to medium term with mild to moderate psychological problems and recommended that counselling would be a useful addition to primary care service provision alongside other mental health services.

4.2.3 Effectiveness of service delivery models

Although collaborative care has generally been identified as a desirable goal in the delivery of C-L mental health services, it is

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[2] They also noted that the definition of "counselling" in this literature has been relatively unclear. For the purposes of the review, Bower et. al (2003) used a relatively pragmatic approach, and used a definition of counsellors based on recognised training and membership of a recognised professional association.

unclear that any but research based services achieve this. On the whole, there has been no good evaluation of C-L services as they are actually practiced, so it has not been possible to say whether this style of service delivery can be an effective intervention in primary care. Collaborative care models, as described, by Katon seemed to be the most commonly evaluated service model, and it can be convincingly argued that these research projects do not reflect the reality of existing services, so the generalisation of the research findings will be limited. Nonetheless, the evidence that is available suggested that Collaborative Care models were effective with a range of psychological problems in primary care, where the conditions were severe enough and for only a limited period during the natural course of the disorder.

Service delivery models which focus on the provision of counselling directly from the GP practice, have been more frequently researched 'in the real world', and the evidence has generally indicated that this type of intervention model was effective in primary care with mild to moderate conditions, but also only for a limited period in the course of the disorder.

Currently, there is no research looking at the longer-term outcome for clients seen within either of these types of service delivery models. So the best that can be said is that both models

of service delivery have been shown to be able to help people in primary care settings, though the effect may be moderate at best, and that any advantage from being involved in the programs disappears by 12 months. Nonetheless, most sources have argued that the evidence was sufficient to warrant increased use of counselling or mental health interventions in primary care settings.

4.2.4 Current Australian government initiatives

Partly in response to the general thrust of the research just reviewed, and partly as a result of the directions of the National Mental Health plans, the Australian government has begun funding a number of projects to provide mental health services in primary care settings.

The first initiative of this kind was the More Allied Health Services (MAHS) program, which was specifically funded to provide allied health resources to rural primary care settings. Although not specifically targeting mental health professionals, many of the programs funded have in fact focused on the employment of mental health professionals, particularly psychologists, as many rural Divisions of General Practice have

highlighted mental health as a primary concern (Commonwealth Department of Health and Ageing, 2002).

The second initiative, Better Outcomes in Mental Health (BOMH), has been more recent and was specifically targeted at providing mental health resources to primary care practices (Mental Health Branch, 2002a). The BOMH program was not specifically targeted at rural settings, though nearly half (7/16) of the currently funded projects were focused on rural and remote regions (Central Australian Division of Primary Health Care, 2002; Gippsland Divisions of General Practice, 2002; NSW Central West Division of GPs, 2002; NSW Outback Division of General Practice, 2002; Sunshine Coast Division of General Practice, 2002; Toowoomba and District Division of General Practice, 2002; Top End Division of General Practice, 2003). The BOMH scheme was primarily concerned with increasing access for GPs to specialist mental health consultation and treatment.

A review of the project outlines, for the MAHS and BOMH projects that have been funded, suggested that most projects have adopted a model of employing mental health professionals, commonly psychologists, to provide direct services to clients referred from participating GPs. The model of practice that seemed most common was similar to the Collaborative Care

models described by Katon (Katon et al., 1996; Katon et al., 1999), with the psychologists employed by a Division of GPs to provide a referral based service to a specific population of GPs. Where the base of GP practices was rural, it appeared that the psychologist was expected to provide the service on a circuit basis, in a manner similar to that of services provided by other mental health services.

Although many of the project descriptions highlighted the location of the service provider within the primary care practice, it was generally on a consultancy or visiting basis. Many of the BOMH programs identified the location of the service provider as either in a GP practice or in the professionals own rooms. There were no indications, in the information available, that models along the lines of attaching mental health professionals to GP practices and locating the professional 'on the ground' were being trialled.

Overall the models of service, particularly in relation to rural primary care, appeared to be most similar to existing mental health service delivery with the exception that a specific individual was identified for contact and referral purposes. The overall impression formed from reading the successful BOHM submissions, was that the general thrust of the projects was to

set up a system of more direct GP access to psychologists as opposed to trialling innovative models of service delivery.

A major criticism of both the MAHS and the BOMH programs, is that it was project based and that funding has not been established or re-current. There was a clear expectation that communities and existing services would be expected to establish funding streams to make such projects ongoing services. It has been noted that, in rural communities in particular, this has led to difficulties attracting and sustaining qualified professionals in the identified positions (Bowers et al., 2002). Although a national program for evaluation of the BOHM projects has been initiated, it is still too early in the implementation for very much definitive information to be available.

4.2.5 The Scottsdale project

In 1996 the community in the North East of Tasmania implemented a new model for local mental health care. The 'Scottsdale Model' was developed when a general medical practice in the rural community of Scottsdale employed a mental health nurse, under an Australian government grant, through the Northern Division of General Practitioners. The role of this person has been to:

1. provide direct clinical service to members of the community;

2. provide consultancy on mental health conditions to the local medical practitioners;

3. respond to mental health emergencies; and

4. educate the professional and general community on mental health issues (Howard, 1999).

The original project was developed because there were a large number of people in the area experiencing high levels of stress. This resulted in an upsurge in the frequency of mental health problems, attempted suicides and completed suicides in the district.

The service was initially described in the community as a grief and stress counselling service, exploring the needs of the local community, and assisting other primary health care providers with effective strategies to manage these problems at a local level. (Howard, 1999)

The clinical model chosen to fulfil these aims was a 'crisis intervention' model. This process was chosen because it allowed for focused and brief interventions that actively involved the 'consumer' in their own care. The goal of the crisis intervention process was to provide an immediate plan of action to reduce

suffering and emotional pain with the aim of restoring sufficient equilibrium to enable a return to everyday levels of functioning (Campbell, Walker, & Howard, 2001).

The crisis intervention model usually required sessions of 45-60 minutes duration with an average of 3 to 5 sessions per person. The mental health nurse also served something of a triage function in assessing the needs of clients and helping them to negotiate the, sometimes difficult, pathway into existing mental health services (Howard, 1999).

In addition, the mental health worker in this position provided ongoing liaison and consultation with local service providers. Presentations on mental health issues were held on a regular basis with local service groups and support organisations. The broader community was exposed to education and information about mental health through regular articles in the local newspaper (Howard, 2000 (Personal Communication)).

A unique aspect of this model appeared to be that the mental health nurse was located in the same geographic area to which he provided services. Initially, he was housed in one of the local GP practices, but was later relocated to offices in the local

hospital to allow for more confidential referral from all of the GPs in the region.

4.2.6 Research issues in rural settings

Many rural communities have argued that any mental health worker providing services to the community needed to be located in the community. This was a strong feeling amongst communities consulted in the course of developing the Tasmanian Rural Mental Health Plan (Mental Health Plan Steering Committee, 2001; Ryan & Robinson, 2001), and has been noted as common to many communities in Australia (Bowers et al., 2002). Community members have expressed the view that a mental health worker who was a part of the community was more likely to understand the needs of the community, and was also more likely to be trusted as a source of help and knowledge than professionals from outside.

The attachment model of service delivery fits within these concepts by locating mental health professionals with the primary care practice where services will be delivered. This would be potentially problematic in rural areas, because the workforce of qualified professionals in rural areas is limited. But, there has been no real comparison of different models of service delivery

which focus on whether the worker was local or visiting, despite a general belief that a local service was the best option (Hartley et al., 1998).

In reality, this sort of arrangement may be impractical, and that certainly explains the predominance of circuit models of service delivery in the BOMH projects (Bendigo & District Division of General Practice, 2002; Brisbane Inner South and Bayside GP Divisions(Qld), 2002; Central Australian Division of Primary Health Care, 2002; Dandenong District Division of General Practice & Greater South Eastern Division of General Practice, 2002; Fremantle Regional Division of General Practice, 2002; Gippsland Divisions of General Practice, 2002; Knox Division of General Practice, 2002; Logan Area Division of General Practice, 2002; Perth and Hills Division of General Practice, 2002; Sunshine Coast Division of General Practice, 2002; Toowoomba and District Division of General Practice, 2002).

Nonetheless, it would be important to consider whether the locale of the worker does lead to better outcomes for clients. If there were no differences between services provided by a worker 'in situ', compared to an external service then, there would be no problem with opting for the most pragmatic level of service delivery. However, if the 'in situ' worker was demonstrably more

effective then the nature of the difference would need to be more completely explored.

The project described in this research, where an 'in situ' mental health nurse provided a primary/secondary mental health service to a rural health region in Northern Tasmania, utilised the opportunity to explore these ideas more fully. Essentially, this circumstance was used to compare the standard level of mental health care with the alternative provided by a community based worker. In addition to clinical outcomes, the research aimed to look at what differences there might be in perceived quality of life, as well as using the opportunity to gain a better understanding of mental health problems in rural primary care settings.

4.3 SUMMARY

The application of standard models of mental health service delivery, and the constraints of rural settings, fit awkwardly at best. The trend in the development of mental health service models has been toward collaboration between specialist mental health practitioners and primary care workers. There is a growing evidence base that such collaborative models can be an effective way of providing services in the community. However, the stepped care models of consultation-liaison have not been proven

to be effective outside of well resourced research settings. Another sort of collaborative model, which has been shown to be relatively effective in 'real world' settings, is that of attachment of mental health professionals to GP practices. Both of these approaches, however, have been shown to be only moderately effective and it has been noted that the comparative improvements have disappeared at longer term follow up.

Not surprisingly, there has been no exploration of the effectiveness of either of these models in rural settings. In reality, there has been very little research into the effectiveness of any mental health service delivery models in rural settings (Judd, Fraser et al., 2002; Judd, Murray et al., 2002). Yet, the multitude of factors that make the delivery of services difficult in rural areas, population density, workforce, distance, cultural, and value issues, also require that even long established models of service delivery should be tested, since it can not be assumed that 'what works in the city will work in the bush'.

The parallels between the attachment model and the Scottsdale rural mental health worker model can be seen fairly easily. In fact, it was probably the relatively low cost and flexibility of this model that led to its adaptation for the rural mental health project. One significant difference, obviously, was

that the worker was attached not only to a GP practice but also to the community. It was this feature, the fact that the worker was part of the community which he served, not a visitor, not a 'blow in', which made the model different from standard models of mental health service, and different from other models that have been researched.

Chapter 5: **Methodology**

It is a good morning exercise for a research scientist to discard a pet hypothesis every day before breakfast. It keeps him young.
Konrad Lorenz (1903-1989)

5.1 OVERVIEW

The primary purpose of this chapter is to describe the methodology used. However the issues to do with the choice of research design which, in this instance, focuses on a naturalistic quasi-experimental approach (Cook & Campbell, 1979) rather than a highly controlled experimental design will also be raised. In addition, as there are a couple of statistical treatments of the data that are less common in current clinical literature, this chapter will also address itself briefly to the issues of statistical techniques for dealing with missing data and the statistical treatment of clinical significance.

5.2 DESCRIPTION OF METHODOLOGY

5.2.1 Researching effectiveness in naturalistic settings

The general approach in this research was to use a survey methodology that has been utilised in a number of other studies (Barrett et al., 1988; Carr et al., 1997; Hemmings, 2000; Kates et al., 2002; Mellor-Clark, 2000b; Ormel et al., 1990; Thurston-Hicks et al., 1998). However, it is not without controversy, as it is a methodology that aims to optimise external validity using a naturalistic research design. This stands in contrast to much

research in medicine and psychology which focuses on optimising internal validity through using randomisation, control comparison groups, and standardised treatment interventions. But there is a growing recognition, particularly in relation to the evaluation of psychological interventions, that the findings from strict clinical trials do not translate to real world clinical situations (Howard et al., 1996).

Figure 5.2.1: Schematic overview of study design.
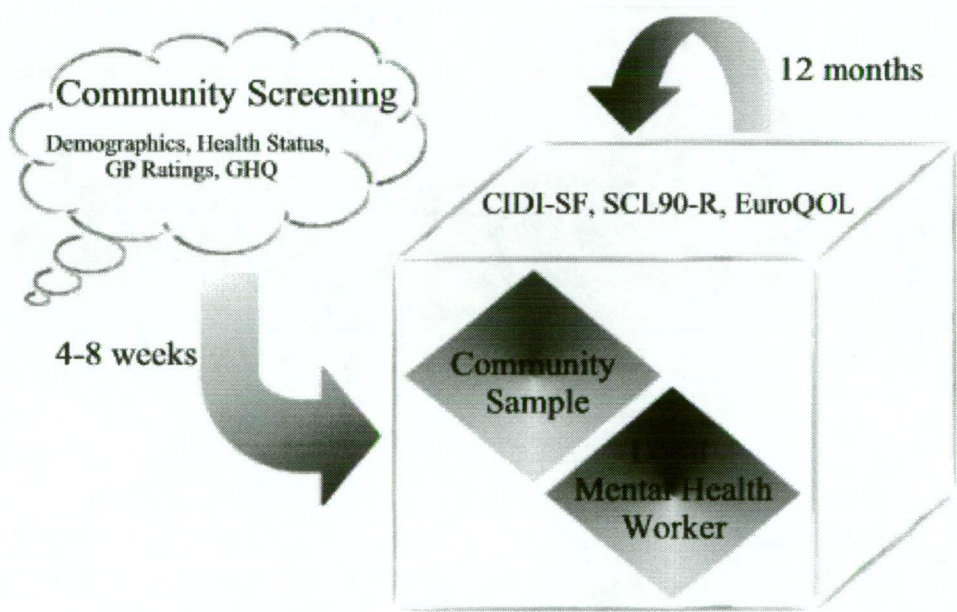
5.2.1.1 Research Design

The design for this study was relatively complicated as it consisted of 3 stages of evaluation with a mix of cross-sectional and longitudinal data collection. This created several panels of data for analysis.

Essentially the design consisted of one screening stage and two assessment stages. The stages of the data collection are illustrated in Figure 5.2.1.

5.2.1.2 Conceptual Hypotheses

Generally speaking, the hypotheses to be tested using this mix of methodologies were quite straightforward. It was expected that there would be no difference in rates of psychological disorder between this primary care population and those in the Australian and international literature. It was expected that the 12-month prevalence would be in the range 25%-30%. It was thought that there might be better recognition of psychological problems by this group of GPs, partly because they had agreed to be involved in the study, but also because rural GPs could be expected to have more exposure to patients with mental health needs, and therefore more experience in both recognition and treatment of such conditions. Finally, it was expected that the mental health service delivered by a local worker would lead to significantly better outcomes than could be obtained though visiting mental health services.

5.2.1.2(a) Community Screening Stage

During the screening stage all patients presenting to see a participating general practitioner during a one week period were

asked to complete a brief questionnaire prior to their consultation

(See Figure 5.2.2).

Figure 5.2.2: Conceptual layout of Community Screening stage.
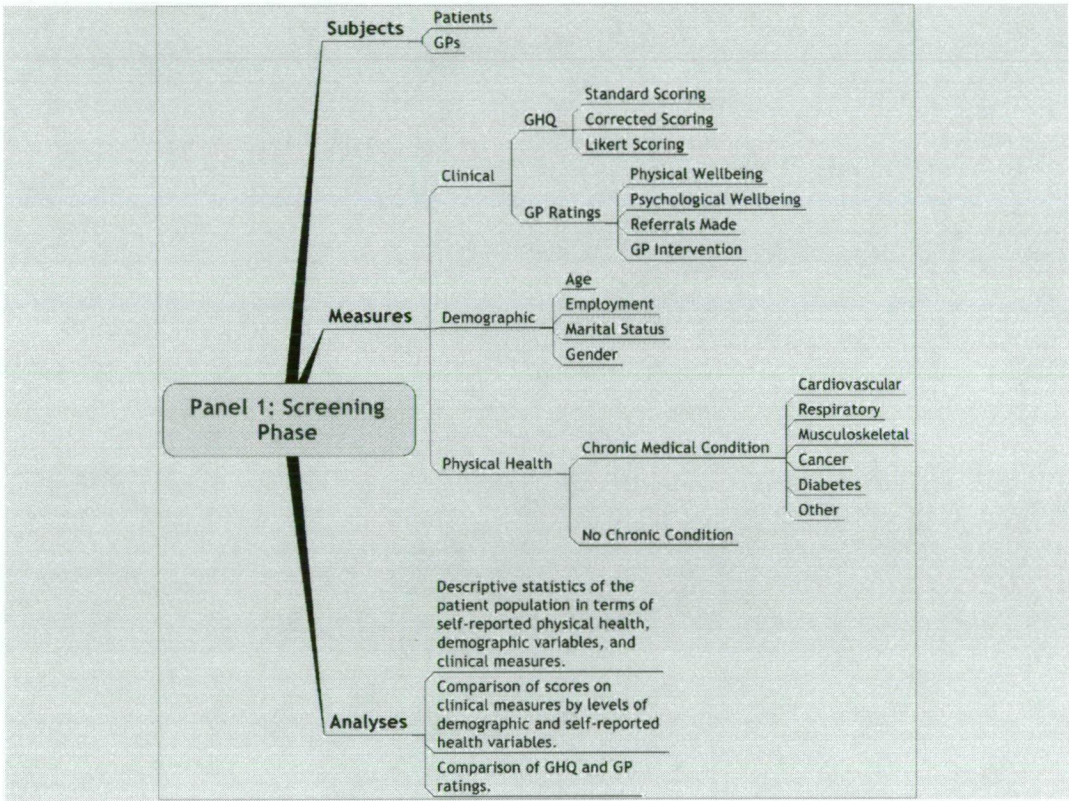
The idea was to develop a large as possible sample of

convenience which could then be selectively re-sampled to

provide estimates of population prevalence of mental health

issues. This was the approach undertaken in the WHO study of

psychological problems in primary care (Sartorius et al., 1993)

and in the SPHERE study (Hickie, Davenport, Naismith, & Scott,

2001a).

The questionnaire provided demographic information, information on basic medical status, and the 20-item General Health Questionnaire (GHQ20).

Following each consultation the general practitioner completed a simple form to provide information on the client's physical and psychological state and information on what, if any, mental health treatment was used during the consultation.

Those clients who responded to the screening were asked whether they would be willing to be followed up over the course of the next 12 months. A large number (347, 71%) indicated that they were willing to be followed up and attempts were made to contact all of these clients.

However quite a large percentage of clients, approximately 200(41%), were lost to follow up because one of the local filing systems was incapable of being used to track the client's direct contact details.

5.2.1.2(b) Initial Clinical Assessment

This stage included all those primary care patients who could be contacted and new clients of the Local Mental Health Worker referred during the period from the start of data collection in stage 1.

Figure 5.2.3: Conceptual layout of Diagnostic Assessment stage
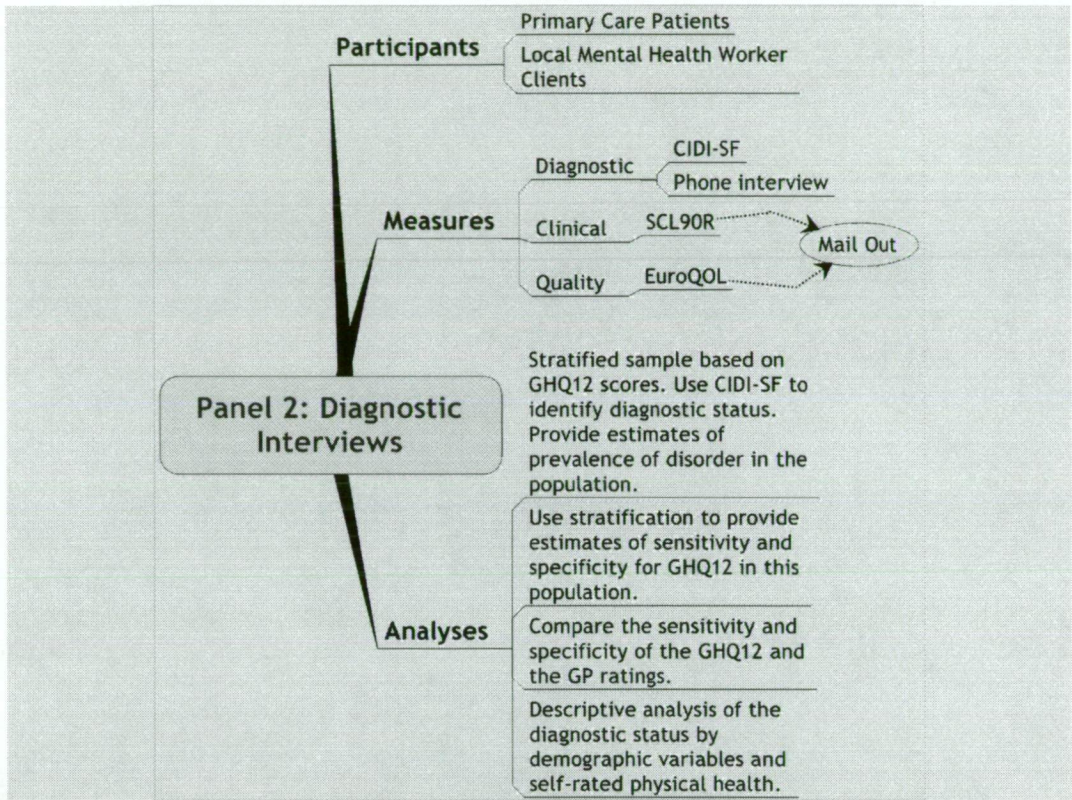
In this stage of the evaluation the participants were contacted by phone by the researcher and if the person was still willing to participate in the research they completed a structured diagnostic interview (CIDI-SF) over the phone. The CIDI-SF was integrated into a Microsoft Access database so that it could be administered with the aid of a computer and the data collection and scoring was automatic.

Participants were then asked to complete a mailed out copy of the Symptom Checklist-90R (SCL90-R) and the European

Quality of Life survey (EQ) as a more complete assessment of severity and impact of psychopathology.

5.2.1.2(c) Follow Up Assessment

In the final stage participants were followed up 10 to 12 months after having been enrolled in the study. All clients, including those of the local Mental Health Worker, were mailed a questionnaire consisting of the SCL-90R, the GHQ20, the EuroQOL and some basic questions on any contacts with 'mental health' services over the previous 9-12 months.

Figure 5.2.4: Conceptual layout of Follow Up stage.
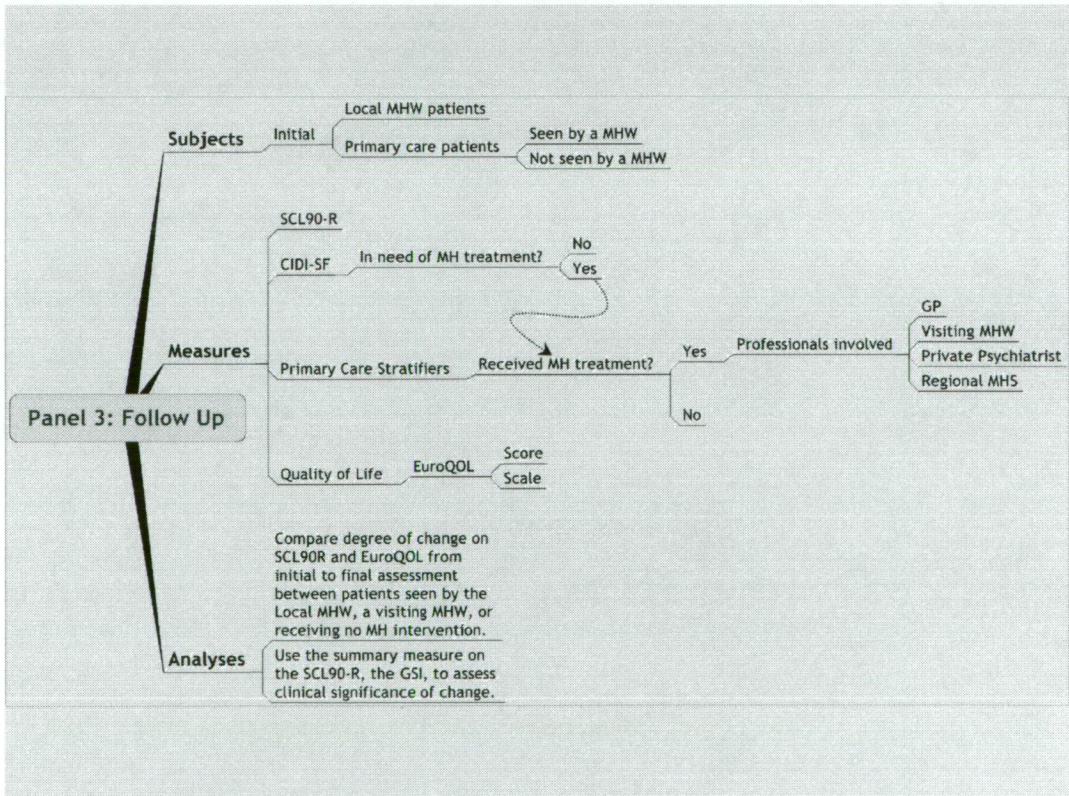
The design of this stage was similar to that described by Carr and colleagues in their research (Carr et al., 1997; Harmon et al., 2000). The design was basically a before and after intervention comparison with the experimental groups determined post hoc on the basis of diagnostic status, symptom severity, or access to treatment.

In addition to the clinical survey the primary care participants was asked to provide information on whether they had received mental health treatment from any professional in the intervening period.

Although the numbers of patients who reported having received mental health intervention was small (20), it was interesting to note that all included their GP and at least one other mental health professional as providing treatment. The mix of professionals providing treatment was quite diverse but mainly consisted of visits to the regional Mental Health Service to work with psychologists or social workers. Some subjects had seen a private psychiatrist and some had been seen by a visiting psychiatrist based with the regional Mental Health Service.

The primary care participants were stratified into three groups on the basis of diagnosis on the CIDI-SF and whether they

had received any mental health treatment in the intervening period.

Those subjects who had scored positively for a diagnosis on the CIDI-SF and had received mental health treatment were classified as a 'usual mental health care' control group. Those subjects who received a positive diagnosis on the CIDI-SF and had not received any mental health treatment were classified as a 'no treatment' control group[3]. Finally, those subjects who received no diagnosis on the CIDI-SF and who received no treatments were classified as a 'normal' control group.

In this way four groups of subjects were established consisting of those treated by the Local Mental Health Worker (LMHW), those receiving the usual model of mental health care (OMHW), those receiving no mental health care at all (UTC), and those not in need of treatment and receiving none (NC). These four groups were then compared on their initial and final scores on the SCL90R and the EuroQOL.

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[3] It should be noted that, as part of the ethics arrangements for this study (See Appendix 8) those clients who were identified as in need of treatment were contacted and the issue of seeking further advice and assessment was discussed. If the participant had given consent, the participants' GP was also contacted to discuss options for appropriate case management.

5.2.1.3 Information for Participants

As there were a number of stages to this research the range of instructions to participants was quite broad.

In general terms, all participants were informed at each stage that their responses were confidential and that they would not be identified unless they specifically requested this. If the participant's results indicated that they had significant psychological disturbance this was discussed with the participant and, if it was appropriate, recommendations for seeking treatment or support from their local GP were made.

GPs involved in the study were also told that their responses were confidential and that there would be no identification of individual practitioners or practices. GPs were also informed that the responses of the primary care participants would be treated as confidential from them except where the participant gave consent for information to be released to the GP.

All participants, including GPs, were told that they were not compelled to participate in the study and could withdraw at any time without needing to explain to the researcher.

5.2.1.3(a) Instructions to practice managers and reception staff

For the period of the data collection the reception staff and practice managers at the GP sites were asked to check with every patient whether they would be willing to participate in a mental health survey. In addition, posters were displayed in the waiting rooms of each surgery asking people to consider participating in a 'How are You Feeling' survey.

If the patient accepted the invitation to participate, reception staff were told to give the patient a 'How are You Feeling' survey package (See Appendix). This package consisted of a B4 envelope with a description of the survey and a consent form on one side and the GP Evaluation questions on the other. The consent form consisted of a number of option boxes which the patients were asked to use to indicate; (a) consent to participate, (b) willingness to be involved in the follow up part of the survey, (c) consent to share information on the results of the surveys with their GP.

5.2.1.3(b) Screening instructions for primary care participants

The participants were asked to read the conditions of consent on the envelope and tick the appropriate boxes and then sign their name to this. They were then asked to complete the

'How are You Feeling' survey and to place their completed survey inside the envelope and seal it. They were then asked to give this to the GP when they went in for their appointment.

5.2.1.3(c) Instructions for the GP

The GPs were asked to complete a series of items, which were printed on the outside of the envelope, at the end of the consultation with the participant. They were instructed not to complete the items on the envelope if the client did not give them consent to do this.

The information on the envelope included rating the current physical and psychological wellbeing of the patient on 10cm Likert scales, indicating whether any mental health intervention was provided during consultation, and recording whether any mental health referral was made. Once this was completed the GP was asked to give the envelope to the practice manager for collection by the researcher.

5.2.1.3(d) Instructions to participants for the CIDI-SF

As this stage of the study was carried out by phone participants were first positively identified as being the person who had completed the screening survey. Prior to beginning the

assessment verbal confirmation of their willingness to participate in the follow up assessments was obtained.

Once this had been established it was explained that the researcher would be asking them a series of questions about thoughts or feelings that they might have had over the past twelve months and that these would be used to assess whether they had a significant mental health issue. It was also explained that the questions would be read from a computer screen and that their responses would be entered on to the computer as they replied.

The participants were asked whether they had any questions or concerns about the assessment and these were dealt with as they arose. Following this the CIDI-SF was administered using the standard protocol described (See Appendix).

At the completion of the survey participants were asked whether there was anything they wanted to discuss about the assessment and any concerns were addressed[4]. Finally participants were thanked for their involvement and reminded

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[4] In two cases the participant was counselled to seek support for serious suicidal thoughts and, with the participant's permission, local area mental health services were contacted and the participant identified as in need of further assessment. Most of the participants were very grateful that someone was taking an interest in how they were feeling and made very positive and supportive comments about the research project. Quite a number said they were caring for aging or disabled relatives and expressed relief at being able to talk to someone "not involved" about how they were feeling.

that a survey would be posted to them shortly and asking them to return it as soon as possible.

5.2.1.3(e) Instructions for completing the follow up survey

As the same follow up questionnaire was used at the time of the diagnostic interview and in the final follow up the same instructions were used (See Appendix).

At each follow up mail out participants were reminded that they had agreed to take part in the follow up assessments of the study but also informed that they need not participate if they chose not to. They were then asked to complete the enclosed questionnaires and to mail them back as soon as possible using Reply Paid envelopes provided.

5.2.2 Selection of Subjects

The recruitment of participants for this research took place after the proposed methodology and survey tools had been approved by the Ethics Committee of the University of Tasmania. As the study involved the assessment of the mental state of participants the Committee was particularly concerned that all those participants who might need help or support would be followed up. This was ensured by the measures described above.

5.2.2.1 GP practices

Five rural general practices were recruited for this study. The general practices were selected on the basis of several criteria and no attempt was made to use stratified random sampling techniques as this was beyond the resources of the project. The practices were all based in rural locations.

Two of these practices involving five GPs were in the North East based in the community where the local Mental Health Worker was active. Two of the practices were on the East Coast and involved three doctors. These communities were comparable to the North East and received visiting mental health services from the same regional centre. One practice based on the North West Coast also participated. This was a comparable rural community that received mental health services from a different regional centre. There were 4 doctors working within this practice.

All the GPs in these practices agreed to participate and were extensively consulted in the development of a methodology that would be appropriate for their surgeries. The GPs were also comprehensively involved in the development of an appropriate tool for collecting information from them about their consultation with the patient. The final GP Survey was only implemented once

everyone agreed that the tool would be appropriate to their circumstance.

5.2.2.2 Primary care participants

As mentioned, the primary care participants for this study were drawn from consecutive attendees at various general practices over the course of a 1-week period.

If the participants indicated that they were willing to be followed up after the screening survey they were initially sent a letter reminding them that they had completed the screening survey and telling them that they would be contacted by phone to complete the phone interview. After the phone interview all the participants were sent a letter asking them to complete the survey and return it to the researcher.

For the final follow up all the participants were sent another letter 10 months after the initial screening asking them to complete the final survey and return it to the researcher.

5.2.2.3 Mental health worker sample

During the initial three months of this study all of the new clients of the local mental health Worker were asked whether they

would participate in the research. If they agreed their contact details were passed on to the researcher

Following this the clients of the mental health worker were contacted in the same way as the primary care participants. They were initially contacted by phone and assessed on the CIDI-SF. A follow up package was sent out immediately after the phone interview and another follow up package was sent out at the same time as that for the primary care participants.

5.3 QUESTIONNAIRES

The various measures used in the study are described below. The measures were chosen to enable broad assessments of psychological problems as well as more specific measures of psychiatric symptomatology. In addition, the measures were selected so as to enable evaluation of the participants using psychiatric categories as well as dimensional assessments of symptomatology. A measure of quality of life, not specific to an illness or condition, was also used to provide a multi-dimensional perspective to the question of change and outcome.

It should be pointed out that all of the standardised measures have been extensively utilised in this sort of research over the past twenty to thirty years. The literature on the General

Health Questionnaire and the Symptom Checklist 90R, in particular, is huge and will only be touched on here. There is also a considerable evidence base for the Composite International Diagnostic Interview- Short Form and the European Union Quality of Life Scale though, as they are more recently developed instruments, not as extensive as for the other measures.

The GP rating scales were developed specifically for this study primarily because it was virtually impossible to find a brief measure of the GP's opinion that was acceptable to the GPs on grounds of time to complete and number of items. Finally the additional data collected on the subjects will be described with some rationale as to why it was included in the study.

5.3.1 The General Health Questionnaire (GHQ)

The General Health Questionnaire (GHQ) is a very well established instrument for the assessment and detection of psychological morbidity in the general population (Benjamin, Decalmer, & Haran, 1982; Benjamin, Lennon, & Gardner, 1991; Berwick, Budman, Damico-White, Feldstein, & Klerman, 1987; Cleary, Goldberg, Kessler, & Nycz, 1982; Goldberg, 1989). Initially developed to evaluate the mental health status of patients of general practitioners in the UK the GHQ has been adapted and

used in a multitude of studies throughout the world (Goldberg et al., 1997; Katz et al., 1995; Sartorius et al., 1993; Simon, Gater, Kisely, & Piccinelli, 1996; Simon et al., 1999). The original version of the scale consisted of 60 items but over time a number of different versions of the measure have been developed.

This has included the GHQ12 which is has been identified as useful in screening for psychological morbidity and also in assessing outcomes following psychological intervention. The version utilised in this study was the GHQ20 which is a shortened version of the GHQ60 which also contains all of the items of the GHQ12.

The GHQ20 consists of 20 questions which respondents are required to rate on a 4-point response scale. Each item refers to the presence of a symptom and respondents rate each 'not at all', 'same as usual', 'rather more than usual', or 'much more than usual'. Originally the GHQ was scored in a bi-modal fashion (0-0-1-1) although this has been criticized as leading to an under identification of respondents with existing psychological problems (Newman, Bland, & Orn, 1988). Goodchild has suggested a corrected scoring where negatively worded items are scored (0-1-1-1) and positively worded items are scored as in the original (Goodchild & Duncan-Jones, 1985). It has also been suggested

that a Likert scoring (0-1-2-3) would be the most appropriate for statistical purposes (Andrich & Van Schoubroeck, 1989; Benjamin et al., 1982; Winefield, Goldney, Winefield, & Tiggemann, 1989). In general, all three scoring methods have been used throughout the literature.

5.3.2 The Composite International Diagnostic Interview - Short Form (CIDI-SF)

The CIDI-SF is a shortened version of the Composite International Diagnostic Interview (CIDI) which has been described as a 'fully structured' ((Andrews & Peters, 1998; Andrews, Peters, Guzman, & Bird, 1995; Kessler, Andrews, Mroczek, Ustun, & Wittchen, 1998) set of scales derived from the CIDI.

The CIDI-SF was developed to provide a quicker process of screening for psychological disorder in epidemiological studies. The scale takes an average of 7 minutes to administer compared to the hour or more for the CIDI and can be conveniently administered over the phone.

The CIDI-SF represents a sub-set of scales based on DSM-IIIR concordance for Major Depressive Episode, Generalised Anxiety Disorder, Simple Phobias, Social Phobia, Agoraphobia

without Panic, Panic Attacks, Obsessive-Compulsive Disorder, Alcohol Dependence, and Drug Dependence. Although the CIDI-SF has a number of limitations, including a lack of validation studies, the developers see it as being of use in general epidemiological research where a time consuming psychiatric interview may not be feasible (Kessler et al., 1998).

In the past several years there have been an increasing number of publications describing the use of the CIDI-SF for this purpose (Egede & Zheng, 2003; Goodwin & Pine, 2002; Pollack, Danziger, Seefeldt, & Jayakody, 2002; Rosen, Spencer, Tolman, Williams, & Jackson, 2003; Sturm & Gresenz, 2002; Wade, Cairney, & Pevalin, 2002; Young, Klap, Sherbourne, & Wells, 2001). The instrument is basically a structured interview with stem-branch logic where marker questions are asked for specific disorders and further questions are asked only if the respondent answers in the keyed direction.

5.3.3 The European Union Quality of Life Scale (EuroQOL)

The EuroQOL (EQ) was developed as part of a European multi-disciplinary research effort. The aim was to develop a non-disease specific instrument for describing health related quality of life and to be able to generate a single index for each health

state. Part of the aim was also to design a measure that was relatively easy for respondents to complete for themselves and short enough to ensure compliance (Brazier, Jones, & Kind, 1993; McDowell & Newell, 1996)). Since its development the EQ has been one of the most extensively evaluated quality of life instruments (Garratt, Schmidt, Mackintosh, & Fitzpatrick, 2002).

The EQ is a two-part questionnaire in which respondents report their health status using the EQ classification and rate their perception of their health status on a visual analogue scale. The EQ covers six domains including Mobility, Self-care, Usual Activity (e.g. work, study), Leisure Activity, Pain/discomfort, and Anxiety/depression. The scoring of the EQ is relatively complicated as it uses weights for the dimension based on regression analyses. The weights described by Brazier, et al.(1993, p. 171) were used in scoring the results for the respondents in this study.

5.3.4 The Symptom Checklist 90-Revised (SCL90R)

The Symptom Checklist-90-Revised (SCL-90R) is another very well established measure in psychological research. It has been used in an extensive array of research studies including investigations of it as a screening instrument and in outcomes

assessment (Derogatis, 1994a, 1994b; Derogatis & Lazarus, 1994; Schauenberg & Strack, 1999). Some more recent studies of primary care have used the SCL-90R and the GHQ in combination to improve screening and as multi-dimensional measures of outcome (Schmitz, Kruse, Heckrath, Alberti, & Tress, 1999; Schmitz et al., 2001).

It is a 90-item, multi-dimensional, self-report inventory first published in 1975. The scale measures symptomatic distress on nine primary dimensions and three global indices. The nine dimensions are somatisation, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism. The global indices are the Global Severity Index (GSI), the Positive Symptom Total (PST) and the Positive Symptom Distress Index (PSDI).

5.3.5 GP rating scales

The GP rating scales were developed to assess the degree to which the general practitioners were aware of the mental health needs of their clients and to allow a comparison of these assessments with the more structured assessments described above.

As the GPs had significant issues about time pressure and were reluctant to answer too many questions in relation to their clients, the assessment of these issues had to be kept simple. The GPs were not prepared to identify whether they had made a diagnosis for the client but they were prepared to identify what interventions they had carried out during the session. The GPs were also willing to rate the general health status of the client from the consultation.

So, GPs were asked to provide a rating of each client's physical and psychological wellbeing on a Likert scale ranging from 0 ('Worst possible state') to 100 ('Best possible state'). It was reasoned that even if the GP was not making a formal diagnosis an assessment of their global sense of the client's wellbeing would provide a measure of the GP's recognition of the client's mental health status.

Two other indirect assessments of the GP's recognition of mental health problems were included. These were obtained by having the GP report on the type of intervention that they used during the consultation and to report on whether they had referred any of the patients for mental health issues.

In reporting on intervention, the GPs recorded whether they had provided medication, counselling, a combination of these, or none of these, to the client during the session. Apart from being an indirect indicator of the GP's belief about the client's needs for intervention this also provides a picture of the type of intervention that the GPs were using for their patients. For referrals, GPs were asked to indicate whether they had made a mental health referral for the client and, if so, whether it was to the local mental health worker (if available), to a visiting mental health worker, to the regional mental health service, to a private mental health worker, or to some other counselling agency.

5.3.6 Additional patient data

The additional data that was collected on clients included standard demographic indicators including age, gender, and marital relationship. An indicator of employment status was also included because of the known association between socio-economic status and psychological problems (Glover et al., 1999a). This simply consisted of having subjects identify whether they were employed (fulltime or part time), unemployed, retired, or on a disabilities pension.

Although this was a crude indicator of socioeconomic status it was thought to be sufficient given that it was important not to have a time consuming screening survey and to be aware of sensitivities that people might have to reporting financial data.

Participants were also asked to record whether they had any chronic or severe physical conditions such as heart problems, diabetes, cancer, respiratory difficulties, etc, as there is a known association between physical illness and psychological disorders (Furukawa, Andrews, & Goldberg, 2002; Kisely & Goldberg, 1996b).

5.4 DATA COLLECTION AND RECORDING

All of the data that was collected for the research was stored on a Microsoft Access© database specifically designed by the author for this purpose (see Figure 5.4.1).

All questionnaire data collected at the various stages was entered on to the database. The data from the CIDI-SF was entered directly into the database at the time of the phone interview using a graphical front end module, programmed in Microsoft Visual Basic 6©, which automatically implemented the decision structure of the CIDI-SF.

Figure 5.4.1: Data entry screen for Clinical Outcome and Tracking System (COaTs) [©] database.

5.4.1 Data Processing and Analysis

The final data sets were obtained by a number of structured queries of the underlying tables in the COaTs[©] database which created a final data table containing the responses for each participant at each stage of the assessment. The final data table was imported into SPSS 11.0[©] and subsets of data for each stage of the design were developed from this.

Four statistical packages were used in the analysis of the data. SPSS 11.0[©] was used for the basic descriptive analyses, correlational analyses and for multivariate comparisons. STATISTICA 6.0[©] (StatSoft Inc, 2000), was used for factorial

analyses and structural equation modelling, the results of which are reported in Campbell, et.al. (2003). NORM (Schafer, 1999), a specialist statistical tool for multiple imputation of missing data, was used to address some of the issues due to participant attrition. Finally R (R Development Core Team, 2004), an open source language and environment for statistical computing and graphics, was used in the analysis of clinical significance using routines written by McGlinchey, et.al. (McGlinchey, Atkins, & Jacobson, 2002, 2003).

5.4.1.1 Clinical Significance

Until quite recently the assessment of the relevance of data in psychotherapy outcome studies has tended to rely on the utilisation of randomised controlled trials with data evaluated using inferential statistics. In addition to the debate about the ability of efficacy studies to answer questions about effectiveness there has been an increasing concern about the interpretations being made of inferential statistics. Many authors are critics of the existing practice, that can be seen in many research publications, of confusing statistical significance with either size of effect and/or power (Denis, 2003; Hager, 2000)). Although it is easy to confuse these related concepts, commentators suggest that the confusion is due primarily to a fundamental misunderstanding of probability

theory and the meaning of 'significance' as a technical term (Brandstätter, 1999; Matthey, 1998).

A related point is that 'significance' is often taken to indicate meaningfulness of results in the real world when the true mean differences or amount of variance accounted for is actually only minimally significant (Hudson, Thyer, & Stocks, 1985; McCartney & Rosenthal, 2000; Zakzanis, 2001). As a result, there has been an increasing focus in the literature on alternatives, or adjuncts, to null hypothesis significance testing (Bieliauskas, Fastenau, Lacy, & Roper, 1997; Brandstätter, 1999; Cumming & Finch, 2001; Olejnik & Algina, 2000; Rosnow & Rosenthal, 1992a, 1992b) and the development of specific procedures to assess clinically meaningful change (Ankuta & Abeles, 1993; Doctor, 1999; Hageman & Arrindell, 1999a, 1999b; Jacobson & Truax, 1991; Kazdin, 1999; Speer, 1992; Speer & Greenbaum, 1995; Thompson, 2002).

Because of the technical and practical complexity of some of the criteria for establishing clinical significance it is not a well known, or well understood, procedure particularly amongst clinicians, but most commentators would agree that these analyses should be part of the standard process for evaluating effectiveness of clinical interventions (Thompson, 2002) and that

editorial guidelines for publication should require the reporting of these statistics (Thompson, 2001, 2002)

The problem with the null hypothesis significance testing approach is that something can be significant statistically but be relatively meaningless in absolute terms. The probability value is affected by the size of the sample and even very small differences between means can be statistically significant if enough data is gathered.

A classic example of this is the correlation between shoe size and IQ. If enough people are asked, it is possible to identify a very small but statistically significant correlation between these two aspects of a person. Obviously this 'link' is not meaningful in the real world.

Another hypothetical example could be a weight reduction program. With 20 clients in either a control or treatment group a mean difference in weight between the groups of 0.1 kg is both statistically and programmatically insignificant. But, if the numbers per group are increased to 200 the difference becomes statistically significant with $p < 0.05$. With N=2000 the difference becomes significant with $p < 0.0001$. The mean difference

between the groups is still only 0.1 units and it is clear that by simply increasing N it is possible to create statistical significance.

The problem for real world clinic data is that samples tend typically to be small whereas experimental studies often recruit large numbers of subjects. Therefore, the analysis of real world data is more likely to lead to non-significant differences whereas controlled studies are more likely to show statistical significance.

With this in mind it becomes important to be able to report data in such a way that both power and practical significance is taken into account. Calculation of effect size has been identified as one solution to the issue (Fan, 2001; Matthey, 1998; Zakzanis, 2001) but as these approaches are also susceptible to the size of N they do not really address the fundamental issue of determining what differences are meaningful (Denis, 2003; Olejnik & Algina, 2000). Another suggestion has been to use statistical analyses that are more relevant to clinically derived data and to identify criteria of significance that are statistically and heuristically meaningful (Kazdin, 1999).

The best known approach in this direction is that suggested by Jacobsen and a range of collaborators (Jacobson & Truax, 1991). Although there have been many other proposals of

methods and criteria for evaluating clinical significance, the work of Jacobson and others forms the basis for much of the discussion and many authors propose variations for calculation without opposing the fundamental derivations that they make. A recent review of a range of methods for evaluating clinical significance also strongly endorsed using Jacobson's approach as the more robust approach (Speer & Greenbaum, 1995).

The basic principle underlying Jacobson's work is the assumption that a change which is 'clinically significant' will have something to do with a return to normal levels of functioning. This then leads to an assumption that people seeking therapy fall within a distinct, 'dysfunctional', population as regards some domain of measures of symptomatology, functioning, quality of life, and so on.

From this it can be argued that there are three possible ways to operationalise clinically significant change following treatment; (1) that their functioning should lie outside the dysfunctional range, where 'range' is defined as two standard deviations beyond the mean (depending on the score direction of the scale) for that population; (2) or, that functioning should fall within the range of the functional, or normal, population within an agreed number of standard deviations; (3) or, that the level of

functioning after therapy is closer to the mean of the functional

population than to the mean of the dysfunctional population

(Jacobson & Revenstorf, 1988; Jacobson & Truax, 1991).

Jacobson and Truax(1991) point out that the third

operationalisation is the least arbitrary as it relies on having

established parameters (means and variances) for both the

functional and dysfunctional populations. The first two approaches

rely on researchers choosing a degree of variance for range that is

not based on established properties of the measures used - thus

making the choices somewhat arbitrary.

If the third procedure is used it is simply a matter of

establishing a cut-off score (C_{cutoff}) based on the mean of the

functional population ($\bar{X}_0$), the mean of the dysfunctional

population ($\bar{X}_1$) and the variance of the two distributions. If the

variances of the two distributions are equal then the formula for c

is:

$$C_{cutoff} = \frac{(\bar{X}_0 + \bar{X}_1)}{2}.$$

The situation is a bit more complicated if the variances are

different as the standard deviation of the functional distribution

(σ_0) and the standard deviation of the dysfunctional distribution

(σ_1) have to be factored in. Nonetheless, the calculation is still quite straightforward:

$$C_{cutoff} = \frac{(\overline{X}_0.\sigma_1 + \overline{X}_1.\sigma_0)}{\sigma_0 + \sigma_1}.$$

The value of C_{cutoff} provides a mark beyond which a score must fall to be considered to have moved from a dysfunctional level to a functional level, as illustrated in Figure 5.4.2.

But, it is also necessary to evaluate whether the quantum of change is large enough to be considered statistically reliable which requires the calculation of a Reliable Change Index (Jacobson & Truax, 1991). This is only relevant where there is an overlap in the distributions of functional and dysfunctional populations, which is the case for most measures, since if there is no overlap C_{cutoff} represents a clear demarcation line between functional and dysfunctional scores. The calculation of a RCI is somewhat more complicated as it relies on calculating the standard error of difference between two scores which is dependent on knowing the standard error of measurement for the scale being used.

Nevertheless, if this information is available, it is possible to identify whether the difference between the pre and post scores

exceeds the z-score for a chosen probability level (i.e. z=1.96, p<0.05) and, if it does, be relatively confident that the post-test score reflects a 'real' change.

Figure 5.4.2: The cut-off point defines the boundary for clinically significant change
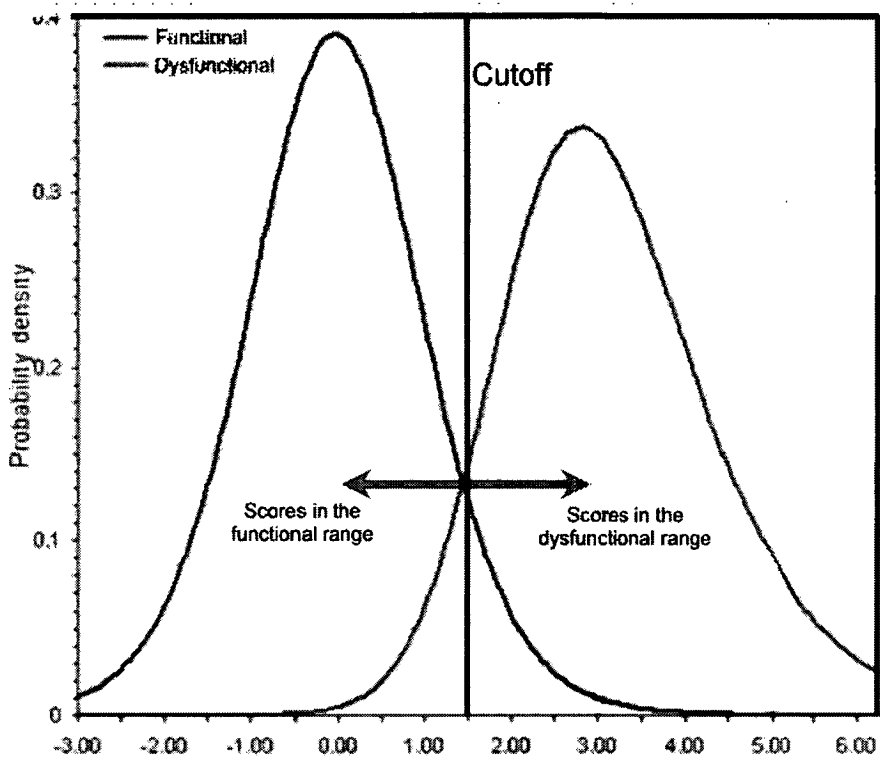
Although these criteria can be developed when there is only limited information about the validity and reliability for the scales being used there is no doubt that the assumptions that have to be made in these cases lead to either conservative or lenient cut-offs. It is far better to have normative data on a test that allows estimates of functional and dysfunctional population means and variances.

At this stage there are very few clinical instruments used in measuring clinical change that have this range of normative data, particularly allowing comparisons between functional and dysfunctional population means and variances. The SCL90-R is one of those few instruments that have the range of parameters fairly well established. In addition, the SCL90-R has been used in a group of recent studies exploring the mental health of primary care patients in Germany in which clinical significance was assessed (Schauenberg & Strack, 1999).

By using the two criteria for clinical significance, (a) a score moving beyond the cut-off and (b) the quantum of change being reliable (RCI), Schauenberg and Strack (SCHPP99) developed five possible categories for change;

1. <u>Recovered</u>, where the patient's post-test score is reliable in the positive direction and is past the cut-off,

2. <u>Improved</u>, where the patient's post-test score is a reliable change in the positive direction but does not cross the cut-off

3. <u>No Change</u>, where the post-test score does not move beyond the cut-off and the magnitude of change, if any, is small.

4. <u>Worse</u>, where the patient's post-test score is reliably different in the negative direction but doesn't exceed the cut-off

5. <u>Deteriorated</u>, where the patient's post-test score is reliably different in the negative direction and passes the cut-off

However, there are a number of practical difficulties with these operationalisations of change. Firstly, it is not possible to identify 'deterioration' for already dysfunctional patients since, by these criteria, for patients whose pre-test scores are in the dysfunctional range there is unlikely to be a cut-off established for more dysfunctional scores.

A similar sort of problem arises where a patient's pre-test score is elevated but not in the dysfunctional range and so below the cut-off. If these patient's post-test scores change they can only be evaluated by whether they have changed reliably so they can only be identified as 'improved' not 'recovered'. This is a meaningful difficulty since no measure is 100% accurate and

there will be a number of patients who have 'true' pathology but who may only have elevated scores within the functional range of a measure. It would still be useful to identify whether these patients have changed following treatment.

The only realistic way to manage these issues is to take an exploratory approach to the data and make some assessment of the extent to which these 'boundary' cases in the dataset may lead to misrepresentation of the results.

It is worth bearing in mind, anyway, that results from these analyses are typically more conservative than results from inferential statistics. Data that looks very good using statistical significance is frequently much less encouraging using this analysis and frequently shows overall rates of improvement for programs between 30% and 40% (Kazdin, 1999; Schauenberg & Strack, 1999). However these percentages are more in line with clinician's experience of changes for their clients in the real world and may be more realistic.

At this stage of the development of the concept of clinical significance, though, there are few hard and fast criteria and the evaluation of clinically meaningful change cannot be solely a statistical procedure (Ankuta & Abeles, 1993).

5.4.2 A short note on missing data (MD)

As with all longitudinal studies, and particularly studies that are carried out in actual service environments, there is an issue in this study of missing data. Until quite recently missing data has been seen as a nuisance and something of a threat to the validity of a study (Cool, 2000). But, over the past 15 years there has been an increasingly sophisticated treatment of missing data based on the use of computers for computationally intense mathematical procedures and a growing application of Bayesian approaches by statisticians (Roth, 1994). At this point in time the advanced statistical techniques for managing missing data are just entering the mainstream of applied research in the fields of medicine and psychology. General statistical software packages do not currently include missing data procedures that are identified as best practice although some of the more specialist packages are starting to include these approaches. There are also some MD software applications available that have been written by statisticians and researchers in the field (Rubin, 1988).

A more complete discussion of the concepts involved in managing missing data can be found in Appendix 1. That discussion provides the context for the decision to use Multiple Imputation (MI) procedures in analysing the research dataset in

this study. MI procedures are conceptually simple but computationally complex and they have been well established as the most appropriate procedure to use with datasets where substantial amounts of data are missing either at random (Missing At Random: MAR) or in a way that is connected to the missingness (such as example to be supplied) (Missing Not At Random: MNAR) (Arnold & Kronmal, 2003; Briggs, Clark, Wolstenholme, & Clarke, 2003; Patrician, 2002; Rubin, 1988; Schafer & Graham, 2002; Sinharay, Stern, & Russell, 2001; Yuan, 2000; Zhou, Eckert, & Tierney, 2001).

In the simplest of terms MI involves generating models of the distribution of the missing data and then filling in the missing data points in the original dataset by selecting values at random from the distributions. The process of replacement is repeated a number of times so that a multiple number of complete datasets is generated. Each of these complete datasets is then analysed using standard statistical methods, which is one of the main advantages of MI approaches, and the resulting parameters and estimates are combined using simple mathematical approaches. This set of steps to an analysis has been described as Imputation, Analysis, and Pooling (van Buuren, 1999) and is illustrated in Figure 5.4.3.

5.4.2.1 Approach Used

In the present study, imputation of missing data was performed selectively to replace missing data in only two of the panels of analysis. The statistical package NORM© was used to develop 10 complete imputed datasets for the second stage of the evaluation replacing missing data for those participants who dropped out from stage 1. The same package was used to impute 10 complete datasets for the evaluation of change from the second to third stage assessments and replaced the missing data for those who had dropped out from stage 2.

Figure 5.4.3: A figurative model of multiple imputation (Adapted from the Multiple Imputation Online website (van Buuren, 1999)
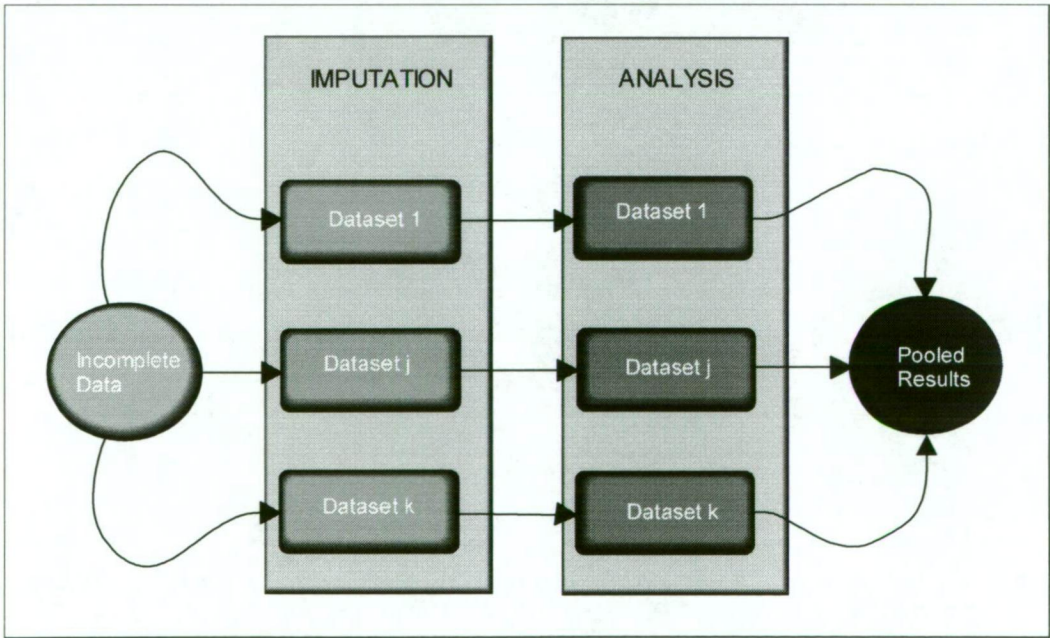
Each of the imputed datasets was then analysed in the same manner as the related incomplete dataset using SPSS 11.0[©] so that for each analysis there were the results from the incomplete dataset and 10 sets of results from the imputed data.

The estimates of effects and variances obtained from the analysis of the imputed data were then combined using NORM[©] which provides adjusted averages of the estimates of both effects and variances. In addition the efficiency of these estimates, which provides a very rough measure of confidence in the estimates, was calculated based on the number of imputed datasets and the estimated rate of missing information.

5.5 **METHODOLOGICAL ASSUMPTIONS**

Very often it has been found that interventions that have moderate to strong effects under controlled conditions have weak or no effects in 'real world' clinical practice (e.g. the Fort Bragg study; (Barnes, Stein, & Rosenberg, 1999)). One of the fundamental assumptions of this research is that it is possible to meaningfully compare groups of participants who are not randomly allocated to treatment or control conditions. Although this is a contentious area it is arguable that randomisation actually distorts the picture because in the 'real world' clients

select their level of involvement with services. In addition there is usually a high level of drop-out from randomised conditions and this attrition clearly threatens the basic validity of data collected (Fairhurst & Dowrick, 1996).

Recently the National Institute of Mental Health in the US changed its funding guidelines to promote research of 'effectiveness', and not just 'efficacy', in psychological treatment. The NIMH emphasises the necessity for the development of evidence that is applicable and generaliseable to the actual clinical practice settings where services are provided (Niederehe, Street, & Lebowitz, 1999; Norquist et al., 1999).

There continues to be considerable debate about appropriate methodologies for evaluating effectiveness of psychological intervention (Bohart, O'Hara, & Leitner, 1998; Buetow, 2002; Chambless & Ollendick, 2001; Sackett, Rosenberg, Muir Gray, Haynes, & Richardson, 1996) but it is now generally well accepted that the most appropriate designs will be quasi-experimental and naturalistic (Henry, 1998; Hohman & Shear, 2002; Lipsey & Cordray, 2000; Roth & Parry, 1997; Sackett & Wennberg, 1997; Speer, 1994).

5.5.1 **Limitations**

As with any design there are difficulties with the methodology used and there are some difficulties with the methodology utilised here too. Perhaps the most obvious was that of subject attrition. In this study there was a loss of a very large number of participants from the primary care group because of an inadequate filing system.

The main approach to evaluating prevalence of psychological disorder in the primary care population was by using a two-stage epidemiologic survey. This type of survey involves the large scale screening of the population of interest. The screening tool needs to be proven to have high levels of sensitivity and specificity to the disorder of interest. The scores on the screening instrument are then used to randomly resample a number of subgroups from the total population to provide a stratified sample (Dunn, 1999) who are then more completely assessed using the 'gold standard' diagnostic procedure.

The intent of the resampling aspect of the design is to enable accurate estimation of population parameters such as prevalence without having to administer expensive and time consuming structured diagnostic interviews to all patients. This type of design enables the recruitment of very large subject

populations and provides statistical parameters for drawing population level conclusions.

The loss of such large numbers of primary care participants made it difficult to stratify the sample without losing large amounts of data. Therefore, it was decided to follow up as many of the participants as possible and to correct for non-random stratification using weighted estimated procedures (Dunn, 1999). Whilst not entirely satisfactory this nonetheless allowed for some reasonable estimates to be made.

5.6 OPERATIONAL HYPOTHESES

The basic thrusts of the hypotheses generated from the literature can be stated relatively easily. However, there was a considerable degree of complexity to the research design and to the data that was collected that is harder to include in these descriptions. Essentially a number of measures of the hypothesised effects were utilised and it is the mix of these that is complicated to describe.

The three domains of enquiry that were explored in this study were the general prevalence of psychological disorder in the primary care population, the ability of the GPs to identify

psychological distress in their patients, and comparison of differences in outcome between the 4 groups.

5.6.1 **Prevalence of psychological disorder**

The two main measures of the degree of psychological disorder in the primary care participants were the GHQ and the CIDI-SF. On the basis of the existing literature it was expected that there would be no difference in prevalence between this group of rural patients and other studies of both rural and urban primary care populations.

It was expected that a substantial percentage of participants, between 30% and 40%, would score above the cut off on the GHQ for identification of possible caseness. It was also expected that the estimated rate of prevalence, based on a diagnosis assigned by using the CIDI-SF, would be about 25%.

5.6.2 **GP rating and psychological disorder**

The main assessment of GP 'recognition' of psychological disorder was the 10-point Likert scale. This is not the sort of scale that has been used in previous studies so it is somewhat more difficult to draw comparisons. Previous studies have used more strict diagnostic formulations and have basically found that GPs

were poor at recognising psychological disorder. On the assumption that this measure is a reasonable operationalisation of the concept of GP recognition it would be expected that there would be little concordance between the GP rating and other measures of psychological disorder.

Thus, it would be predicted that there would be minimal correlation between the GP ratings and scores on the GHQ and the SCL90. It would also be expected that the GP rating would contribute little to the prediction of psychiatric diagnosis on the CIDI-SF.

5.6.3 Differences in outcome

There is good evidence in the literature that psychological intervention in primary care settings has a moderate positive benefit. Though it is also apparent that this benefit has effectively disappeared after 6-12 months, and intervention groups do as well as treatment as usual groups, in long term follow up. There is, however, no literature on the relative benefits of psychological intervention in rural settings provided by a locally resident service provider.

Conservatively, it would be expected that psychological treatment provided by either the local mental health worker

(LMHW) or the visiting mental health service (OMHW) should be equally beneficial and that both groups should show positive gains over the untreated control group (UTC). Depending on whether the UTC is considered as a 'treatment as usual' group it might also be expected that there will be no differences in outcome between the treatment and control groups by the 12 month assessment.

Therefore it would be expected that all the groups will show significantly lower scores on the SCL90 scales at the follow up assessment than at the initial assessment but that there will be no significant differences between the groups in the amount of decrease. Conversely it would be expected that all three groups would show significantly higher scores on the EQ measures at the second assessment and no differences between the groups.

5.7 SUMMARY

The design for this study was necessarily quite complex as the purpose of the research was multifaceted. In addition to being interested in whether a model of locally delivered mental health care was more effective than 'treatment as usual' this study was concerned with broader questions about the prevalence of

psychological problems in a rural primary care population and the effectiveness of GPs in identifying psychological distress.

To achieve these aims a three stage methodology was used. The first and second stages constituted the basis for a two-stage epidemiological survey in which data was gathered in relation to risk, prevalence and GP recognition of psychological disorder. The second and third stages constituted pre- and post-treatment stages of a longitudinal clinical evaluation.

The methodology and design were based on naturalistic and quasi-experimental principals and no efforts were made to select or randomise the treatment and non-treatment groups. Although there is the inherent threat to internal validity in this design the potential for greater external validity and the greater likelihood of being able to complete the study were significant strengths.

The most significant limitation to this study was the difficulty of participant attrition. One approach to this was to utilise advanced statistical analysis in the form of multiple imputation of missing data to support the inferential analyses of the incomplete data sets. In addition procedures for evaluating clinical significance were used which, although conservative, can

provide a clearer picture of change in either large or small data

sets.

Chapter 6: Results

Get your facts first, and then you can distort them as much as you please.

Mark Twain(1835-1910)

6.1 STRUCTURE OF THE DATA COLLECTED

As indicated previously, this research utilised a two-stage design which involved three stages of data collection- (a) Screening, (b) Diagnostic Follow-Up, and (c) Review. This approach is presented illustratively in Figure 5.2.1(pp.170). The numbers of participants in each of these stages declined over the course of the study, hence the previous discussion of missing data analysis, and Figure 6.1.1 provides a graphical description of the numbers of subjects in each stage.

Figure 6.1.1: Numbers of participants by stage of study.
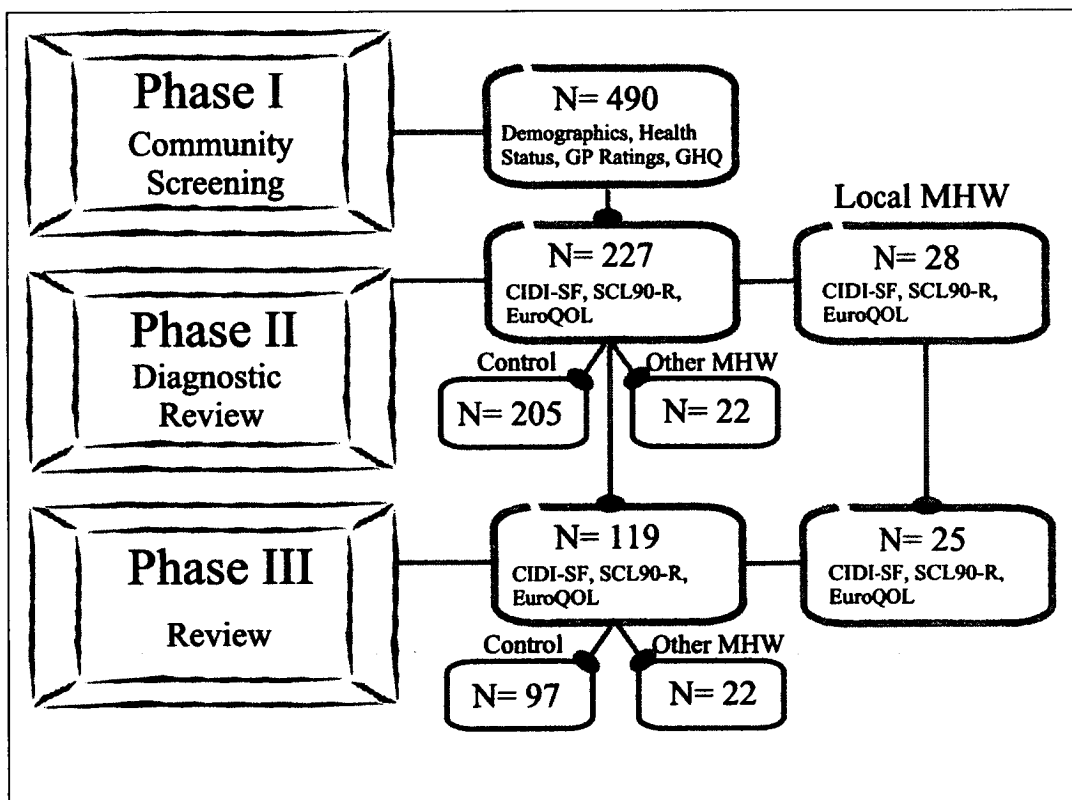
The total number of participants throughout the study was 518 with 490 recruited through the Primary Health (PH) screening and 28 recruited from clients of the Local Mental Health Worker (LMHW). Of the 490 PH participants 227 (46%) went on to complete the second stage and 119 (24%) completed all three stages. Of the 28 LMHW participants 25 (89%) went on to complete the third stage of assessment.

The PH participants were able to be further categorised on the basis of whether they had been seen by a mental health professional over the course of the study. In total 22 PH participants had been seen by another mental health worker. The remaining 205 PH participants thus formed a control group to the two identified treatment groups – Local Mental Health Worker and Other Mental Health Worker.

The control group was further categorised into those participants who were identified on the CIDI-SF as having a diagnosable mental health problem and those who were not. This allowed the establishment of a 'healthy' control group (NC, N=105), made up of those participants who did not receive a diagnosis and did not receive treatment, and an 'untreated' control (UTC, N=105), made up of those participants who received a diagnosis and who did not receive treatment. The

numbers of subjects in each of the comparison groups at each of

the stages of the research is shown in Figure 6.1.1.

Figure 6.1.2: Numbers of subjects in Comparison Groups

Count

		Comparison Groups				
		Local MHW	Other MHW	Untreated Control	Normal Control	Total
Phase Completed	Phase II	3	-	57	51	111
	Phase III	25	22	43	54	144
Total		28	22	100	105	255

The following sections will describe the data collected, and

results of various analyses, by loosely following the stages in

which the data was collected. It will obviously be important to

analyse the 'missingness' of the data available to establish

whether any of the factors being studied are correlated with the

absence of data. However, this will be left until the data

describing the various samples is presented.

6.1.1 Demographics Details

The demographic data is presented in Figure 6.1.3. This

provides details on the primary care participants separated into

those who completed the screening stage only, and then those in

the Control groups and the Other MHW groups. The demographic

details that were available for the Local MHW participants are presented in the last column.

Figure 6.1.3: Demographic details of the study participants

		Completed Stage 1		Control Groups		Other MHW		Local MHW		Total	
		Count	Col %	Count	Col %	Count	Col %	Count	Col %	Count	Col %
Location	East Coast	160	60.8%	84	41.0%	7	31.8%			251	48.5%
	North East	78	29.7%	79	38.5%	11	50.0%	28	100.0%	196	37.8%
	North West	25	9.5%	42	20.5%	4	18.2%			71	13.7%
Gender	Male	90	34.2%	61	29.8%	6	27.3%	17	60.7%	174	33.6%
	Female	167	63.5%	138	67.3%	15	68.2%	11	39.3%	331	63.9%
	Unknown	6	2.3%	9	2.9%	1	4.5%			13	2.5%
Age Range	16-25 yrs	39	14.8%	15	7.3%	1	4.5%	3	10.7%	58	11.2%
	25-35 yrs	40	15.2%	27	13.2%	2	9.1%	3	10.7%	72	13.9%
	35-45 yrs	56	21.3%	47	22.9%	2	9.1%	6	21.4%	111	21.4%
	45-65 yrs	80	30.4%	84	41.0%	14	63.6%	7	25.0%	185	35.7%
	65+ yrs	44	16.7%	30	14.6%	2	9.1%	1	3.6%	77	14.9%
	Unknown	4	1.5%	2	1.0%	1	4.5%	8	28.6%	15	2.9%
Occupation	Employed FT	60	22.8%	50	24.4%	4	18.2%	2	7.1%	116	22.4%
	Employed PT	50	19.0%	35	17.1%	5	22.7%	1	3.6%	91	17.6%
	Home Duties	30	11.4%	26	12.7%					56	10.8%
	Retired	65	24.7%	48	23.4%	5	22.7%			118	22.8%
	Unemployed	22	8.4%	25	12.2%	1	4.5%	1	3.6%	49	9.5%
	Disabled	21	8.0%	8	3.9%	4	18.2%	1	3.6%	34	6.6%
	Unknown	15	5.7%	13	6.3%	3	13.6%	23	82.1%	54	10.4%
Medical Condition	Diabetes	2	.8%	3	1.5%					5	1.0%
	High BP	32	12.2%	26	12.7%	3	13.6%			61	12.4%
	Asthma	11	4.2%	11	5.4%					22	4.5%
	Stroke			1	.5%					1	.2%
	Heart condition	3	1.1%	6	2.9%	2	9.1%			11	2.2%
	Breathing problem	3	1.1%	2	1.0%					5	1.0%
	Cancer	3	1.1%							3	.6%
	Arthritis	18	6.8%	13	6.3%	1	4.5%			32	6.2%
	Other condition	10	3.8%	5	2.4%	1	4.5%			16	3.3%
	Multiple condition	33	12.5%	35	17.1%	3	13.6%			71	14.5%
	No medical condi...	148	56.3%	103	50.2%	12	54.5%			263	53.7%

The gender mix of the primary care participants was what might be expected with the majority being female (68% vs 32%). There was a relatively even spread of ages across the sample though there was some skewing towards older clients. The occupational groupings of the clients tended to over represent

retired, unemployed and disabled clients and under represent

clients in employment. Nearly half of this group had no

established or chronic medical condition whilst 15% had a

multiple number of established conditions. The number of clients

with single established medical conditions was relatively evenly

spread although high blood pressure and arthritic conditions were

present at a relatively high rate.

6.1.1.1 Other Mental Health Worker

The twenty two clients who received a mental health service

tended to be largely female (68% vs 27%). The range of ages

was probably not particularly informative given the numbers but

the majority of the clients (67%) were in the older (45-65 yrs)

age range. Interestingly a large number of the group were

employed full or part time, a substantial number were retired,

only one was unemployed, and four were disabled. Just over half

(55%) had no chronic medical condition, seven (32%) had one

chronic condition and three (14%) had a multiple number of

conditions.

6.1.1.2 Local Mental Health Worker

During the initial period of the study, which was dated from

the time that data was being collected from the GP surgeries, all

of the new clients of the local mental health Worker were asked whether they would participate. The acceptance rate was 91% with 28 clients agreeing to be involved and 3 declining. The gender mix of these clients was quite unusual for this type of study insofar as there were more males than females (61% vs 39%). Dates of birth were missing for 28% of the group but the range for the remainder was generally reflective of the primary care population age ranges except that fewer clients were aged 65+. No information was collected on these clients as to occupational or medical status.

6.2 ANALYSIS OF MISSING DATA

As has been mentioned there was a dramatic loss of participants between the first and second stage of the study. The primary cause of this loss of participants was the inability to follow up clients located in the East Coast locations due to problems with file numbers. This can be seen in Figure 6.2.1 which shows that 64% of participants from the East Coast completed only Stage 1 compared to 40% from the North East and 35% from the North West.

However, it is important to explore whether the loss of data may have been due to any systematic bias, particularly related to

the participants mental health status. If participants failed to go

on to other stages because of something to do with their mental

health the assumption that the data is missing due to unrelated or

random causes is less sustainable and any imputation of missing

data needs to take this into account.

Figure 6.2.1: Participants completing each stage by Location

		Stages Completed					
		Stage 1		Stage 1 and 2		All Stages	
		Count	Row %	Count	Row %	Count	Row %
Location	East Coast	160	63.7%	46	18.3%	45	17.9%
	North East	78	39.8%	43	21.9%	75	38.3%
	North West	25	35.2%	22	31.0%	24	33.8%
Total		263	50.8%	111	21.4%	144	27.8%

The relationship of the various factors with missingness was

evaluated by regressing all of the demographic variables as well

as GHQ scores on to a dichotomous category of Stages Completed

using binary logistic regression. The dependent variable of

completed stages was constructed by classifying all participants

who completed Stage 1 or Stage 2 as 'non-completers' and those

who completed all 3 stages as 'completers'. All of the categorical

predictor variables were dummy coded into sets of dichotomous

variables prior to entry into the analysis.

The results of the regression analysis are presented in

Figure 6.2.2. From this it can be seen that Location contributes

significantly to completion (Wald=14.46, P<0.001) with the East

Coast category being the only significant factor (B = -1.241,

s.e.=0.347, Wald=12.936, P<0.001) and the negative estimate

indicating that East Coast participants were more likely to appear

in the 'non-completers' category.

Figure 6.2.2: Estimates of Logistic regression of variables on stages of completion.

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a] LOCATION			14.464	2	.001	
East Coast	-1.248	.347	12.936	1	.000	.287
North East	-.543	.340	2.550	1	.110	.581
AGE RANGE			11.046	4	.026	
16-25 yrs	-1.140	.679	2.822	1	.093	.320
26-35 yrs	-.895	.612	2.139	1	.144	.408
36-45 yrs	.156	.545	.081	1	.776	1.168
46-65 yrs	.090	.435	.043	1	.836	1.094
GENDER	-.117	.276	.181	1	.671	.889
OCCUPATION			2.437	5	.786	
Employed FT	.701	.549	1.631	1	.202	2.016
Employed PT	.606	.567	1.142	1	.285	1.832
Home Duties	.828	.608	1.852	1	.174	2.288
Retired	.632	.584	1.173	1	.279	1.882
Unemployed	.884	.626	1.993	1	.158	2.420
MEDICAL STATUS			3.111	2	.211	
One Condition	.296	.287	1.064	1	.302	1.345
Multiple Conditions	.663	.380	3.051	1	.081	1.942
GHQ12_T1	.070	.036	3.894	1	.048	1.073
Constant	-1.226	.771	2.531	1	.112	.293

a. Variable(s) entered on step 1: LOCATION, AGERNGE, GNDR, OCCUP, MEDSTAT, GHQ12_T1.

There is also an effect for age (Wald=11.046, P<0.05),

though none of the separate categories show a significant

relationship. However, participants aged 16-25 years appeared to

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was higher for those participants who went on to complete all

three stages (2.84 vs 2.36 and 1.94). This difference is

statistically significant but post-hoc analyses indicated that the

only significant difference was between the mean of those

completing Stage 1 only and those who completed all stages

(X_{diff}=-0.86, s.e.=0.347, p<0.05).

Figure 6.2.4: Frequency of GHQ scores for participants grouped according to completion.

	Not Completed		Completed	
	GHQ12 at T1		GHQ12 at T1	
	Count	%	Count	%
0	172	46.4%	42	35.3%
1	62	16.7%	27	22.7%
2	25	6.7%	11	9.2%
3	25	6.7%	7	5.9%
4	18	4.9%	4	3.4%
5	20	5.4%	4	3.4%
6	11	3.0%	3	2.5%
7	12	3.2%	4	3.4%
8	7	1.9%	1	.8%
9	7	1.9%	2	1.7%
10	1	.3%	5	4.2%
11	4	1.1%	2	1.7%
12	7	1.9%	7	5.9%
Total	371	100.0%	119	100.0%

From looking at Figure 6.2.4 it seems clear that the main

difference between the completers and the non-completers was

that a slightly higher percentage with very high (10-12) scores completed all stages.

6.2.1 **Summary**

The single biggest factor effecting whether participants completed the study was whether they were recruited from the East Coast with those from the East Coast being much less likely to be completers. There were minor effects for age and medical condition but these did not achieve statistical significance. There was a statistically significant effect for GHQ with those participants having higher GHQ scores being slightly more likely to complete the study. A comparison of mean GHQ scores for each stage of completion showed that this effect was only present from Stage 1 to Stage 2.

6.3 DEMOGRAPHICS AND GHQ & GP RATINGS IN STAGE 1

Most of the results presented in this section have previously been reported by Campbell, Walker and Howard (2001). Another publication, by Campbell, Walker and Farrell (2003), has utilised

the data from stage 1 to explore the factor structure of the

GHQ12 in an Australian population[5].

Although the 20-item version of the GHQ was used in this

study the correlation between the 12-item version and the 20-

item version was very high ($r = 0.98, N = 490$ $p < 0.001$) making the

two versions effectively equivalent. Therefore only the results of

the GHQ12 were considered in further analyses as this is the most

researched version.

The basic properties of the GHQ12 for all those in the PH

screening stage are presented in Figure 6.3.1, Figure 6.3.2, and

Figure 6.3.3.

Some 214 (43.7%) of participants scored zero on the GHQ

and 119 (24.2%) scored over 3. The cut-off score for 'caseness'

on the GHQ12 in the general population has generally been set at

2/3 (McDowell & Newell, 1996) and at this level the percentage of

participants who have an increased likelihood of being diagnosed

with a psychological disorder is 151/490 (30.8%).

The skew in the distribution is generally a feature of the

GHQ, and probably most case finding instruments, as many more

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[5] These publications are attached to the back cover of the thesis in an envelope marked "Publications".

people in the population will have no symptoms at all than those

who have some. Nonetheless this distribution suggested that

about a third of participants had some level of psychological

disturbance.

Figure 6.3.1: Details of the GHQ12 at Stage 1

GHQ12 at T1

N	Valid	490
	Missing	0
Mean		2.24
Std. Deviation		3.157
Skewness		1.606
Std. Error of Skewness		.110
Kurtosis		1.762
Std. Error of Kurtosis		.220

The GP Rating scales, which were simple Likert ratings of

the participant's psychological and physical well-being, were also

somewhat skewed in their distributions though the scalar nature

of the rating seems to have allowed a more normal distribution of

scores (Figure 6.3.4,pp. 235 and Figure 6.3.5, pp. 236). The

descriptive statistics for both scales are provided in Figure 6.3.6

(pp. 236).

There was a moderate positive correlation between the GP

ratings of physical and psychological wellbeing ($r = 0.520$).

Figure 6.3.2: Distribution of scores on the GHQ12 at Stage 1.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	214	43.7	43.7	43.7
	1	89	18.2	18.2	61.8
	2	36	7.3	7.3	69.2
	3	32	6.5	6.5	75.7
	4	22	4.5	4.5	80.2
	5	24	4.9	4.9	85.1
	6	14	2.9	2.9	88.0
	7	16	3.3	3.3	91.2
	8	8	1.6	1.6	92.9
	9	9	1.8	1.8	94.7
	10	6	1.2	1.2	95.9
	11	6	1.2	1.2	97.1
	12	14	2.9	2.9	100.0
	Total	490	100.0	100.0	

The correlations between the GHQ and GP ratings are provided in Figure 6.3.7 (pp. 237). There was a moderate correlation between the GHQ12 and psychological wellbeing ($r = -0.403$) and a weak correlation between the GHQ12 and physical wellbeing ($r = -0.205$).[6]

The apparent relationship between GHQ scores and GP rating of wellbeing was further explored by comparing the mean GP ratings for participants screened for caseness on the GHQ

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[6] Because the GP rating scales are scored in the opposite direction to the GHQ, higher scores equating to higher wellbeing, the negative correlations actually represent positive association.

(Figure 6.3.8, pp. 237). Those participants who were identified as cases on the GHQ were rated an average of 14.5 points lower on psychological wellbeing than those who were not identified as cases.

Figure 6.3.3: Histogram of GHQ12 at Stage 1.

GHQ12 at T1
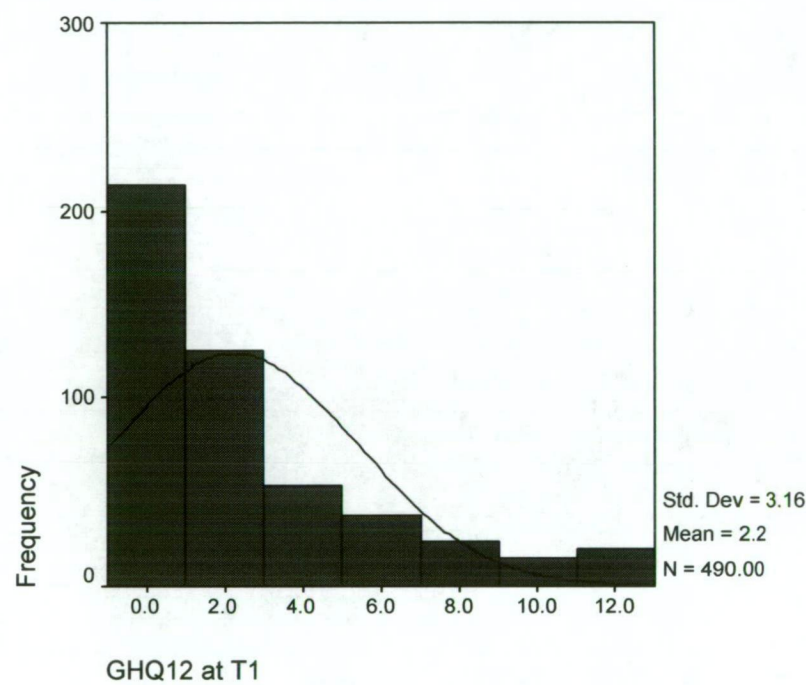
This difference was statistically significant ($t = 6.69, df = 468. p < 0.001$). There was also a statistically significant difference between cases and non-cases on ratings of physical wellbeing with scores of people identified as cases being 8.8 points lower than non-cases ($t = 4.20, df = 468. p < 0.001$).

Figure 6.3.4: Distribution of GP rating of Physical wellbeing.

Physical Rating(GP)
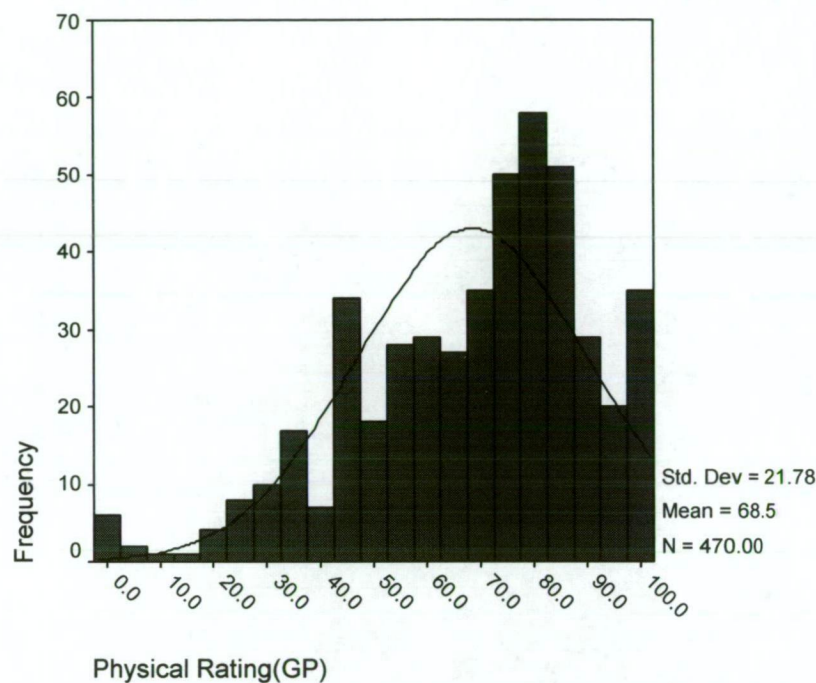
The relationship between physical and psychological wellbeing, GHQ scores and the demographic data is provided in Figure 6.3.9 (pp. 239), Figure 6.3.10 (pp. 240), Figure 6.3.11 (pp. 241), and Figure 6.3.12 (pp. 242).

There were no significant differences on gender for GHQ scores ($t = -0.93, df = 475.n.s.$) or rating of physical wellbeing ($t = -0.27, df = 456.n.s.$). However, psychological wellbeing was rated significant lower ($X_{diff} = 4.55$) in women than men ($t = 2.02, df = 456.p < 0.05$).

Figure 6.3.5: Distribution of GP rating of Psychological wellbeing.

Std. Dev = 22.78
Mean = 70.9
N = 470.00

Psychological Rating(GP)
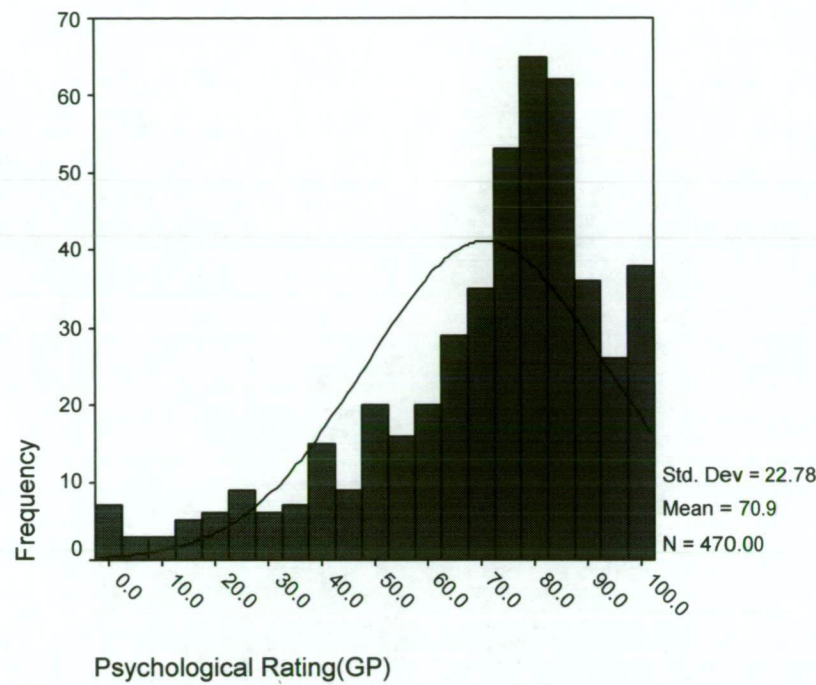
Figure 6.3.6: Descriptive statistics for GP ratings of Physical and Psychological Wellbeing.

		Physical Rating(GP)	Psychological Rating(GP)
N	Valid	470	470
	Missing	20	20
Mean		68.52	70.86
Std. Deviation		21.780	22.777
Skewness		-.781	-1.146
Std. Error of Skewness		.113	.113
Kurtosis		.324	.945
Std. Error of Kurtosis		.225	.225

Figure 6.3.7: Correlations between GHQ12 and GP Ratings.

		Physical Rating(GP)	Psychological Rating(GP)	GHQ12 at T1
Physical Rating(GP)	Pearson Correlation	1	.520**	-.205**
	Sig. (1-tailed)	.	.000	.000
	N	470	470	470
Psychological Rating(GP)	Pearson Correlation	.520**	1	-.403**
	Sig. (1-tailed)	.000	.	.000
	N	470	470	470
GHQ12 at T1	Pearson Correlation	-.205**	-.403**	1
	Sig. (1-tailed)	.000	.000	.
	N	470	470	490

**. Correlation is significant at the 0.01 level (1-tailed).

There were significant differences in physical wellbeing

($F = 6.60, df = 4/462, p < 0.001$) and GHQ scores

($F = 2.91, df = 4/482, p < 0.05$) for different age categories. There

were no significant differences on psychological wellbeing.

Figure 6.3.8: Means for GP ratings for cases and non-cases on the GHQ12.

		N	Mean	SD	S.E.
Psychological Rating	Screen -ve	323	75.39	18.352	1.021
	Screen +ve	147	60.89	27.898	2.301
Physical Rating	Screen -ve	323	71.27	19.571	1.089
	Screen +ve	147	62.49	25.015	2.063

Post-hoc analyses identified that on physical wellbeing

those in the '45-65' category were rated lower than some, but not

all, of the other categories. On the GHQ the main differences was

for participants in the '65+' category who scored lower than those in the '45-64' category.

There were significant differences in means for Occupational Status on GHQ ($F = 4.17, df = 5/458, p < 0.001$), physical wellbeing ($F = 5.24, df = 5/442, p < 0.001$), and psychological wellbeing ($F = 3.25, df = 5/442, p < 0.01$). This was primarily due to those in the 'Disabled' category scoring at very much lower levels than nearly all of the other categories.

The Medical Conditions category was simplified by collapsing the various possible conditions into categories of 'No Condition', 'One Condition', or 'Multiple Conditions'. There were no significant differences between these categories on either psychological wellbeing or GHQ scores. There was, however, a significant difference between the categories on physical wellbeing ($F = 15.50, df = 2/469. p < 0.001$). The differences were due to those participants with either one or multiple conditions being rated significantly lower than those with no condition.

Comparisons were also made between GP ratings and the GHQ on the GP's self reported mental health intervention during the consultation when the data was collected.

Figure 6.3.9: Mean scores on GHQ and GP Ratings for Gender.

Case Summaries

Gender		GHQ12	Psychological Rating	Physical Rating
Male	Mean	2.07	74.01	68.29
	S.E	.242	1.733	1.699
	N	157	147	147
Female	Mean	2.36	69.46	68.87
	S.E	.180	1.318	1.251
	N	320	311	311
Total	Mean	2.26	70.92	68.69
	S.E	.145	1.058	1.009
	N	477	458	458

The range of possible referral categories was simplified into two categories of those patients who were referred for mental health services and those who were not referred. The results for these categories are presented in Figure 6.3.13 (pp. 243).

One thing to note from this table is that there were no indications of whether a referral had taken place or not for a large number of participants. There were no significant differences on physical wellbeing for participants who were referred for a mental health service compared to those who were not referred ($t = -1.65, df = 263.n.s.$). However, GHQ scores were significantly higher for those participants referred for a mental health service ($t = 3.86, df = 263.p < 0.001$) and psychological wellbeing was

significantly lower for referred participants

$(t = -5.46, df = 263. p < 0.001)$.

Figure 6.3.10: Mean scores on GHQ and GP Ratings for Age.

Case Summaries

Age Range		GHQ12	Psychological Rating	Physical Rating
16-25 yrs	Mean	2.35	74.59	76.12
	SE	.403	3.026	2.520
	N	55	51	51
25-35 yrs	Mean	2.57	72.78	71.00
	SE	.402	3.177	3.196
	N	69	64	64
35-45 yrs	Mean	2.25	73.69	74.17
	SE	.298	2.148	1.947
	N	105	103	103
45-65 yrs	Mean	2.53	67.06	63.45
	SE	.259	1.761	1.676
	N	178	170	170
65+ yrs	Mean	1.14	71.55	65.19
	SE	.246	2.381	2.220
	N	76	75	75
Total	Mean	2.23	70.88	68.56
	SE	.143	1.053	1.007
	N	483	463	463

The category of treatment provided by the GP during the consultation was also simplified to three categories - whether any mental health treatment had been carried out, whether the consultation was for purely medical reasons, and whether there was no need for treatment. Comparisons of GHQ and GP ratings

for each of these categories are provided in Figure 6.3.14 (pp.

243).

Figure 6.3.11: Means for GHQ and GP Ratings on Occupational Status.

Case Summaries

Occupation		GHQ12	Psychological Rating	Physical Rating
Employed FT	Mean	2.26	73.71	72.05
	SE	.279	2.394	2.240
	N	114	108	108
Employed PT	Mean	2.11	75.94	74.10
	SE	.345	2.045	1.993
	N	90	86	86
Home Duties	Mean	2.38	68.17	69.02
	SE	.402	3.304	2.936
	N	56	53	53
Retired	Mean	1.43	70.44	65.00
	SE	.237	1.823	1.871
	N	118	118	118
Unemployed	Mean	2.81	67.83	69.52
	SE	.507	3.339	3.571
	N	48	46	46
Disabled	Mean	4.00	59.47	54.56
	SE	.676	4.639	3.295
	N	33	32	32
Total	Mean	2.22	70.97	68.68
	SE	.146	1.073	1.031
	N	459	443	443

There were significant differences on GHQ scores for

different level of GP treatment ($F = 8.10, df = 2/282. p < 0.001$). GHQ

scores were significantly higher for those people who received a

mental health intervention compared to those who received no

intervention ($\bar{X}_{diff} = 1.68, se = 0.60.$ $p < 0.05$) and for those who

received medical treatment only ($\bar{X}_{diff} = 1.90, se = 0.48.$ $p < 0.001$).

Figure 6.3.12: Means on GHQ and GP Ratings on Medical
Condition.

Case Summaries

Medical Status		GHQ12	Psychological Rating	Physical Rating
Only one condition	Mean	2.19	70.19	64.99
	SE	.266	1.808	1.784
	N	156	150	150
Multiple conditions	Mean	2.04	67.35	59.14
	SE	.347	2.388	2.102
	N	71	71	71
No Condition	Mean	2.33	72.26	73.32
	SE	.193	1.508	1.368
	N	263	249	249
Total	Mean	2.24	70.86	68.52
	SE	.143	1.051	1.005
	N	490	470	470

There were also significant differences on psychological

wellbeing for GP intervention ($F = 48.98, df = 2/282.$ $p < 0.001$).

Again, those participants who received a mental health

intervention were rated significantly lower on psychological

wellbeing than those participants who received a medical

intervention ($\bar{X}_{diff} = -28.96, se = 3.06.\ p < 0.001$) or no intervention

($\bar{X}_{diff} = -29.69, se = 3.85.\ p < 0.001$).

Figure 6.3.13: GHQ and GP ratings by GP referral.

Case Summaries

		Physical Rating	Psychological Rating	GHQ12
Referred	Mean	61.25	43.90	4.95
	SE	5.627	5.388	1.082
	N	20	20	20
Not Referred	Mean	69.99	73.25	2.12
	SE	1.444	1.473	.190
	N	245	245	245
Total	Mean	69.33	71.04	2.34
	SE	1.405	1.497	.199
	N	265	265	265

Figure 6.3.14: GHQ and GP ratings by GP intervention.

Case Summaries

		GHQ12	Psychological Rating	Physical Rating
Mental Health Treatment	Mean	3.88	46.46	63.04
	SD	4.347	23.178	22.598
	N	67	67	67
Medical Consult	Mean	1.98	75.42	66.20
	SD	2.783	18.665	22.629
	N	162	162	162
No treatment	Mean	2.20	76.15	75.67
	SD	3.206	24.811	22.682
	N	54	54	54
Total	Mean	2.47	68.70	67.26
	SD	3.376	24.380	22.956
	N	283	283	283

There were significant differences on physical wellbeing depending on GP intervention ($F = 5.06, df = 2/282.\ p < 0.05$) with those participants not receiving any intervention rating higher in physical wellbeing than those who received either a medical intervention ($\bar{X}_{diff} = 9.46, se = 3.56.\ p < 0.05$) or a mental health intervention ($\bar{X}_{diff} = 12.62, se = 4.14.\ p < 0.01$).

6.3.1 Summary

Although there is a considerable amount of analysis in this section much of it can be considered as validation of the instruments used. Essentially, the GHQ results appeared to be similar in this population to previous studies.

The GP rating scales of psychological and physical wellbeing also seemed to be reasonably good scales though the properties of these could only be explored crudely. Nevertheless, they both showed associations with other ratings which measured similar things. For example, the likelihood of a mental health intervention by the Gp, or a mental health referral was associated with lower scores on the GP rating of psychological well being. Likewise, the likelihood of participants reporting a physical illness was associated with lower GP ratings of physical wellbeing..

The association between GHQ scores and physical wellbeing was probably due to the moderate to strong association between psychological and physical wellbeing. This association probably reflected a common wellbeing factor which meant that GHQ would necessarily have a weak association with GP rating of physical wellbeing.

There was a moderate association between GHQ and GP ratings of psychological wellbeing such that a lower rating of wellbeing was associated with higher scores on the GHQ. The likelihood of a mental health referral or mental health treatment by the GP was associated with higher GHQ scores and lower GP ratings of psychological wellbeing. Lower GP ratings of physical wellbeing were also associated with a higher likelihood that the GP reported using a mental health intervention.

6.4 PREVALENCE, SCREENING AND THE CIDI-SF

A total of 240 participants, including clients of the local mental health worker, were diagnostically assessed on the CIDI-SF. The rates of diagnoses for this sample are presented in Figure 6.4.1.

From this it can be seen that 71 participants (29.6%) were given one diagnosis. A further 74 participants (30.8%) satisfied

the criteria for multiple diagnoses on the CIDI-SF. Only 95

participants (39.6%) were not given a diagnosis. Altogether 145

people (60.4%) in this sample were given one or more diagnosis

on the CIDI-SF.

Figure 6.4.1: Diagnoses from CIDI-SF assessment.

		Frequency	Valid Percent	Cumulative Percent
Valid	Depression	30	12.5	12.5
	Generalised Anxiety	1	.4	12.9
	Specific Phobia	22	9.2	22.1
	Social Phobia	11	4.6	26.7
	Panic Disorder	5	2.1	28.7
	Drug/Alcohol Abuse	2	.8	29.6
	Multiple Diagnoses	74	30.8	60.4
	No Diagnosis	95	39.6	100.0
	Total	240	100.0	
Missing		278		
Total		518		

However, the participants not involved in Stage 2 were not

planned exclusions so it was possible that there was some biasing

of the prevalence due to the relative proportions of cases and

non-cases (based on GHQ scores) included in Stage 2.

Figure 6.4.2 shows that the ratio of cases to non-cases in

Stage 1 was 1:2.25 whereas the same ratio in Stage 2 was

1:2.10 (The relative percentages of Cases and non-Cases within

each stage is shown in the column marked "Row%"). Although

this was not a very large difference it was corrected by using

sampling weights of the inverse of the Stage 2 sampling fraction.

The weighting for non-cases was 339/155 (2.18) and that for

cases was 74/151 (2.04).

Figure 6.4.2: Relative numbers of participants in each Stage by 'caseness'.

	Stage 1		Stage 2	
	Count	Row %	Count	Row %
Non Case	339	. 69.2%	155	45.7%
Case	151	30.8%	74	49.0%

The 'true' prevalence for this population was then calculated

using the Horvitz-Thompson estimator:

$$\pi = \frac{\sum w_i \cdot y_i}{\sum w_i}$$, where y is the range of diagnostic

classifications, and w is the weight for each case assessed in

Stage 2.

Using this approach the estimated number of participants

from the total sample with a positive CIDI diagnosis is 250.62

which resolved to a prevalence of 51.1%. Figure 6.4.3 presents

the estimates for CIDI diagnoses based on the weighted GHQ

caseness, which may clarify this approach to prevalence

estimation.

Figure 6.4.3: Estimates of diagnostic classification using weighted GHQ caseness.

CIDI-SF GHQ	Yes	No	Total
No	144.54	194.91	339.45
Row%	42.6%	57.4%	
Col%	57.7%	81.3%	69.2%
Yes	106.08	44.88	150.96
Row%	70.3%	29.7%	
Col%	42.3%	18.7%	30.8%
Total	250.62	239.79	490.41
Row%	**51.1%**	48.9%	

The diagnoses made on the CIDI-SF were collapsed into 4

categories; (1) Depression, (2) Anxiety, (3) Multiple, and (4) No

Diagnosis. This enabled an easier comparison of the relative

scores on the GHQ and the other clinical measures to get a better

understanding of the severity and complexity of the problems that

participants were experiencing (Figure 6.4.4).

Figure 6.4.4: Mean scores for clinical measures by summarized diagnostic categories.

	Depression			Anxiety			Multiple Diagnosis			No Diagnosis		
	Mean	sd	N	Mean	sd	N	Mean	sd	N	Mean	sd	N
GHQ T1	3.65	3.87	20	1.59	2.74	39	4.82	4.48	60	1.4	2.12	92
GSI T1	0.57	0.4	30	0.51	0.33	39	1.07	0.6	74	0.26	0.23	95
QOL Qrre T1	0.69	0.36	30	0.79	0.2	39	0.66	0.33	73	0.82	0.26	94

On the GHQ there was a significant main effect for

diagnostic category ($F = 15.57, df = \frac{3}{210}, p < 0.001$). Scores on the

GHQ were significantly higher for participants with multiple

diagnoses, depression or anxiety compared to subjects with no

diagnosis.

There was a significant main effect for scores on the Global

Symptom Index (GSI) of the SCL90R ($F = 54.15, df = \frac{3}{237}, p < 0.001$)

with participants with multiple diagnoses having higher scores

than subjects in the other categories.

There was a significant main effect for diagnosis on the

scale measure of quality of life (QOL) ($F = 4.86, df = \frac{3}{235}, p < 0.01$)

with scores being significantly lower for those participants with

multiple diagnoses compared to the other groups.

A relatively good independent metric for the complexity of a

case would appear to be the number of diagnoses made on the

CIDI-SF as multiple diagnoses were clearly related to higher

scores on all of the clinical outcome measures. The numbers of

diagnoses identified in each of the treatment groups were

compared to see if there was any disproportionate distribution of

simple and complex cases (Figure 6.4.5).

There were no significant differences between the numbers

of subjects across diagnosis between the Local Mental health

Worker and Other Mental Health service conditions

($\chi^2 = 0.420, df = 2.n.s.$) though there appeared to be more in the

LMHW group with single diagnoses (LMHW=39% vs OMHS=23%)

and more in the OMHS with multiple diagnoses (LMHW=50% vs

OMHS=59%). There were proportionately more clients with single

diagnoses in the UTC group compared to the Local Mental Health

Worker condition and the Other Mental health Service condition

($\chi^2 = 20.301, df = 4.p < 0.001$).

Figure 6.4.5: Comparison groups by Diagnostic summaries.

Comparison Groups * Diagnostic Summary Crosstabulation

			Diagnostic Summary			
			Only one condition	Multiple conditions	No Condition	Total
Comparison Groups	LMHW	Count	11	14	3	28
		% within Comparison Groups	39.3%	50.0%	10.7%	100.0%
	OMHS	Count	5	13	4	22
		% within Comparison Groups	22.7%	59.1%	18.2%	100.0%
	UTC	Count	54	46	·	100
		% within Comparison Groups	54.0%	46.0%		100.0%
	NC	Count	1	1	88	90
		% within Comparison Groups	1.1%	1.1%	97.8%	100.0%
Total		Count	71	74	95	240
		% within Comparison Groups	29.6%	30.8%	39.6%	100.0%

6.4.1 Summary

Although there was a potential bias in the second stage
sampling, due to subject attrition, the ratios of cases to non-cases
in both stages was fairly similar. Nevertheless a weighted
estimate of the prevalence of a diagnosed condition was used.
This turned out to be quite high with an estimate of 50% of
participants likely to have a diagnosable mental illness.

The estimates of specific diagnoses were interesting in that
12.5% of participants had a diagnosis of Depression and 16.5%
had a diagnosis of Anxiety whilst only 0.8% received a substance
abuse diagnosis. The rates for depression were comparable to the
WHO primary care findings of 10% but the rate for anxiety was
nearly double, whilst the rate for drug and alcohol problems was
three times less, than those found in that study (Sartorius et al.,
1993). However, the very high rate of multiple diagnoses (30.8%)
fits with all the literature which identifies very high rates of co-
morbidity (Andrade, 2000; Hickie, Koschera et al., 2001;
Sartorius, Ustun, Lecrubier, & Wittchen, 1996).

It appeared that diagnosis could be used as a reasonable
gauge of the relative complexity of a case, as having any CIDI
diagnosis was associated with higher GHQ and GSI scores and
lower quality of life, and then having multiple diagnoses was

associated with much higher scores on the symptom measures and much lower scores on quality of life.

The degree of complexity of cases in the treatment groups was compared and there did seem to be a slightly higher proportion of complex cases in the OMHW group than in the LMHW and the UTC groups. Despite this it was found that there were no significant differences between the LMHW and the OMHW groups although participants in the UTC group tended to be less complex.

6.5 ASSOCIATIONS BETWEEN GP RATINGS AND STAGE 2 MEASURES

The GP ratings were matched with a number of the measures taken at Stage 2. As the SCL90-R has a large number of specific symptom scales the results reported in relation to this will refer only to the summary measures – the Global Symptom Index (GSI), the Positive Symptom Total (PST), and the Positive Symptom Distress Index (PSDI) – to clarify the reporting.

Figure 6.5.1 presents the correlations of the GP ratings and the SCL90-R summary scales and the quality of life measures.

Psychological well being showed small but significant negative correlations with all three summary measures of the SCL90-R and small but significant positive correlations with both quality of life rating scales.

Physical well being was not correlated with any of the symptom summaries except PSDI where there was a small but significant negative correlation. There was also a small positive correlation with the first quality of life scale but not the global rating of quality of life.

The relationship between GP ratings and GHQ with the CIDI-SF diagnosis was explored using logistic regression. Multiple imputation was also used to provide a check of the estimates derived from the analysis of the incomplete data set. The tables of estimates are presented in Figure 6.5.2.

Figure 6.5.1: Correlations of GP ratings and Stage 2 measures.

Correlations

		Physical Rating(GP)	Psychological Rating	GSI	PST	PSDI	QOL Qrre	QOL Analog
Physical Rating	Pearson Correlation	1	.520**	-.106	-.035	-.220**	.219**	.080
	Sig. (1-tailed)	.	.000	.060	.302	.001	.001	.120
	N	470	470	218	218	218	216	216
Psychological Rating	Pearson Correlation		1	-.267**	-.221**	-.318**	.228**	.224**
	Sig. (1-tailed)		.	.000	.001	.000	.000	.000
	N		470	218	218	218	216	216
GSI	Pearson Correlation			1	.933**	.819**	-.385**	-.392**
	Sig. (1-tailed)			.	.000	.000	.000	.000
	N			257	257	257	255	255
PST	Pearson Correlation				1	.696**	-.345**	-.382**
	Sig. (1-tailed)				.	.000	.000	.000
	N				257	257	255	255
PSDI	Pearson Correlation					1	-.451**	-.436**
	Sig. (1-tailed)					.	.000	.000
	N					257	255	255
QOL Qrre	Pearson Correlation						1	.481**
	Sig. (1-tailed)						.	.000
	N						255	255

**. Correlation is significant at the 0.01 level (1-tailed).

In the analysis of the incomplete data the independent variables accounted for approximately 18% of the variance. All three were significantly related to the CIDI diagnosis but the relative size of the Beta estimates suggests that GHQ made the greatest contribution followed by small contributions from psychological and physical well being.

The MI analysis essentially supported the analysis of the incomplete data set except that physical wellbeing was not consistently significantly related to the CIDI diagnosis. The relative sizes of the estimates and standard errors across the variables and the constant term remained the same.

Figure 6.5.2: Estimates for logistic regression of GHQ and wellbeing ratings on diagnostic category (CIDI-SF) using incomplete and MI datasets[7].

	Incomplete Data Set					Imputed Data Sets (x10)					
	B	S.E	Wald	df	sig	B	S.E	t	df	sig	Efficiency Estimate
GHQ	0.18	0.05	10.64	1.00	0.00	-0.16	0.05	-3.37	65.00	0.00	96%
Psychological Wellbeing	-0.03	0.01	8.35	1.00	0.00	0.02	0.01	2.04	21.00	0.05	94%
Physical Wellbeing	0.02	0.01	6.12	1.00	0.01	-0.01	0.01	-1.58	21.00	0.13	94%
Constant	0.07	0.60	0.01	1.00	0.91	-0.21	0.59	-0.35	33.00	0.73	95%

6.6 TREATMENT GROUP SCORES ON OUTCOME MEASURES IN STAGE 2

The four comparison groups, LMHW, OMHW, UTC, and NC, were compared on the outcome measures in stage 2 to explore any initial differences in symptom severity or quality of life ratings.

Figure 6.6.1: Means and standard deviations for comparison groups on outcome measures at Stage 2.

	LMHW (n=28)	OMHS (n=22)	Untreated Control (n=100)	Normal Control (n=105)
	$\bar{x}(sd)$	$\bar{x}(sd)$	$\bar{x}(sd)$	$\bar{x}(sd)$
GSI	0.80(0.79)	1.17(0.81)	0.70(0.37)	0.28(0.24)
PST	37.87(26.60)	45.75(25.53)	33.54(13.56)	18.11(12.79)
PSDI	1.45(0.72)	1.99(0.77)	1.69(0.48)	1.25(0.36)
QOL Qrre	0.71(0.44)	0.60(0.34)	0.75(0.26)	0.82(0.26)
QOL Analog	68.57(19.94)	66.25(17.62)	70.67(16.68)	78.01(14.59)

---

[7] It should be noted that the reversed sign in the results from the imputed data sets are due to the dependent variable being coded in the opposite direction compared to the analysis of the incomplete data set

Figure 6.6.1 presents the means and standard deviations for these comparison groups on the outcome measures. All the measures showed a significant effect across the four comparison groups (Figure 6.6.2).

Each measure showed independently significant between subject effects across the comparison groups (Figure 6.6.3) and post hoc analyses were performed to explore the differences in means between the comparison groups.

The GSI mean for the LMHW group was significantly lower than the means for the OMHW group and the NC group but not significantly different from the Untreated Control group. The mean GSI for the OMHW group was significantly higher than the LMHW, the UTC and the NC groups. The mean GSI for the Untreated Control group was significantly higher than for the Untreated Control group (See Figure 6.6.4 pp 259).

Figure 6.6.2: Multivariate ANOVA for Comparison Groups (LMHW, OMHS, UC, NC) on 5 measures (GSI, PST, PSDI, QOL Qrre, QOL Analogue).

Multivariate Tests					
Effect	Value*	F	Hyp df	Error df	Sig.
Intercept	0.024	2023.01	5	247	p<0.001
Comparison					
Groups	0.44	8.56	15	747	p<0.001
	0.605	9.066	15	682.26	p<0.001

*Wilks Lambda

The mean PST score of the Local Mental health Worker group was not significantly different from the mean of the Other Mental Health Service and Untreated control groups but it was significantly higher than the Normal Control group. The mean PST of the Other Mental Health Service group was significantly higher than the means for both the Untreated and Normal Control groups. The mean PST of the Untreated Control group was significantly higher than the mean for the Normal Control group.

Figure 6.6.3: Between subjects effects for Comparison Groups on multiple measures.

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	GSI T1	20.020[a]	3	6.673	33.626	.000
	PST T1	22935.220[b]	3	7645.073	28.091	.000
	PSDI T1	15.883[c]	3	5.294	21.228	.000
	QOL Qrre T1	1.089[d]	3	.363	4.299	.006
	QOL Analog T1	4750.010[e]	3	1583.337	5.941	.001
Intercept	GSI T1	86.532	1	86.532	436.020	.000
	PST T1	181485.418	1	181485.418	666.846	.000
	PSDI T1	403.923	1	403.923	1619.586	.000
	QOL Qrre T1	81.436	1	81.436	964.514	.000
	QOL Analog T1	798090.869	1	798090.869	2994.446	.000
COMPGRP	GSI T1	20.020	3	6.673	33.626	.000
	PST T1	22935.220	3	7645.073	28.091	.000
	PSDI T1	15.883	3	5.294	21.228	.000
	QOL Qrre T1	1.089	3	.363	4.299	.006
	QOL Analog T1	4750.010	3	1583.337	5.941	.001
Error	GSI T1	49.813	251	.198		
	PST T1	68310.890	251	272.155		
	PSDI T1	62.599	251	.249		
	QOL Qrre T1	21.192	251	8.443E-02		
	QOL Analog T1	66897.441	251	266.524		
Total	GSI T1	154.676	255			
	PST T1	300190.999	255			
	PSDI T1	656.463	255			
	QOL Qrre T1	168.063	255			
	QOL Analog T1	1434560.417	255			
Corrected Total	GSI T1	69.834	254			
	PST T1	91246.110	254			
	PSDI T1	78.482	254			
	QOL Qrre T1	22.282	254			
	QOL Analog T1	71647.451	254			

a. R Squared = .287 (Adjusted R Squared = .278)

b. R Squared = .251 (Adjusted R Squared = .242)

c. R Squared = .202 (Adjusted R Squared = .193)

d. R Squared = .049 (Adjusted R Squared = .038)

e. R Squared = .066 (Adjusted R Squared = .055)

The mean PSDI score for the Local Mental Health Worker group was significantly lower than the mean for the Other Mental Health Service group but not significantly different from the

Untreated and Normal Control groups. The mean of the Other

Mental Health Service group on PSDI was not significantly

different from that of the Untreated Control group but was

significantly greater than that of the Normal Control group (See

Figure 6.6.5).

Figure 6.6.4: Post hoc (Scheffe) comparison on between group means for

	(I)	(J)	Mean Diff. (I-J)	S.E	Sig.	95% CI Lower Bound	Upper Bound
	LMHW	OMHS	-0.37*	0.13	0.04	-0.73	-0.01
		UTC	0.10	0.10	0.77	-0.17	0.37
		NC	0.52**	0.09	0.00	0.25	0.79
	OMHS	LMHW	0.37*	0.13	0.04	0.01	0.73
		UTC	0.47**	0.11	0.00	0.18	0.77
GSI T1		NC	0.89**	0.10	0.00	0.60	1.19
	UTC	LMHW	-0.10	0.10	0.77	-0.37	0.17
		OMHS	-0.47**	0.11	0.00	-0.77	-0.18
		NC	0.42**	0.06	0.00	0.24	0.59
	NC	LMHW	-0.52**	0.09	0.00	-0.79	-0.25
		OMHS	-0.89**	0.10	0.00	-1.19	-0.60
		UTC	-0.42**	0.06	0.00	-0.59	-0.24

*p<0.05, **p<0.001

GSI.

Figure 6.6.5: Post hoc (Scheffe) comparison on between group means for

	(I)	(J)	Mean Diff. (I-J)	S.E	Sig.	95% CI Lower Bound	Upper Bound
	LMHW	OMHS	-0.55**	0.14	0.00	-0.95	-0.15
		UTC	-0.24	0.11	0.16	-0.55	0.06
		NC	0.20	0.11	0.32	-0.10	0.50
	OMHS	LMHW	0.55**	0.14	0.00	0.15	0.95
		UTC	0.30	0.12	0.09	-0.03	0.63
PSDI		NC	0.75**	0.12	0.00	0.42	1.08
T1	UTC	LMHW	0.24	0.11	0.16	-0.06	0.55
		OMHS	-0.30	0.12	0.09	-0.63	0.03
		NC	0.45**	0.07	0.00	0.25	0.64
	NC	LMHW	-0.20	0.11	0.32	-0.50	0.10
		OMHS	-0.75**	0.12	0.00	-1.08	-0.42
		UTC	-0.45**	0.07	0.00	-0.64	-0.25

*p<0.05, **p<0.001

PSDI.

There were no significant differences between the Local

Mental Health Worker, the Other Mental health Service, and the

Untreated Control groups on mean QOL (Questionnaire) scores.

The mean QOL score for the Normal Control group was

significantly greater than the mean score for the Other Mental

Health Service group (See Figure 6.6.6).

Figure 6.6.6: Post hoc (Scheffe) comparison on between group means for QOL.

	(I)	(J)	Mean Diff. (I-J)	S.E	Sig.	95% CI Lower Bound	Upper Bound
	LMHW	OMHS	0.11	0.08	0.63	-0.12	0.34
		UTC	-0.03	0.06	0.98	-0.20	0.15
		NC	-0.11	0.06	0.35	-0.29	0.06
	OMHS	LMHW	-0.11	0.08	0.63	-0.34	0.12
		UTC	-0.14	0.07	0.27	-0.33	0.06
QOL		NC	-0.22*	0.07	0.02	-0.41	-0.03
Qrre T1	UTC	LMHW	0.03	0.06	0.98	-0.15	0.20
		OMHS	0.14	0.07	0.27	-0.06	0.33
		NC	-0.09	0.04	0.22	-0.20	0.03
	NC	LMHW	0.11	0.06	0.35	-0.06	0.29
		OMHS	0.22*	0.07	0.02	0.03	0.41
		UTC	0.09	0.04	0.22	-0.03	0.20

*p<0.05, **p<0.001

There were no significant differences in mean QOL

(Analogue) scores between the Local Mental Health Worker, the

Other Mental Health Service, and the Untreated Controls. The

mean scores of the Normal Control group were significantly

greater than those of the Other Mental Health Service group and

the Untreated Control group (See Figure 6.6.7).

6.6.1 Summary

These results indicate that there were some differences

between the comparison groups on the initial symptom measures.

Figure 6.6.7: Post hoc (Scheffe) comparison on between group means for QOL Analogue.

(I)	(J)	Mean Diff. (I-J)	S.E	Sig.	95% CI Lower Bound	Upper Bound
LMHW	OMHS	2.32	4.65	0.97	-10.77	15.41
	UTC	-2.09	3.49	0.95	-11.93	7.74
	NC	-9.44	3.47	0.06	-19.20	0.32
OMHS	LMHW	-2.32	4.65	0.97	-15.41	10.77
	UTC	-4.42	3.85	0.73	-15.25	6.42
	NC	-11.76*	3.82	0.03	-22.53	-1.00
UTC	LMHW	2.09	3.49	0.95	-7.74	11.93
	OMHS	4.42	3.85	0.73	-6.42	15.25
	NC	-7.35*	2.28	0.02	-13.77	-0.92
NC	LMHW	9.44	3.47	0.06	-0.32	19.20
	OMHS	11.76*	3.82	0.03	1.00	22.53
	UTC	7.35*	2.28	0.02	0.92	13.77

(QOL Analog T1)

*p<0.05, **p<0.001

Essentially the OMHW group tended to have a higher level of symptomatology than all the other groups though this seemed to be primarily due to the distress experienced by that group. There was no difference between the OMHW and LMHW groups on total number of symptoms reported but the OMHW group rated the symptoms as more distressing.

The LMHW group tended to fall midway between the OMHW group and the UTC group on general symptomatology and total number of symptoms and though the distress experienced by the UTC group was slightly higher it was not significantly different.

All the comparison groups were significantly more symptomatic than the NC group.

There were fewer differences between the groups on the quality of life measures. The NC group had a higher rating on the QOL Questionnaire score than the other groups but was only significantly different from the OMHW group. On the QOL Analogue scale all the symptomatic groups rated quality of life lower than the NC group but the differences were only significant between the OMHW and UTC group.

6.7 CHANGE IN OUTCOME MEASURES AFTER 12 MONTHS

Although the percentage of missing cases from Stage 2 to Stage 3 was relatively small for the LMHW and OMHS groups there were quite a number of missing data points for the NTC and NC groups (Figure 6.7.1). Therefore a multiple imputation of missing data points was used to complement the analysis of the incomplete data set[8].

For the analysis a difference score was calculated by subtracting the Stage 2 score from the Stage 3 score such that a positive score for the symptom measures indicated positive change and a negative score for the quality measures indicated positive change. Missing values for the difference scores were

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[8] It should be noted that in the regression tables the coefficient beta is referred to as 'B'

imputed using the Stage 2 and Stage 3 scores as well as GHQ, GP

Rating, and Demographic details from Stage 1.

Figure 6.7.1: Numbers & percentages of cases reassessed at 12 months.

	Stage 2	Stage 3	%
LMHW	28	25	89%
OMHS	22	22	100%
UTC	100	43	43%
NC	105	54	51%

6.7.1 Global Symptom Index

The mean differences on GS are given in Figure 6.7.2. The

results of the ANOVA and MI for GSI are presented in Figure

6.7.3.

Figure 6.7.2: GSI mean differences.

	Mean	sd	N
LMHW	0.16	0.50	25
OMHS	0.05	0.34	22
UTC	-0.05	0.35	43
NC	-0.08	0.31	54

There was a significant effect for Comparison group on changes in the GSI ($F = 2.74, df = \frac{3}{143}.p < 0.05$). An inspection of the regression estimates indicated that the main contributor to the variance in the differences in GSI means was the Local Mental Health Worker condition ($est. = 0.24, s.e. = 0.09.p < 0.05$).

Figure 6.7.3: ANOVA of GSI difference with comparison of regression estimates for incomplete and imputed data.

GSI Difference								
Source	SS (III)	df	MS	F	Sig.			
Intercept	0.06	1	0.06	0.44	0.51			
Comparison	1.09	3	0.36	2.74	0.05*			
Error	18.57	140	0.13					
Corrected Total	19.66	143						

Regression est.	Incomplete Data Estimates			Imputed Estimates			efficiency estimate
	est.	s.e	sig.	est.	s.e	sig.	
Intercept	-0.08	0.05	0.12	-0.06	0.05	0.23	96%
LMHW	0.24	0.09	0.01*	0.19	0.09	0.04*	98%
OMHS	0.13	0.09	0.17	0.11	0.10	0.24	99%
UTC	0.03	0.07	0.68	0.04	0.08	0.59	94%

*p<0.05

The estimates obtained from multiple imputation were very similar to those obtained from the incomplete data set. An inspection of the means indicated that there was a small positive change in GSI from Stage 2 to Stage 3 and little or no change in GSI scores for the other conditions.

6.7.2 Positive Symptom Total

The mean differences on PST are given in Figure 6.7.4. The results of the ANOVA and MI for PST are presented in Figure 6.7.5. There was no significant effect for Comparison group for change in PST scores although the effect approached significance $(F = 2.50, df = \frac{3}{143}.n.s.)$.

Figure 6.7.4: PST mean differences.

	Mean	sd	N
LMHW	6.76	19.97	25
OMHS	1.06	14.80	22
UTC	-0.61	13.13	43
NC	-2.98	13.52	54

The regression estimate for the LMHW condition was significant $(est = 9.75, se = 3.61.p < 0.05)$ as was the estimate obtained by MI $(est = 7.72, se = 3.56.p < 0.05)$.

An inspection of the mean change scores suggested that there had been a small positive change in the PST scores for the LMHW condition but clearly not enough to attain significance.

Figure 6.7.5: ANOVA of PST difference with comparison of regression estimates for
incomplete and imputed data.

PST Difference								
Source	SS (III)	df	MS	F	Sig.			
Intercept	140.37	1	140.37	0.63	0.43			
Comparison	1664.11	3	554.70	2.50	0.06			
Error	31112.66	140	222.23					
Corrected Total	32776.76	143						
Regression est.	Incomplete Data Estimates			Imputed Estimates				
	est.	s.e	sig.	est.	s.e	sig.	efficiency estimate	
Intercept	-2.98	2.03	0.14	-1.77	1.84	0.34	96%	
LMHW	9.75	3.61	0.01*	7.72	3.56	0.03*	98%	
OMHS	4.04	3.77	0.29	2.82	3.71	0.45	99%	
UTC	2.37	3.05	0.44	1.40	3.29	0.68	94%	

*p<0.05

6.7.3 Positive Symptom Distress Index

The mean differences on PSDI are given in Figure 6.7.6.

The results of the ANOVA and MI for PSDI are presented in Figure

6.7.7. There was no significant effect for Comparison group on

change in PSDI ($F = 1.44, df = \frac{3}{143}.n.s.$).

Figure 6.7.6: PSDI mean differences.

	Mean	sd	N
LMHW	0.15	0.57	25
OMHS	-0.04	0.44	22
UTC	-0.04	0.42	43
NC	-0.08	0.47	54

There was a significant regression estimate for the LMHW

group ($est = 0.23, se = 0.11. p < 0.05$) but this was not supported in

the estimates generated by MI.

Figure 6.7.7: ANOVA of PSDI difference with comparison of regression estimates for incomplete and imputed data.

PST Difference								
Source	SS (III)	df	MS	F	Sig.			
Intercept	0.00	1	0.00	0.01	0.92			
Comparison	0.95	3	0.32	1.44	0.23			
Error	30.68	140	0.22					
Corrected Total	31.62	143						
Regression est.	Incomplete Data Estimates			Imputed Estimates			efficiency estimate	
	est.	s.e	sig.	est.	s.e	sig.		
Intercept	-2.98	2.03	0.14	-0.07	0.06	0.25	97%	
LMHW	9.75	3.61	0.01	0.20	0.11	0.06	99%	
OMHS	4.04	3.77	0.29	0.02	0.12	0.85	99%	
UTC	2.37	3.05	0.44	0.08	0.08	0.34	97%	

*$p<0.05$

6.7.4 Quality of Life Questionnaire

The mean differences on QOL Qrre are given in Figure

6.7.8. The results of the ANOVA and MI for QOL Qrre are

presented in Figure 6.7.9.

Figure 6.7.8: QOL Qrre Mean Differences

	Mean	sd	N
LMHW	-0.18	0.44	24
OMHS	0.03	0.21	22
UTC	-0.03	0.19	43
NC	0.02	0.24	52

Figure 6.7.9: ANOVA of QOL Qrre difference with comparison of regression estimates for incomplete and imputed data.

QOL Qrre Difference

Source	SS (III)	df	MS	F	Sig.
Intercept	0.21	1	0.21	2.99	0.09
Comparison	0.70	3	0.23	3.30	0.02*
Error	9.66	137	0.07		
Corrected Total	10.36	140			

Regression est.	Incomplete Data Estimates			Imputed Estimates			efficiency estimate
	est.	s.e	sig.	est.	s.e	sig.	
Intercept	0.02	0.04	0.66	-0.01	0.03	0.66	96%
LMHW	-0.19	0.07	0.001*	-0.12	0.05	0.02*	99%
OMHS	0.01	0.07	0.87	0.03	0.06	0.59	99%
UTC	-0.05	0.05	0.37	0.02	0.04	0.53	97%

*p<0.05

There was a significant effect for Comparison Group on change in QOL Qrre ($F = 3.30, df = \frac{3}{140}.p < 0.05$). The regression estimate for LMHW was significant and none of the other conditions made a significant contribution ($est = -0.19, se = 0.07.p < 0.01$). The estimates from the MI were very similar and the only condition to make a significant contribution to the regression estimate was the LMHW ($est = -0.12, se = 0.05.p < 0.05$).

An inspection of the means indicated that there was a small positive (accounting for the direction of the scale) change in the LMHW scores on the QOL Qrre and no real change for the other conditions.

6.7.5 Quality of Life Analogue Scale

The mean differences on QOL Analogue are given in Figure

6.7.10. The results of the ANOVA and MI for QOL Analogue are

presented in Figure 6.7.11.

Figure 6.7.10: QOL Analogue Mean differences

	Mean	sd	N
LMHW	-2.95	20.62	22
OMHS	5.20	24.91	22
UTC	0.50	20.68	43
NC	0.45	14.83	48

Figure 6.7.11: ANOVA of QOL Analogue difference with comparison of regression
estimates for incomplete and imputed data.

QOL Analog Difference					
Source	SS (III)	df	MS	F	Sig.
Intercept	76.10	1	76.10	0.20	0.66
Comparison	744.83	3	248.28	0.65	0.59
Error	50263.81	131	383.69		
Corrected Total	51008.63	134			

Regression est.	Incomplete Data Estimates			Imputed Estimates			
	est.	s.e	sig.	est.	s.e	sig.	efficiency estimate
Intercept	0.45	2.83	0.87	-0.68	2.85	0.81	95%
LMHW	-3.41	5.04	0.50	-2.57	4.79	0.59	98%
OMHS	4.75	5.04	0.35	5.88	5.12	0.25	98%
UTC	0.05	4.11	0.99	6.49	3.25	0.05	97%

*p<0.05

There was no significant effect for Comparison Group in the

ANOVA ($F = 0.65, df = \frac{3}{134}.n.s.$) and none of the conditions

contributed significantly to the regression. These estimates were

generally supported in the MI that provided very similar results except for the UTC condition. However, the MI estimate of the value for UTC is so discrepant from that obtained with the incomplete data set that it most probably reflects the instability of the MI estimate.

6.7.6 **Summary**

In general, the LMHW group showed positive and significant gains between the two assessments on all the symptom measures. The LMHW group also showed positive and significant gains on the QOL Qrre but not on the QOL Analogue scale. The OMHW and UTC groups showed no significant change between the two assessments on any of the measures. As might be expected, there were no significant changes on any of the measures for the NC group.

6.8 **CLINICAL SIGNIFICANCE USING GSI**

As has been mentioned clinical significance is a statistical procedure which aims to identify whether change in scores on a scale represent meaningful 'real world' change. It essentially involves comparing the amount of change in a score with pre-established cut-offs for reliable and meaningful change and the second approach to the analysis of outcome was to compare the

degree of clinically significant change undergone by each of the

Comparison Groups.

As the GSI is the only measure which has any really

satisfactory background for calculating clinical significance using

the recommended procedure it was the only one reported on

here. Jacobson's approach for calculating clinical significance was

used to classify each case into one of the four categories (1)

Deteriorated, (2) Unchanged, (3) Improved, and (4) Recovered).

These were then further categorised by Comparison Group and

are presented for the incomplete data set as a cross-tabulation.

Figure 6.8.1: Numbers of participants achieving clinically significant change on the GSI.

			Change Score				
			Deteriorated	Unchanged	Improved	Recovered	Total
	LMHW	Count	3	15	2	5	25
		% within Comparison Groups	12.0%	60.0%	8.0%	20.0%	100.0%
		% within CS	20.0%	13.2%	50.0%	45.5%	17.4%
	OMHS	Count	2	17	1	2	22
		% within Comparison Groups	9.1%	77.3%	4.5%	9.1%	100.0%
		% within CS	13.3%	14.9%	25.0%	18.2%	15.3%
	UTC	Count	6	33	1	3	43
		% within Comparison Groups	14.0%	76.7%	2.3%	7.0%	100.0%
		% within CS	40.0%	28.9%	25.0%	27.3%	29.9%
	NC	Count	4	49		1	54
		% within Comparison Groups	7.4%	90.7%		1.9%	100.0%
		% within CS	26.7%	43.0%		9.1%	37.5%
Total		Count	15	114	4	11	144
		% within Comparison Groups	10.4%	79.2%	2.8%	7.6%	100.0%
		% within CS	100.0%	100.0%	100.0%	100.0%	100.0%

Overall 10% (15) of the participants deteriorated in their conditions, 3% (4) Improved, 8% (11) Recovered and 79% (114) remained unchanged.

Within the Local Mental Health Worker group 60% were unchanged whilst 12% deteriorated, 8% improved and 20% recovered.

Within the Other Mental Health Service condition 77% remained unchanged, 9% deteriorated, 5% improved and 9% recovered.

Within the Untreated Control group 77% remained the same, 14% deteriorated, 2% improved, and 7% recovered.

Finally, in the Normal Control group 91% were unchanged, 7% deteriorated and 2% recovered.

Of the 15 participants who showed improvement 7 (47%) were from the LMHW condition, 3 (20%) were from the OMHS condition, 4 (27%) were from the UTC condition and 1 (7%) was from the NC group.

A further analysis of the relationship between Comparison Group membership and degree of change was undertaken by carrying out an ordered logistic regression of Comparison Group

on change category. This analysis was supplemented by MI of

missing data as the regression analysis produced estimates and

error variances that were able to be summarised.

The model for the non-imputed data appeared to be a

reasonable fit ($GoF\chi^2 = 9.93, df = 6.n.s.$) but accounted for only

4.5% of the variance. The only parameter estimate which

contributed significantly to differences in the Change category was

the Local Mental Health Worker condition.

Figure 6.8.2: Regression estimates (ordered logistic) for Comparison condition on Change category.

	Incomplete data set					Imputed data					
	Est	se	Wald	df	Sig.	Est	se	t	df	Sig.	efficiency estimate
LMHW	1.22	0.60	4.19	1	0.041*	0.91	0.51	1.79	144	0.08	97%
OMHS	0.55	0.64	0.75	1	0.39	0.38	0.53	0.72	637	0.47	99%
UTC	0.03	0.51	0.00	1	0.96	0.12	0.45	0.26	26	0.79	94%

The estimates from the MI were similar to those from the

non-imputed data but the estimate for the LMHW did not achieve

significance but approached it at the 0.1 level. From this point of

view the LMHW condition appears to have contributed significantly

to variation in the Change category but this was a weak effect

that does not account for very much of the variance in the

Change category.

6.8.1 Summary

The LMHW group showed a greater degree of clinical improvement than either the OMHW or UTC groups. All three groups had about the same level of clinical deterioration. A large percentage of participants remained unchanged in all three groups.

Supporting these results, it was found that membership of the LMHW group was significantly associated with classification into one of the improvement change categories whereas membership of the OMHW and UTC groups showed no such association.

6.9 AN ANALYSIS OF COMPLEX CASES

As there were some significant differences between the groups on symptom and quality measures in the initial assessments a subset of analyses was carried out to assess whether the initial complexity of a case impacted on the likelihood that the participant would improve at the second assessment.

As mentioned previously the CIDI diagnosis proved to be a robust indicator of clinical complexity so these analyses were carried out by splitting the participants into two groups depending

on whether they had a single CIDI diagnosis or multiple

diagnoses. The change in the outcome measures were compared

separately for these two groups and the numbers of participants

in the Change categories was analysed.

The results of these analyses are reported below but it

should be noted that the numbers are small and the results

should be considered cautiously.

6.9.1 Change in clinical measures by complexity

There were no significant differences taking complexity into

account on the QOL Analogue or PSDI measures so these results

will not be reported.

For those participants with multiple diagnoses the LMHW

group showed a greater degree of change than either the OMHW

or UTC groups on the GSI, the PST, and the QOL Qrre. On the GSI

and the QOL this effect approached significance at the 0.1 level

and on the PST it was significant.

In contrast there were no significant differences between

these groups on any of the measures for those participants with a

single diagnosis (See Figure 6.9.1, Figure 6.9.2 and Figure 6.9.3).

Figure 6.9.1: Differences in GSI for complex and non-complex cases.

		N	Mean	sd	F	df	Sig.
Multiple Diagnosis	LMHW	11	0.272	0.624	2.48	2/41	p<0.1
	OMHW	13	-0.007	0.247			
	UTC	18	-0.073	0.352			
Single Diagnosis	LMHW	11	0.006	0.353	0.54	2/40	n.s.
	OMHW	5	0.167	0.597			
	UTC	25	-0.028	0.347			

Figure 6.9.2: Differences in PST for complex and non-complex cases.

		N	Mean	sd	F	df	Sig.
Multiple Diagnosis	LMHW	11	14.496	25.411	3.57	2/41	p<0.05
	OMHW	13	0.119	11.865			
	UTC	18	-12.909	11.353			
Single Diagnosis	LMHW	11	-6.051	31.218	0.38	2/40	n.s.
	OMHW	5	2.166	24.734			
	UTC	25	-0.124	14.488			

Figure 6.9.3: Differences in QOL Qrre for complex and non-complex cases.

		N	Mean	sd	F	df	Sig.
Multiple Diagnosis	LMHW	9	-0.231	0.509	2.38	2/39	p<0.1
	OMHW	13	0.028	0.219			
	UTC	18	-0.008	0.170			
Single Diagnosis	LMHW	11	-0.167	0.480	0.78	2/38	ns
	OMHW	4	-0.167	0.018			
	UTC	25	-0.050	0.197			

Thus there was some evidence that the greatest degree of change occurred for those cases with multiple diagnoses in the LMHW group but not for cases with multiple diagnoses in the other two groups and not for those cases with only a single diagnoses.

6.9.2 Clinically significant change and complexity

There were no significant differences in the amount of change for non-complex cases based on the clinical significance indicator ($\chi^2 = 3.63, n = 41, df = 4.$ $n.s.$). There was however a significant difference in the amount of change for complex cases ($\chi^2 = 12.75,\ \ n = 42, df = 4.\ p < 0.05$).

Figure 6.9.4: Numbers and percent of cases in Change categories by complexity.

		Deteriorated	Unchanged	Improved
Non-complex	LMHW	2	8	1
	%	33.33	27.59	16.67
	OMHW	1	2	2
	%	16.67	6.90	33.33
	UTC	3	19	3
	%	50.00	65.52	50.00
Complex	LMHW	1	5	5
	%	20.00	16.13	83.33
	OMHW	1	12	0
	%	20.00	38.71	0.00
	UTC	3	14	1
	%	60.00	45.16	16.67

Although the overall numbers were small it can be seen from the table in Figure 6.9.4 that, for the complex cases, the majority showing any clinical improvement were from the LMHW group (83%) and that none were from the OMHW. The UTC group had the greatest level of deterioration for both the non-complex and complex cases and the degree of deterioration was the same for the LMHW and OMHW group for complex cases.

6.9.3 Summary

Both analyses seemed to show that the change in outcome measures was not due to improvement in less complex cases. Indeed the opposite seemed to be the case with the results suggesting that the greatest amount of change was for complex cases in the LMHW group with the other conditions showing little differences in change regardless of complexity.

Chapter 7: **Results Summary**

Twice and thrice over, as they say, good is it to repeat and review *what is good.*
Plato(427-347 BC)

7.1 INTRODUCTION

This chapter presents a more interpretive discussion of the data presented previously. The main purpose is to draw the results together so that the links between this research and the literature and this research and further studies can be explored.

7.2 DEMOGRAPHIC DETAILS

The sample on which the study was based was initially representative of the population from which it was drawn. Over the course of the study the characteristics of the sample necessarily became more restricted and it was not possible to ensure representativeness in each of the comparison groups.

One unusual feature from this was that the male to female ratio in the LMHW group was the reverse of the ratio in the general sample and also for both the OMHW and the UTC groups. It is a fairly standard finding in mental health, that women are over-represented in most settings by a ratio of 2:1. The ratio of males being treated by the LMHW went against the trend.

It is difficult to know why this was the case but one possible explanation was that the LMHW was male and had good rapport

with male clients. This may have made a referral to this worker for help more acceptable to the male patients of the GPs. This phenomenon would certainly be worth understanding better as involving men in mental health is notoriously difficult. If there was something about the accessibility and familiarity of the local worker that made this a reasonable option for men it would provide a significant advantage to localised service delivery.

7.3 MISSING DATA

This section explored the possible biases in the incomplete data set, and the first thing to note was that the main cause of missing data was the loss of data from one particular GP practice. Insofar as these participants were absent from the study for reasons not connected to the study variables it can be argued that the greatest part of the missing data is Missing At Random (MAR).

The predominant finding from the missing data analysis was that there were no major differences, in the results of the analyses, between the incomplete data set and the multiple imputed data sets. This suggests that the nature of the missingness did not have a major effect on the structure of the final data set obtained.

7.3.1 Bias towards symptomatic clients

However there was a small bias towards clients with higher GHQ scores completing the study. The size of this effect was small but nonetheless needed to be accounted for. This bias was also primarily an issue for the derivation of prevalence using the second stage participant GHQ and CIDI results to estimate population prevalence. It was not particularly relevant to the question of outcome, as this involved the comparison between the groups on the clinical and quality change measures, and rates of psychiatric classification were not part of the outcomes assessment.

The main thing to note about the slight bias was that it was entirely due to a small group of participants (n=7) with very high GHQ scores who completed the whole study. There was no evidence that decreasing GHQ scores led to increasing likelihood of not completing the study. When the data from these high scoring subjects was excluded the mean difference in GHQ between completers and non-completers disappeared[9].

From this point of view, the effect reported here was due to a skew in the data introduced by a number of outlier scores. It

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[9]
$$\bar{X}_{non-completers} = 1.75, n = 359. \ \bar{X}_{Comp} = 1.70, \ n = 105. \ t = 0.205, df = 462.n.s.$$

was not representative of a systematic trend, or correlation, for

lower GHQ scorers to drop out.

7.4 ESTIMATE OF PREVALENCE

As noted in the previous chapter it would not really be

appropriate to base an estimate of the population prevalence

simply on the proportion of participants in the second stage

identified with CIDI diagnosis. This was not a question of the data

being skewed by the participants with high GHQ scores as the

design of a two-stage survey deliberately over samples high

scorers on the screening test. However, a correction is required

for the proportions of cases and non-cases included in the second

stage so that the sample reflects the population from which it was

drawn (Dunn, 1999). Therefore a sampling weight was assigned

to each second stage subject in calculating the estimated

population prevalence.

With this procedure it was estimated that slightly more than

50% of the sample had a diagnosable psychological disorder. This

was an extremely high estimate and was double the accepted

estimate for primary care populations.

One possibility for this high estimate was that the initial

primary health care sample was skewed towards subjects with

psychological problems. However, the GHQ scores and the predicted numbers of cases/non-cases in this sample were not very different from other primary care studies. If anything the GHQ scores in this study were lower than other studies. This tends to suggest that there was no bias toward more distressed patients in the sample.

If an initial skewing of the data was not the cause then it is possible that this prevalence represents the actual rate of patients with psychological disorders presenting to see their GP. The very high rate may be due to specific characteristics of this rural population which were not specifically tracked.

Interestingly, the rates were similar across the geographic locations, ranging from 57% in the North East through 56% in the East Coast to 50% in the North West.

7.5 GP RATINGS

The GP ratings scales appeared to be valid scales, though the high correlation between the GP rating of physical wellbeing and psychological wellbeing indicated that they were rating some common 'global' impression of the patient's wellbeing.

The correlation between GP rating of psychological wellbeing and the other symptom measures suggested that GPs global impressions were moderately in line with well established measures. Interestingly the strongest association between the GP rating and the SCL scales was on the distress scale which may mean that the GP rating relates to global distress rather than presence or absence of psychiatric symptoms.

There was an association between the GP rating of psychological wellbeing and CIDI diagnosis but this was a relatively small effect when compared to the relationship between diagnosis and GHQ. In another analysis, not reported, the Receiver Operating Characteristics (ROC) of the GP rating of psychological wellbeing was compared to the ROC of the GHQ and found to be the same ($Area_{GP} = 0.630$. $Area_{GHQ} = 0.627$), though it should be noted that both measures showed poor performance.

In addition to the GP ratings, the GP referrals and reported mental health activity were generally consistent with the GHQ data. So that patients who were referred, or who received some mental health treatment from the GP, had very much higher GHQ scores than those who were not referred, or who did not receive treatment.

Although these results are not directly comparable to studies that have looked at detection rates by GPs, the association between the GP global ratings and the other measures is a good indication that the GPs were good at recognising the psychological disturbance in their patients. Insofar as recognition precedes detection it seems reasonable to suggest that these results point to a reasonable rate of detection. The GP rating was not necessarily an accurate indicator of whether or not a patient would have a formal diagnosis but they were at a minimum identifying psychological distress.

7.6 OUTCOME

There were some differences between the comparison groups on initial assessment. Generally though, these differences were slight and seemed primarily to relate to the general levels of distress than numbers of symptoms reported. The LMHW group seemed to lie between the OMHW group and the UTC group in terms of general psychological disturbance and, from this point of view, may have represented 'easier' cases. However, an analysis of the complexity of cases using number of diagnoses as a metric for 'complexity' found no statistical differences between the LMHW and OMHW groups in terms of the proportions of complex cases. However, the LMHW did have a higher proportion of non-complex

cases and UTC group had a lower overall proportion of complex cases than either the LMHW or OMHW groups.

It could be argued from this data that the LMHW group had the same rate of clinically complex cases but that the overall complexity in the OMHW was greater. It could be argued that the LMHW group experienced, and perhaps expressed, less distress than the OMHW group. If 'distress' was being associated with severity, and it often is, then if the OMHW group was experiencing more distress their conditions may have been seen as more acute and this may have been more likely to lead to a mental health referral.

Whichever may be the case it was important to be able to assess whether the complexity of a case influenced the probability of change over time since it might be possible to argue that a lack of change in the OMHS group was due to the more complex nature of the problems being dealt with.

As it turned out the only group to show any statistically significant change over time was the LMHW group. On all of the summary measures of the SCL90 and on the questionnaire on quality of life, LMHW participants consistently showed positive

gains whereas participants in the other groups showed little or no change.

This finding was supported by the data on clinically significant change. Although the overall level of change was quite low using this assessment it was not very different from other studies that have used clinical significance as a marker. Basically, clinical significance is a conservative marker.

Essentially the LMHW group showed a much higher number of participants achieving improvement or recovery than either the OMHW or the UTC participants. Assuming that the rate of improvement shown by the UTC group (9%) represents 'spontaneous' recovery over time it can be seen that the rate of improvement in the OMHW group (13%) is only a slight improvement whereas the rate of improvement in the LMHW group (28%) is 3 times the base rate.

Interestingly, the phenomenon noted by a number of authors of differences between treatment and non-treatment groups disappearing after a moderate amount of time was not apparent in this study. The UTC group showed only a minimal amount of change over time and a relatively high rate of deterioration (14%). This data contradicts suggestions that

psychological intervention has only moderate and short term benefit.

Intervention did not appear to have an impact on the rates of deterioration. Both the LMHW (12%) and the OMHW (9%) groups had similar rates of deterioration to the UTC.

The question of whether these results were due to the initial complexity of cases being different between the groups was explored by exploring differences between the groups for complex cases only. What was found was that the pattern of change was strongest amongst complex cases. This suggested that, in fact, the greatest amount of change occurred in the complex LMHW participants. This finding indicated that the LMHW model was very probably most effective with the complex cases.

Chapter 8: Discussion

The end crowns all; And that old common arbitrator,
Time, Will one day end it.
William Shakespeare (1564-1616)

8.1 SUMMARY OF THE RESEARCH

The main focus of this study has been the generation of knowledge about psychological problems in rural primary care settings. The study has explored the prevalence of psychological morbidity in these settings using three different measures (the GHQ12, the GP assessment, and the CIDI-SF) and a two-stage screening approach. The ability of the GP to identify psychological problems was also explored by comparison of GP ratings with scores on the other instruments. Finally, the study evaluated the effectiveness of interventions provided by a mental health worker working in the local community compared to those provided by non-local mental health services and no intervention.

8.1.1 Review of the questions that were posed

In the first chapter three questions were posed (1.6, pp. 12-13) which were the main purpose of the study that has been described. These were; (i) whether rural clients seen by a local mental health worker would have different outcomes to rural clients seen within a traditional model. However, the context of this service evaluation also made it possible to ask questions about; (ii) the prevalence of psychological problems in rural

primary care and (iii) the recognition of these by the GPs involved in the study.

The following discussion will explore the answers to these questions, which have been presented in the two previous sections (Chapter 6:, pp. 219 & Chapter 7:, pp. 279), and raise issues as to future directions for some of these issues.

The discussion will begin with the issue of prevalence and recognition of psychological disorders and then on to the utility of the local mental health worker as a model of service delivery.

8.2 PREVALENCE OF PSYCHOLOGICAL PROBLEMS IN PRIMARY CARE

The prevalence of psychological problems can be evaluated in a number of ways. The 'true' prevalence will be based on the number of people who actually have a psychological disorder relative to those who don't. In assessing psychological conditions this is actually a relatively complex assessment to make (Dunn, 1999; Goldberg, 1989). Even the 'gold standard' psychiatric assessments cannot be considered perfectly accurate as measurement error cannot be eliminated in these instruments (Henderson, 1996).

As a result, many studies report on rates of disorder using a number of measures, usually the GHQ and a diagnostic interview, as well as utilising two-stage screening designs to estimate the population prevalence (Dunn, 1999; Henderson, Duncan-Jones, Byrne, Scott, & Adcock, 1979; Stanley & Gibson, 1985; Vazquez Barquero et al., 1997).

In this study, the GHQ estimate of morbidity was 30.8%, which was similar to rates reported for other Australian and overseas primary care populations (MaGPie Research Group, 2001; Plummer et al., 2000; Schmitz et al., 1999; Tiemens et al., 1996; Vazquez Barquero et al., 1997; Winefield et al., 1989; Worsley, Walters, & Wood, 1978). The actual 12-month prevalence estimate, of 51%, was quite a bit higher than the average identified rate of 25% , but it must be remembered that the range of prevalence estimated in the primary care studies has been found as low as 7% and as high as 52% (Barrett et al., 1988; Benjamin, Maoz, Shiber, Antonovsky, & Mark, 1992; Berardi et al., 1999; Higgins, 1994; Kessler et al., 2002; MaGPie Research Group, 2001; Olfson et al., 2000; Philbrick et al., 1996; Sartorius et al., 1993; Sartorius et al., 1996; Vazquez Barquero et al., 1997; Wittchen & Pittrow, 2002). Thus, the high rate of disorder identified in this study may be unusual, but it was by no means inconceivable.

One possibility for the large number of cases in this sample was that of an initial sample bias perhaps due to patients with psychological problems being more willing to be involved in the study. However, the rates of predicted cases on the GHQ and the mean GHQ scores were no different, and in fact somewhat lower, then other studies, which clearly meant that the initial pool was not biased towards having mental health concerns.

The other possible bias here was that those participants willing to be further assessed might also be more likely to have higher GHQ scores. There was a small but significant association between GHQ scores and progression on to the next stages of assessment. However, this was entirely due to some outlier subjects and not a general trend in the sample population. This was also reflected in the fact that the actual effect size was very small.

One possible explanation, for this high rate of psychological problems, was that the GP in a rural setting may be most likely the first, and sometimes only, health professional available to the community. In the general population it has been established that there are relatively high rates of psychological morbidity and that the majority of people with problems will see only their GP if they in fact see anyone (Andrews, Henderson et al., 2001; Andrews,

Issakidis et al., 2001; Australian Bureau of Statistics, 1998, 1999;

Issakidis & Andrews, 2002). In addition, the rural GP has often

been identified as a trusted and valued member of the local

community. This probably means that, in rural communities, there

will be a greater likelihood that people will visit their GP when

they have a psychological problem.

Therefore, the very high rate of disorder in this study

sample probably reflected a concentration of psychological

problems in patients of the rural GPs and not necessarily that

there was a higher base rate of disorder in the general population.

This rate of disorder does, however, present a somewhat

startling picture of the needs of the patients of these rural

practices. It is not possible to draw a direct connection between

case identification and need for, or response to, treatment. But,

the very large number of patients that this figure represents

suggested that the GPs would be experiencing an enormous

burden of care for psychological and emotional problems in their

patients. The lack of available services for mental health care

meant that these GPs were required to manage these issues

largely by themselves.

8.3 RECOGNITION OF PSYCHOLOGICAL PROBLEMS

The approach used in this study, in evaluating the detection of psychological problems by GPs, was similar to work that had been done in the 1980s and 1990s comparing the GP ratings of psychological distress with GHQ scores (Boardman, 1987; Goldberg & Huxley, 1992). A number of indices of the GP assessment have been developed. These were;

> d) Conspicuous Psychiatric Morbidity (CPM), which is the percentage of patients identified by the GP as having a psychological problem.

> e) Accuracy between the GP rating and GHQ score which is based on the correlation between the two, and

> f) The Identification Index (II), which is the rate of patients identified by both the GP and the GHQ adjusted for the screening characteristics of the GHQ.

In this sample, the GPs identified (CPM) that 32% of their patients had moderate to severe levels of psychological distress. This was comparable to the GHQ predicted rate of 30.8%. It was also similar to CPM estimates found in other studies. The Accuracy of the GP ratings was 0.40 which was also very similar to estimates from other studies. The Identification Index for this

study was 0.50 which was, again, very much the same level for other studies (Boardman, 1987; Boardman, Bilankis, Zouni, & Bouras, 1992; Goldberg & Huxley, 1992).

From this point of view, the GPs in this study were about as accurate at identifying psychological distress in their patients as might be expected, but only half of the patients who were detected by the GHQ were also identified by the GP.

The GP rating of psychological well-being was also found to have a minor relationship with the CIDI-SF diagnosis, though the relationship between the GHQ and the CIDI was much larger. The classification accuracy of the GP rating as a predictor of CIDI-SF diagnosis was 0.56, which again indicated that a little more than 50% of those participants identified as cases by the GP were subsequently found to have a diagnosis.

From this point of view, the recognition and detection of the GPs in these rural settings were no better and no worse than those of GPs in many other settings (Higgins, 1994; Ormel, Koeter, Van den Brink, & Van de Willige, 1991; Ormel et al., 1990; Tiemens et al., 1999; Van der Pasch & Verhaak, 1998).

There were a number of issues about the measurement of the GP assessment which need to be taken into account. This

study used a 10-point Likert scale whereas other studies have used 6-point rating scales or disorder classifications. So, these results were no strictly comparable. However, the consistency between these results and other studies suggest that the measure used was reasonable.

However, such measures can only be considered rough estimates of detection as they used a global scale for a decision making process that was probably highly modular. The GP would take into account not just the patients' presented symptoms but also the known history, the likelihood that the patient can/will comply with treatment, the availability and accessibility of treatment services, and the general benefit to the patient of making such a diagnosis (Cooper, 2003).

In addition, the assessments used in the majority of studies, including this one, have been administered cross sectionally. This means that the ongoing nature of the GPs relationship with their patients has largely been ignored. As there has been some evidence that GPs will make accurate diagnoses over time (Kessler et al., 2002; Thompson et al., 2001), these figures were likely to be under estimates of a GP's ability to identify psychological problems.

However, it has been extremely difficult to conduct this sort of research with GPs. For a range of reasons, GPs have seemed to be reluctant and suspicious of getting involved in this sort of research. Partly, this may be because they have been one of the most researched health provider populations. GPs also often identified that they were quite time poor, so any measurement tool had to be minimally intrusive to increase the probability that it would be used. So, in the absence of very committed GPs, the type of information that can be obtained will be tightly constrained (Fairhurst & Dowrick, 1996; Ward, King, Lloyd, Bower, & Friedli, 1999).

Nonetheless, these results indicated that GPs were not identifying a substantial proportion of cases that were presenting to them. In conjunction with the prevalence estimate, that 50% of patients had a psychological disorder, these results indicated that there was a substantial amount of unmet need in this population. At the very least, many of these primary care participants needed a formal diagnostic evaluation and many would have benefited from psychological intervention.

However, the other arm to this issue, after presentation and detection, is access to appropriate intervention. For many rural GPs there are few, if any, local services that can be accessed to

provide care for their patients. Where visiting mental health services are available there remain questions about the accessibility and effectiveness of these to rural patients.

8.4 THE IMPACT OF A LOCAL MENTAL HEALTH WORKER MODEL

This study demonstrated that participants receiving intervention from the local mental health worker improved much more than those who were being treated by another mental health service or those not receiving treatment. Those participants being seen by another mental health service were no different on outcome measures to those participants not receiving treatment.

In contrast to other studies, there was only slight improvement over time for those participants who were not treated despite the fact that they had milder symptoms compared to the two treatment groups (Bower et al., 2003; Katon & Gonzales, 2002; Katon et al., 1995; Katon et al., 1999; Rowland et al., 2000).

The conclusion that can be drawn from these results was that there was no substantial benefit to rural participants being treated by services from outside of their community whereas

participants treated in their local community improved to a greater degree.

The actual rates of clinical improvement were quite low overall, but this was not unusual when using clinically meaningful indices of change. In fact, the overall rate of change was comparable to most other studies, which relates more to the general difficulty for psychological interventions to effect meaningful change in real world clinical conditions, than to the effectiveness of the model being evaluated (Kazdin, 1999; Schauenberg & Strack, 1999). Nonetheless, the rate of clinically meaningful improvement in the local mental health worker group continued to be substantially better than no treatment and treatment by another service.

One possible explanation for the differences was that the local mental health worker client group had a less complex symptomatology and so was more likely to show change. However, there were no differences in the proportion of complex cases between the local and other mental health service groups, although there were a greater number of non-complex cases in the local mental health worker group. In addition, the analysis of complex cases suggested that the participants who mainly changed in the local mental health worker group were the

complex cases and that no similar changes were seen in complex

participants from the other mental health service group.

8.4.1 Lack of specific understanding of the causes

The understanding of these findings was necessarily limited

by the design of the study. As it is, the study can't rule out other

alternative explanations for the change in the local mental health

worker group. For instance, the choice to use the local mental

health worker instead of the usual mental health service, by either

the GP or the patient, constituted a significant difference between

the groups. In the Scottsdale area there would have been the

choice between referring to the local mental health worker or to

the visiting mental health professionals, or to the regional mental

health service. For those participants in the other geographical

locations there was no such choice as there was no local mental

health worker available. Making such a choice may be associated

with preparedness to resolve issues and so change the nature of

the population being treated.

Also, the 'dose' of interventions was not accounted for, so

the comparison between the treatment groups was unavoidably

crude. It was plausible that the participants in the local mental

health worker group would have been seen more frequently and

more regularly than the other mental health service group. The local mental health worker utilised a model of case management involving regular, and relatively frequents contact, with clients over a fairly brief period (Howard, 2000 (Personal Communication)). In contrast, outreach mental health clinicians see clients much less frequently and often have major gaps between clinical consultations[10]. Therefore, the difference between these two groups could simply have been a response to the increased number of direct client contacts by the rural mental health worker.

8.5 HOW TO UNDERSTAND THE 'ACTIVE INGREDIENTS'?

Having said this, it must be pointed out that these factors could be considered to be the 'active ingredients' in a model of locally delivered mental health services. If the service was available in the local community the service will be a familiar and known quantity and visits could be regular and more frequent.

A major question that arose from the difference between the services was what were the effective factors? Was it that the local service was in, and of, the local community? Or, was it that

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[10] In the authors experience, as an outreach mental health clinician, it was not unusual to see clients once every 4 to 6 weeks and sometimes for only 3 to 4 sessions.

it was more accessible so more able to deliver a course of intervention? If a visiting service were equally able to deliver a complete course of intervention would there be any differences in outcome?

The effectiveness of the local mental health worker in this study indicated that this was a model that should be adapted for other rural communities. The questions that remain, as to what makes this an effective intervention, form the basis for further and more detailed research about the processes involved.

In addition, the complexity of issues involved in capturing the 'active ingredients' of a service model, and the multitude of factors that influence the utilisation and effectiveness of a service, mean that quantitative, experimental methodologies should be used in conjunction with qualitative approaches to 'thicken the story'. Conversations and interviews with GPs about the choices of referral that they made, interviews with the clients about their experiences of the service, narratives from the community about 'their' service and about mental health, and interviews with local and visiting mental health workers about their experiences, would add immeasurably to a fuller understanding of the strengths and weaknesses of the different models of service delivery.

8.5.1 Research as an opportunistic and collaborative endeavour

Opportunities for research have often been lost because clinicians and researchers focus on methodologies which are considered the 'gold standard', but which are extremely difficult to implement (Orpin, 2003). It has been noted that there is a significant gap in the evidence base for rural health generally. and for rural mental health in particular (Parsons et al., 2003). Given the current funding for 'pure' or 'basic' research in this area (Jorm et al., 2002), it does not seem likely that this gap will be narrowed substantially any time soon.

This study was an example of one of those natural collaborations, which also provided opportunities for researching basic questions, created by the need to evaluate programs. Orpin (2003) has suggested that the exploration of 'scientific' research questions related to rural health, may have to make more of the opportunities provided by such collaborations. Despite the call for a national research agenda in rural mental health in Australia, this is an area that has remained neglected (Judd & Humphreys, 2001; Judd, Murray et al., 2002). This study has, to some degree, exemplified the benefits that can be produced through collaborative endeavours involving government, academia, and the community.

8.5.2 The impact on the Tasmanian Rural Mental Health Plan

As has been mentioned, the Tasmanian Rural Mental Health Plan was partially developed on the basis of the project that this study has described. One of the recommendations from the Plan was that there be a pilot study, extending the model of service delivery described in this study, in three other rural Tasmanian communities. The draft evaluation report of the implementation of the Plan has noted that four other communities had employed a local primary mental health care worker in addition to the three communities identified for the pilot implementation (Boote & Cook, 2004: See Figure 8.5.1).

The critical question that occurs from the broadening of the model into Tasmanian rural communities is whether the collaboration can naturally continue. There will be excellent opportunities to further explore the questions as to what the 'active ingredients' were in the local mental health worker model whilst, at the same time, continuing to evaluate whether the model has clinically meaningful effect for people in rural communities. But, it was not at all clear from the evaluation report (Boote & Cook, 2004) that these opportunities had been recognised.

As Judd and colleagues have pointed out (Judd, Fraser et al., 2002), the effectiveness of mental health service models should be evaluated, and this could particularly apply to models used to service rural communities because, too often, the models developed have been based on the dubious assumption that 'one size fits all' (Fraser et al., 2002). This would seem to require not only recognition of the opportunities but also the maintenance of collaborative partnerships across many communities over many years.

Figure 8.5.1: Sites where Local Primary Mental Health workers have been employed.
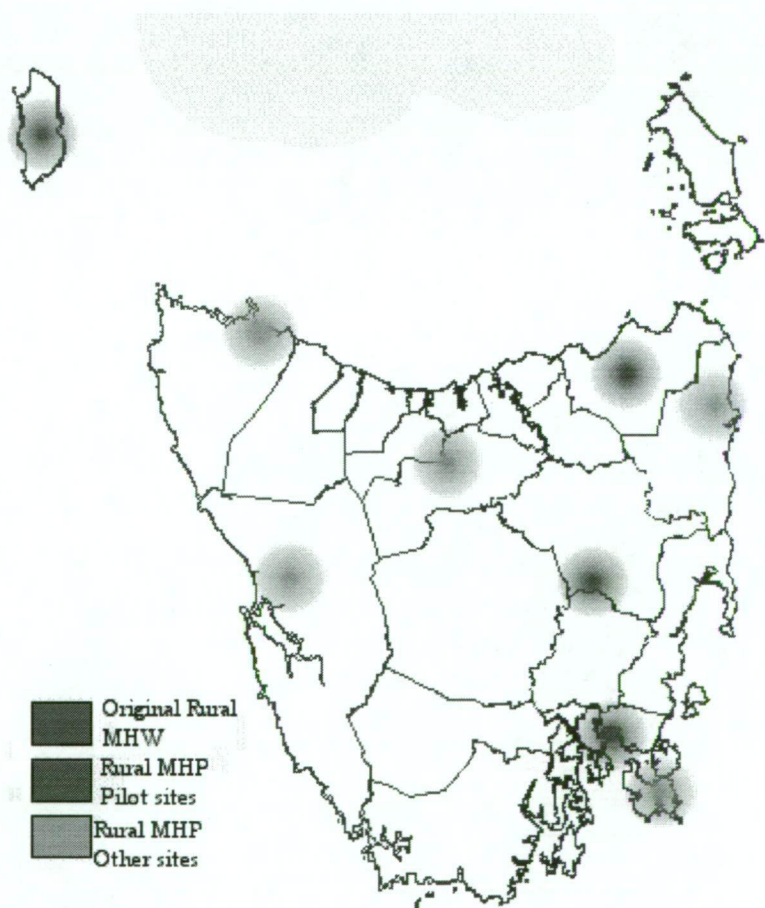
8.6 AND FINALLY...

It is hard to disagree with Judd and her team who have repeatedly drawn attention to the need for a national focus on rural mental health, a national rural mental health plan for services and for research (Fraser et al., 2002; Judd, Fraser et al., 2002; Judd & Humphreys, 2001; Judd, Jackson et al., 2002; Judd, Murray et al., 2002). Such an approach would both highlight the issue of rural mental health and provide a common framework for the development of research and service delivery programs. By doing so, models, such as the one described in this study, could be exposed and potentially adapted to other rural situations.

But, the key word here is 'adapted'. The model evaluated in this research was a community driven initiative. The identification of a need by the community, and the adaptation of an agreed model were critical factors in the 'ownership' of the service. This was probably a significant reason why the model was so successful. One thing was very clear from the consultations in the development of the Tasmanian Rural Mental Health Plan, and that was that imposed solutions were seen as ineffective (Boote & Cook, 2004; Mental Health Plan Steering Committee, 2001). Communities need to be involved in the planning, development

and implementation of services that suit the needs and character of the community.

This may be a more complicated and expensive way, in the short term, to establish and implement services, but it seems likely that a localised solution will be more effective than one that comes from outside. The effectiveness of the service will translate into positive social, psychological, and economic benefits as more people respond to the service and are thus able to live productive and effective lives. How such benefits can be costed and contrasted with less consultative approaches continues to be a difficult issue to resolve methodologically.

Ultimately, service delivery in rural areas would seem to require partnerships and integration. Focusing on the specialist tertiary issues in mental health does not address the real burden in the community, which requires primary mental health intervention. More than this, the specialist framework locks in a view that what is required are specialist models of intervention. What is really required is an integration of service development with research. Collaborations between rural communities, local Universities, regional mental health services, and other agencies will ensure that the models developed are evaluated and

encouraged to grow in dynamic partnerships involving the clients,

the community, and the service providers.

APPENDIX 1: AN OVERVIEW OF MULTIPLE IMPUTATION FOR MISSING DATA ANALYSIS.

1.1 THE PROBLEM OF MISSING DATA

Missing data are a frequent and nearly universal problem in survey and longitudinal research settings. In survey research participants may not answer questions because they forget or skip them, because they choose not to answer, because they don't have the information to hand, or any number of other reasons. In longitudinal research participants may drop out entirely because they relocate, die, or for some other reason that may or may not have anything to do with the study.

Until recently the approaches to managing the issue of missing data have been surprisingly crude. This is probably because sophisticated analysis of missing data requires the use of computationally complex data modelling using Bayesian statistics. This is an area of mathematical statistics that has remained historically obscured by the ease of use and popularity of 'frequentist' statistics (Austin, Brunner, & Hux, 2002; Gurrin, Kurinczuk, & Burton, 2000). But, in recent decades researchers have been given increasing access to computational tools for dealing with missing data although such tools are still rarely integrated into mainstream statistical data-analysis software (Schafer & Olsen, 1998). Consequently researchers do have

access to sophisticated methods for missing data analysis but they must first be aware that there is an inherent problem with missingness. Unfortunately, this is not generally the case as many researchers remain ignorant of the issues (Patrician, 2002).

1.1.1 **What's the problem**

Missing data cause so much difficulty because most statistical approaches rely on complete data sets for analysis. Therefore most data analysis programs exclude data by default if there is any level of missingness in the data record. The standard defaults are listwise or pairwise deletion/exclusion and these will be described below (1.2). Thus missingness is treated as a nuisance factor which can be managed by editing datasets to give the appearance of completeness. In actuality, this editing frequently leads to answers based on the data analyses being biased, inefficient, and unreliable (Schafer & Graham, 2002).

1.1.1.1 <u>Non-response bias</u>

The problem of non-response bias arises when the participants who do not respond to a particular question or questions differ in some way from those who do respond. This introduces a systematic pattern, or bias, into the missingness of

the data. This bias may or may not be related to the broad

objectives of the study or to the specific question(s) that have

been missed. It is not possible to evaluate this relationship unless

the researcher has included measurement of variables that relate

to the non-responsiveness. In some situations it is possible to

predict non-responsiveness or drop out and measure theoretical

correlates to account for the biasing effects but in reality such

knowledge is limited and unlikely for most studies.

By managing the missing data through deletion of data

points the researcher entrenches the bias in the data set and,

thus, throughout any subsequent data analysis. It is unusual to

see missingness analysed, so it is more likely than not that

researchers are unaware of whether the missingness of the data

is leading to bias in the analysed data set.

1.1.1.2 Compromised analytic power

The power of a study can be significantly compromised by

the approach to handling missing data and often in such a

complicated way that it is difficult to determine the actual effect.

Depending on the type of deletion of data that is chosen to deal

with missing data researchers may reduce the overall sample size

to such a degree that power is substantially reduced. Or, the

power of multivariate analyses with different levels of missingness across factors can be compromised in such a way that it is difficult to interpret the meaning of standard effect size measures.

It can be seen that the biggest danger for a research project is non-recognition that an analysis has been compromised by simply accepting a default approach to missing data. The default approaches provide a 'complete' data set, but at a cost. The researcher must be mindful of this cost, and use procedures to explore and understand the missingness in the data, so that they can undertake a planned analysis of a dataset that takes into account that some of the data is missing. At times, the default options for data deletion are the appropriate technique for managing missingness but they should be chosen rather than simply accepted.

1.1.2 Describing missing data

Data can be considered to be missing at two levels, *unit nonresponse* or *item nonresponse*. Unit nonresponse describes the situation when data is missing from a subject for all variables at a point in time such that the full data collection procedure has failed (i.e. the participant is lost to follow up). Item nonresponse happens when partial data is available for the participant on some

or all of the variables (i.e. the participant answers questions selectively) (Schafer & Graham, 2002).

In longitudinal studies, participants may be available for some waves of data collection and missing for others. This type of missingness can be called *wave nonresponse*. Dropout can be considered as a particular case of wave nonresponse in which the participant is unavailable for one panel of data collection and does not return. This is probably the most common form of nonresponse in longitudinal studies, but it is not uncommon for participants to be absent for one wave and then reappear for the next (Schafer & Graham, 2002).

Most data sets can be conceptualised as matrices where rows correspond to observational units or participants and columns to items or variables. Such a framework allows a visual description of several important classes of missing data patterns.

Referring to Figure 8.6.1, it is possible to see that a univariate pattern of missingness (i), occurs when there is a set of missing data points on one variable across a multiple number of subjects. The second pattern is one of monotonic missingness (ii), where missingness on one unit predicts missingness on all subsequent units. This pattern of missingness is most likely to

arise in longitudinal studies with subject attrition in each wave.

The final pattern of missingness is essentially arbitrary (iii), where

any set of variables may be missing for any unit.

Figure 8.6.1: Patterns of nonresponse in matrix data sets: (i) univariate missingness, (ii) monotonic missingness, and (iii) arbitrary pattern. (Adapted from (Schafer & Graham, 2002).)
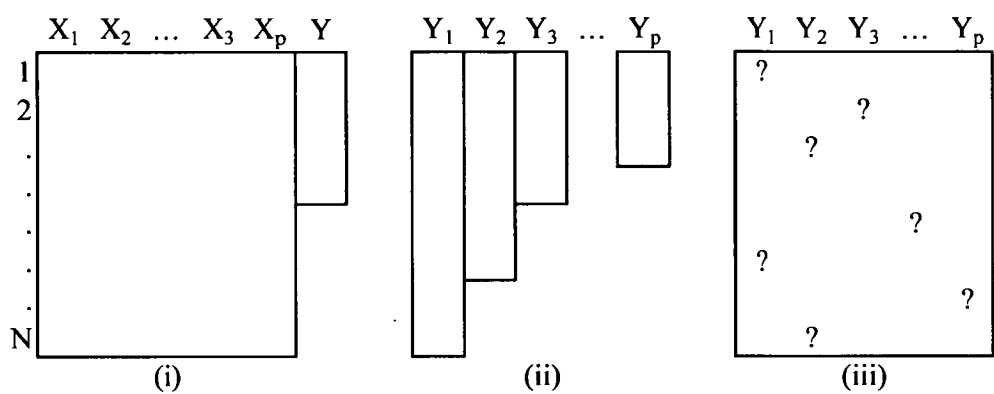
The other aspect of missingness, which is not often

appreciated, is that it can be regarded as having a probabilistic

distribution which is determined by a hypothetical *missingness*

mechanism. This distribution is essentially a mathematical device

to describe the rates and patterns of missing values and to

capture relationships between the *missingness* and the values of

the missing items (Schafer & Graham, 2002). This probability of

missingness can be classified according to the relationship

between the missingness and the actual data as *Missing at*

Random (MAR), Missing Completely at Random (MCAR), and

Missing Not at Random (MNAR).

1.1.2.1 <u>Missing at Random</u>

Although these concepts are best described using probability notation they can also be understood in more general terms. As probability theory introduces another level of theoretical complexity this discussion will confine itself to common English descriptions.

When data is considered to be MAR this is a much less restrictive, and much more likely, assumption than MCAR. Responses are said to be MAR when the probability of a missing value is not dependent on the value itself but may depend on the values of other variables in the data set. For example, failure to report weight on a survey might be related to gender or age in which case the missingness would be said to be MAR (Patrician, 2002).

Unfortunately it is not possible to test the assumption of MAR directly simply because there is no way of knowing what the missing values are. So when data are missing beyond the control of the researcher one can never be sure that MAR holds. In

reality, of course, it also more likely that several mechanisms for missingness will be operating some of which are related to the data in question whilst others are entirely unrelated (Schafer & Olsen, 1998).

An assumption of MAR essentially determines the formal probability model to be used in imputation of missing data. Although it can not generally be guaranteed the assumption of MAR leads to more robust methods than such ad hoc procedures as listwise deletion or mean substitution (Schafer & Graham, 2002).

1.1.2.2 Missing Completely at Random

Data is considered to be MCAR when there is no relationship between the variable containing the missing data and the rest of the variables in the data set. For example, if a survey question asked about height, the missing values on this variable would need to be not related to the height of the participants or to their gender, age, weight, or any other variables in the survey for the missingness to MCAR. If it were found that short people were less likely to record their height or that women were less likely to report height the missingness would be non-random. In the first

instance the data would be MNAR whilst in the latter case the data would be MAR.

It is possible to partly verify whether data is MCAR by comparing responders to non-responders on all other variables but, as with MAR, it is virtually impossible to determine whether the probability of missingness was a result of the value of the variable itself.

The assumption of MCAR is a much more restrictive model and is seldom useful in practice. As the MAR assumption is so robust it is usually better suited to real-world applications than MCAR (Schafer & Graham, 2002).

1.1.2.3 <u>Missing Not at Random</u>

Data is said to be MNAR when the missingness depends on the value of the variable that is missing. For example, people in either high or low income brackets are much less likely to report their income on surveys. In this circumstance, the missingness is related to the variable that is missing so the missingness is non-random.

When data is MNAR it is difficult to develop methods for imputing or substituting the missing values since they depend on

the value that is actually missing. The best approach is for researchers to use proxy measures to explore whether the missingness is related to the variable that is missing (Patrician, 2002). For example, information about occupation can provide a general indicator of income and this could be used to check whether missing income data was related to probable income levels. Essentially this will only enable the researcher to be cognisant of the issue, and interpret results with due caution, rather than providing a solution.

It is possible to specify models of probability based on MNAR data but this is a complex area of mathematical modelling which is just starting to be explored by theoretical statisticians (Schafer & Graham, 2002).

1.2 APPROACHES TO HANDLING MISSING DATA

As has been mentioned previously the primary approach to managing missing data has frequently dealt with it as a nuisance that needed to be eliminated rather than managed. In addition though, it must be acknowledged that the mathematical complexity of procedures for managing missing data make them generally inaccessible to anyone but advanced theoretical statisticians.

This section describes in brief some of the main procedures that are used to deal with missing data.

1.2.1 **Listwise deletion**

Listwise deletion is generally the most common default option for managing missing data in most statistical analysis software (Patrician, 2002). The technique involves simply discarding all cases with any missing data such that all analyses rely on only those cases with a full complement of values. The main advantage of this approach is that it accommodates any type of statistical analysis.

If the data set is large enough and the data is MCAR this approach will generally yield unbiased parameters although the standard error estimates increase as sample size declines. But, the results can be misleading if a large proportion of the sample is discarded and this is exacerbated if the data is not MCAR. If the data is MAR, listwise deletion will generally lead to biased estimates, either too high or too low, and dramatic reductions in power.

1.2.2 Pairwise deletion

The other common default data exclusion method is pairwise deletion. In this technique a case is eliminated from the analysis if one or some of the variables included are unavailable for analysis so the case is excluded from only those analyses which require the missing data value. This approach does not have universal applicability and is generally limited to correlational and regression analyses (Patrician, 2002).

As with listwise deletion, pairwise deletion is probably only appropriate if data can be assumed to be MCAR. Similar sorts of issues with biasing of estimates occur if the data is MAR.

The problem with both of these approaches is that they require an assumption that the excluded cases are a *random* subsample of the data set. Generally speaking this will be an erroneous assumption and deletion techniques lead to biased estimates which cannot be thoroughly evaluated in the absence of knowledge about the distribution of the missingness.

1.2.3 Weighting techniques

Another method for handling missing data is to weight respondent's data by how many units they represent.

Respondents and nonrespondents who are similar on some set of variables form a pool of possible data providers. The values provided by the respondents are then weighted by the proportion of participants that they represent.

This approach requires an assumption that there is no unit nonresponse bias and can become quite unworkable if there is also item nonresponse. The technique is thought to reduce the biasing that is found with deletion methods but standard error calculation is very much more difficult. Overall, weighting reduces sample variance because multiple identical values replace the missing values (Patrician, 2002).

1.2.4 Single imputation

Imputation is a term that describes a technique for substituting a missing value with an estimate of that value based on the values of other variables or a reasonable estimate. In single imputation one value is ascribed to the missing value.

A common example of single imputation is means substitution. In this approach, missing values are replaced by the sample mean of the variable. Although it is a simple technique it has some major limitations, including that it ignores the issue of

nonresponse bias. Mean substitution also leads to significant problems with statistical inferences as sample variance is decreased and this leads to biased correlations and estimates that are too close to the mean.

Other examples of single imputation include 'hot deck' imputation in which a participants' missing values are replaced with the values of another participant randomly selected but matched on relevant criteria (i.e. age, gender, SES, etc). The difficulty with this approach is that variability is consequently underestimated and it requires that there be no substantial difference between respondents and nonrespondents.

Another approach is linear regression where predictive equations based on complete case data are used to generate the imputed value using the participant's non-missing variables as predictors. This approach can work well only as long as the predictors are strong. However, the approach also leads to a reduction in the variability of the sample overall.

Single imputation techniques have some advantages in that complete-data methods for analysis are possible and the data set is more manageable. However, single imputation methods treat

the substituted values as true and thus the precision of tests is over-estimated.

1.2.5 Multiple imputation

An increasingly popular technique that addresses many of the weaknesses of other methods for handling missing data is multiple imputation. Multiple imputation is a predictive approach to handling missing data and blends classical approaches and Bayesian statistical techniques. The technique relies on iterative algorithms to create several imputations for each missing value, such that the imputations are plausible insofar as data relationships and data distribution are maintained.

The main strength of MI is that is based on an explicit understanding that missingness is subject to probabilistic modelling and that satisfactory substitutions require that the distribution of the missingness be taken into account. The technique requires that the imputation model is specified and used to impute a multiple number of data sets. Each of these data sets is then analysed separately and the resulting parameter estimates and error variances are then combined. This combination yields a single set of test statistics, parameter estimates, and standard errors.

1.2.5.1 Assumptions and constraints

There are a number of assumptions that should be met for the outcome of MI to have validity. The first is that the missing values should be MAR. Next the imputation model should match the model used for the analysis. As the imputation should preserve all of the important associations between the variables in the dataset, including those interactions that will be part of the final analysis, the imputation must properly preserve these relationships. Finally, the imputation model should include all of the relevant variables and their associations to ensure that potentially meaningful relationships between variables and missingness are included.

1.2.5.2 Advantages

The main advantage of MI is that it allows the use of complete-data methods for analysis. In addition, MI includes random error, as random variation is built in as part of the imputation process. Because repeated estimations are used, MI produces more reasonable estimates of standard errors, a major failing for single imputation methods. In addition, MI can accommodate any model of the data and does not require specialised software for the actual data analysis.

1.2.5.3 <u>Disadvantages</u>

Most of the disadvantages of MI are pragmatic. It takes considerably more effort to create the imputations, significantly more time to run the analyses, and requires more data storage space.

In addition, MI is often considered to be statistical sleight of hand and many people do not properly understand what is being done with this approach. There are a number of papers showing that MI accurately reflects the observed information, but there is still a danger that the estimates will be seen as based on conjured data.

1.3 THE PROCESS OF MULTIPLE IMPUTATION

The process of MI is relatively straightforward. Several data sets are generated and then analysed separately. The resulting estimates are then combined through averaging formulas to produce one set of parameters. The amount of missing data determines the number of imputed data sets, though most statisticians recommend between 3 and 5.

1.3.1 **Selecting a model**

The first step in MI is to select a model for the data set. The most common model for MI is the multivariate normal, which assumes that all the variables have a normal distribution, are linearly related, and have a normal error term. The model of imputation should include all the variables for the intended analysis as well as others that might be predictive of the missing values. It is generally recommended that more, rather than fewer, of the variables in data set should be included in the model for imputation.

1.3.2 **Estimates of means and covariances**

The next step in MI, is to produce estimates of the means and covariance matrix using an expectation and maximisation (EM) algorithm. These two steps form the basis for an iterative process which continues until the process converges and a maximum likelihood estimate results. The expectation step is somewhat like a regression estimation of the missing value while the maximisation step uses the new value to calculate means and covariances. The expectation step then uses these new values to calculate a new imputation which is then used to calculate means

and covariance estimates. These steps continue until there is little or no change in the estimates from one iteration to the next.

1.3.3 **Data augmentation**

In this step the multiple data sets are generated via a data augmentation algorithm. Data augmentation is similar to an EM process but is a stochastic Bayesian method which produces probabilistic estimates. Essentially data augmentation fills in the missing values and makes inferences about the parameters in an iterative process. The procedure of alternately simulating missing data and parameters creates a Markov chain which eventually stabilises and converges in distribution. This is a distribution of the missing data which is essentially a predictive distribution. Data values are then drawn randomly from this distribution to substitute for the missing values.

1.3.4 **Data analysis and summation**

Once a number of data sets have been generated each one is analysed using the same approaches. Each analysis yields parameter estimates and estimates of standard errors. These are then combined using specific averaging formulas that take into

account the number of imputations, the degree of missing data, and the variances among the parameter estimates.

This process is made considerable easier by the availability of software such as NORM (Schafer, 1999) which automates each of the steps described above except that the imputed data sets are analysed with standard statistical software. In addition to providing overall estimates and standard errors, NORM provides estimates of t-values and p for estimating the significance of the differences between values, and confidence intervals for the lower and upper limits of the estimates. NORM also produces an estimate of the rate of missing information. This estimate can be used to generate a rough estimate of the efficiency of the MI inference.

1.4 SUMMARY

The key lesson about missing data is that, before any analysis, the researcher should explore their dataset for the amount and patterns of missing information. Once it has been determined that missingness is part of the data set, the researcher should then go about determining the best way to handle the missing data. Rather than abandoning potentially valuable data, and introducing bias into any analyses, the

researcher now has a number of options for estimating the

missing data points. Of all the techniques available, MI is proving

to be the simplest and most robust approach, particularly in

situations where data is unlikely to be missing completely at

random.

APPENDIX 2: RESEARCH PROTOCOL

UNIVERSITY OF TASMANIA
DEPARTMENT OF RURAL HEALTH

Rural Mental Health in Primary Care Settings

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Research Protocol –
Scottsdale, Smithton, St Helens, St Marys

Project: This research project has grown out of the location of a mental health worker in Scottsdale some three years ago. This worker was employed under a Commonwealth grant to provide early intervention to patients presenting to their GP's with mental health problems. This is a unique model of mental health delivery in primary care and contrasts with the dominant practice of visiting mental health workers providing consultations to GP's. The level of dissatisfaction with this second model is evident in most forums where GP's opinions are sought.

There is considerable anecdotal evidence that the MH worker in Scottsdale has very successful in direct clinical care, GP knowledge and understanding of mental health issues, community understanding and support, and in the development of community networks to assist people with mental health problems. But, there is no quantitative and very little structured qualitative support for this model of service delivery. As a consequence, the University Department of Rural Health has been funded to conduct a

comprehensive research oriented evaluation of this model of mental health delivery to rural primary care practices.

Design: This project uses a two-phase design to identify what proportion of patients who are presenting to their general practitioners actually have a mental health problem. Phase 1 involves using the General Health Questionnaire-20, in conjunction with the clinical judgement of the GP, as a screening instrument. Phase 2 involves following up all those patients screened positive, as well as a statistically meaningful number of those screened negative, and further assessing them using the Symptom Checklist – 90, The EuroQol assessment of quality of life, and a DSM-IV diagnostic interview. Over the course of the project all patients with a mental health problem will be reassessed to track changes in their mental health status. Utilising a naturalistic case tracking approach, the project will be able to compare the outcomes for patients who receive different forms and levels of intervention.

The involvement of Smithton, St Marys, and St Helens is to provide the control factors for comparison with the Scottsdale model. Smithton was chosen because it has similar demographic and geographic characteristics to Scottsdale. St Marys and St Helens were chosen because there is a well established model of visiting mental health workers to the area.

Subjects: All patients aged between 16 years and 70 years presenting to their GP surgery for diagnosis and treatment over a 1 month period. All patients should be offered the screening envelope and questionnaire on only one occasion.

Procedure: There are several steps to the screening procedure. Some will require action from the reception/administrative staff, some from the patient, and some from the GP.

1.   When the patient presents for their appointment they should be asked to read the information on the envelope about the Mental Health project.

2.   If the patient consents to participate in the project, the administrative person should write the name of the practice and the patient's practice specific file number on the back of the envelope.

3.   The patient should then be given the envelope and the "How are you feeling?" questionnaire with a pencil and asked to fill it in whilst they wait to see the GP.

4.   If the patient has any questions about the screening instrument, the administrative staff should direct them to the GP for clarification.

5.   Once the patient has filled in the screening instrument they are asked to give it to the reception/administrative staff or to the GP. If they choose to give it to the reception/administrative staff the envelope should then be passed on to the GP when the patient goes in to see them.

6.   Once the patient has been seen, the GP should fill in the back of the envelope. This involves reporting on the physical and psychological well-being of the patient and indicating what treatment decision was made.

7.   On completion the envelope should be placed in the box provided until it is collected by the researcher, Alistair Campbell, at Oakrise CAMHS, 3 Kelham St, Launceston.

If, at any stage during the project, there are any concerns about the way that the project is being conducted or the manner in which you or the patients have been dealt with please contact the Chair or the Executive Officer of the University Human Research Ethics Committee by ringing (03) 6226 7569 or (03) 6226 2763.

If there are any problems that are not covered by this protocol please ring Alistair Campbell on (03) 6336 2867 for assistance.

Many thanks for your involvement in this project.

APPENDIX 3: CONSENT FORM FOR PARTICIPANTS

UNIVERSITY OF TASMANIA
DEPARTMENT OF RURAL HEALTH

"How are you feeling?"

Locked Bag 1-372, Launceston
Tasmania 7250 Australia
Telephone: 03 6324 4000
Fax: 03 6324 4040

Email: Alistair.Campbell@utas.edu.au

Thank you for taking the time to read about our project. I hope that you will feel able to help us with it.

If you are willing to be involved in the research, please

1. Sign this form below and tell us if you would be willing for us to talk to you some more.

2. Answer the questions on the page inside this envelope

3. Put the pages back in the envelope and seal it.

4. Give the sealed envelope to your doctor.

Statement of Informed Consent

I have read the information supplied about this research. I understand that my participation is voluntary and that I can withdraw at any time. I understand that I will be asked a range of questions about how I am feeling and my general state of health. I also understand that the information I provide will be treated as confidential.

| Are you willing to be involved in further research? | YES | ○ I am willing to be involved in further research. |
| | NO | ○ I am **not** willing to be involved in further research. |

| Are you willing for us to inform your GP of your results? | YES | ○ I am willing for my doctor to be informed of my answers to these questions |
| | NO | ○ I am **not** willing for my doctor to be informed of my answers to these questions |

Please sign here

_____ Date

_____/_____/2000

APPENDIX 4: 'HOW ARE YOU FEELING?'
SCREENING QUESTIONNAIRE.

"How Are You Feeling?" Questionnaire

Gender	Age	Other Details
O Male O Female	O 16 - 25 years O 25 - 35 years O 35 - 45 years O 45 - 65 years O 65 - 75 years O 75+ years	O Employed f/t O Employed p/t O Unemployed O Disabled O Retired O Other O Not Applicable

Physical Health

Are you currently being treated for any of the following?

O Diabetes   O High Blood Pressure   O Asthma   O Stroke
O Heart Trouble   O Breathing Trouble   O Cancer   O Arthritis/rheumatism

O Other:_____

Please read this carefully:

We would like to know if you have had any medical complaints, and how your health has been in general, <u>over the past few weeks</u>. Please answer <u>ALL</u> the questions on the following pages simply by underlining the answer which you think most nearly applies to you. Remember that we want to know about present and recent complaints, not those that you had in the past.

It is important that you try to answer <u>ALL</u> the questions.

Thank you very much for your cooperation.

Have you recently:				
1. been able to concentrate on whatever you're doing?	better than usual	same as usual	less than usual	much less than usual
2. lost much sleep over worry?	not at all	no more than usual	rather more than usual	much more than usual
3. been managing to keep yourself busy and occupied?	more than usual	same as usual	less than usual	much less than usual
4. been getting out of the house as much as usual?	more than usual	same as usual	less than usual	much less than usual
5. felt on the whole you were doing things well?	better than usual	about the same	less well than usual	much less well

Please Turn Over...

"How are You Feeling?"   Page 2

6. been feeling mentally alert and wide awake?	better than usual	same as usual	less alert than usual	much less than usual
7. felt that you are playing a useful part in things?	more than usual	same as usual	less useful than usual	much less useful
8. felt capable of making decisions about things?	more than usual	same as usual	less than usual	much less capable
9. felt constantly under strain?	not at all	no more than usual	rather more than usual	much more than usual
10. felt you couldn't overcome your difficulties?	not at all	no more than usual	rather more than usual	much more than usual
11. been able to enjoy your normal day-to-day activities?	more than usual	same as usual	less than usual	much less than usual
12. been taking things too hard?	not at all	no more than usual	rather more than usual	much more than usual
13. been able to face up to your problems?	more so than usual	same as usual	less able than usual	much less able
14. found everything getting on top of you?	not at all	no more than usual	rather more than usual	much more than usual
15. been feeling unhappy and depressed?	not at all	no more than usual	rather more than usual	much more than usual
16. been loosing confidence in yourself?	not at all	no more than usual	rather more than usual	much more than usual
17. been thinking of yourself as a worthless person?	not at all	no more than usual	rather more than usual	much more than usual
18. been feeling reasonably happy, all things considered?	more than usual	about the same as usual	less than usual	much less than usual
19. been feeling nervous and uptight all the time?	not at all	no more than usual	rather more than usual	much more than usual
20. found at times you couldn't do anything because your nerves were too bad?	not at all	no more than usual	rather more than usual	much more than usual

APPENDIX 5: GP RATING SCALES AND MENTAL HEALTH ACTIVITY

GP SECTION

Place a mark (✕) on the lines below to indicate the current physical and psychological wellbeing of the patient you have just seen.

Physical Wellbeing

Low——————————+————————┴————————+——————High

Psychological Wellbeing

Low——————————+————————┴————————+——————High
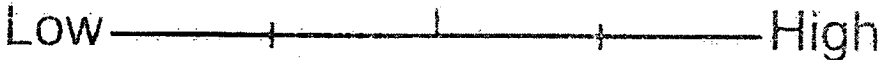
Please indicate whether you provided any mental health intervention during this consultation.	☐ Prescribed medication
	☐ Provided counseling
	☐ No Mental Health intervention
	☐ Referred to mental health specialist
	TO ☐ Local Mental Health Worker
	☐ Visiting Mental Health Worker
	☐ Private Psychiatrist
	☐ Other Counsellor

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APPENDIX 6: COMPOSITE INTERNATIONAL DIAGNOSTIC INTERVIEW – SHORT FORM (CIDI-SF)

CIDI-SF 12 MONTH DSM-IV VERSION - v1.1, December 2002

SECTION A: MAJOR DEPRESSIVE EPISODE

*A1. During the past 12 months, was there ever a time when you felt sad, blue, or depressed for two weeks or more in a row?

YES...1
NO...5 GO TO *A9
(IF VOLUNTEERED) I WAS ON MEDICATION/ANTI-DEPRESSANTS 6

*A1a. For the next few questions, please think of the two-week period during the past 12 months when these feelings were worst. During that time did the feelings of being sad, blue, or depressed usually last all day long, most of the day, about half the day, or less than half the day?

ALL DAY LONG 1
MOST..2
ABOUT HALF..3 GO TO *A9
LESS THAN HALF...4 GO TO *A9

*A1b. During those two weeks, did you feel this way every day, almost every day, or less often?

EVERY DAY..1
ALMOST EVERY DAY 2
LESS OFTEN...3 GO TO *A9

*A1c. During those two weeks did you lose interest in most things like hobbies, work, or activities that usually give you pleasure?

YES 1
NO 5

*A1d. Thinking about those same two weeks, did you feel more tired out or low on energy than is usual for you?

YES 1
NO 5

*A2. Did you gain or lose weight without trying, or did you stay about the same?
Interviewer: If R asks: "Are we still talking about the same two weeks?" Answer: "Yes."

GAIN...1
LOSE...2
(IF VOLUNTEERED) BOTH GAINED AND LOST WEIGHT 3
STAY ABOUT THE SAME...4 GO TO *A3
(IF VOLUNTEERED) R WAS ON A DIET ....5 GO TO *A3

*A2a. About how much did (you gain/you lose/your weight change)?

_____ POUNDS

Interviewer: Accept a range response

1

*A2b. Interviewer: Did R's weight change by 10 pounds or more?

YES 1
NO 5

*A3. Did you have more trouble falling asleep than you usually do during those two weeks?

YES 1
NO ....5 GO TO *A4

*A3a. Did that happen every night, nearly every night, or less often during those two weeks?

EVERY NIGHT 1
NEARLY EVERY NIGHT 2
LESS OFTEN 3

---

*A4. During those two weeks, did you have a lot more trouble concentrating than usual?
Interviewer: If R asks: "Are we still talking about the same two weeks?" Answer: "Yes."

YES 1
NO 5

---

*A5. People sometimes feel down on themselves, no good, or worthless. During that two week period, did you feel this way?

Interviewer: If R asks: "Are we still talking about the same two weeks?" Answer: "Yes."

YES 1
NO 5

---

*A6. Did you think a lot about death — either your own, someone else's, or death in general during those two weeks?

Interviewer: If R asks: "Are we still talking about the same two weeks?" Answer: "Yes."

YES 1
NO 5

---

*A7. INTERVIEWER CHECKPOINT — (COUNT QUALIFYING RESPONSES IN *A1c-*A6: *A1c=1, *A1d=1, *A2b=1, *A3a=1 or 2, *A4=1, *A5=1, and *A6=1)

ZERO QUALIFYING RESPONSES ....1 GO TO *B1
IF ONE OR MORE QUALIFYING RESPONSE 2

2

*A8.   To review, you had two weeks in a row during the past 12 months when you were sad, blue, or depressed and also had some other feelings or problems like (READ UP TO THE FIRST THREE "YES" RESPONSES TO *A1c-*A6).

About how many weeks altogether did you feel this way during the past 12 months?

_____ # OF WKS
(IF VOLUNTEERED) ENTIRE YEAR..52 GO TO *A8b

*A8a.   Think about this most recent time when you had two weeks in a row when you felt this way. How long ago was that?

_____ MONTHS in the past

*A8b: Did you tell a doctor about these problems? (By "doctor" I mean either a medical doctor or osteopath, or a student in training to be either a medical doctor or osteopath.)

YES..1
NO...5

*A8c.   Did you tell any other professional (such as a psychologist, social worker, counselor, nurse, clergy, or other helping professional)?

YES..1
NO...5

*A8d.   Did you take medication or use drugs or alcohol more than once for these problems?

YES..1
NO...5

*A8e.   How much did these problems interfere with your life or activities — a lot, some, a little, or not at all

A LOT..1 GO TO *B1
SOME...2 GO TO *B1
A LITTLE..3 GO TO *B1
NOT AT ALL...4 GO TO *B1

*A9.   During the past 12 months, was there ever a time lasting two weeks or more when you lost interest in most things like hobbies, work, or activities that usually give you pleasure?

YES..1
NO...5 GO TO *B1
(IF VOLUNTEERED) I WAS ON MEDICATION/ANTI-DEPRESSANTS..............6

3

*A9a. For the next few questions, please think of <u>the two-week period</u> during the past 12 months when you had the <u>most complete</u> loss of interest in things. During that two-week period, did the loss of interest usually last <u>all day long</u>, <u>most</u> of the day, <u>about half</u> the day, or <u>less than half</u> the day?

ALL DAY LONG 1
MOST 2
ABOUT HALF...3 GO TO *B1
LESS THAN HALF...4 GO TO *B1

*A9b. Did you feel this way <u>every day</u>, <u>almost every day</u>, or <u>less often</u> during the two weeks?

EVERY DAY..1
ALMOST EVERY DAY 2
LESS OFTEN...3 GO TO *B1

*A9c. During those two weeks, did you feel more <u>tired out</u> or low on energy than is usual for you?

YES 1
NO 5

*A10. Did you <u>gain</u> or <u>lose</u> weight without trying, or did you <u>stay about the same</u>?

Interviewer: If R asks: "Are we still talking about the same two weeks?" Answer: "Yes."

GAIN...1
LOSE...2
(IF VOLUNTEERED) BOTH GAINED AND LOST WEIGHT 3
STAY ABOUT THE SAME...4 GO TO *A11
(IF VOLUNTEERED) R WAS ON A DIET ....5 GO TO *A11

*A10a. About how much did (you gain/you lose/your weight change)?

_____POUNDS

Interviewer: Accept a range response.

A10b. Interviewer: Did R's weight change by 10 pounds or more?

YES 1
NO 5

*A11. Did you have more trouble falling asleep than you usually do during those two weeks?

YES..1
NO...5 GO TO *A12

4

*A11a. Did that happen every night, nearly every night, or less often during those two weeks?

EVERY NIGHT 1
NEARLY EVERY NIGHT 2
LESS OFTEN 3

---

*A12. During those two weeks, did you have a lot more trouble concentrating than usual?

Interviewer: If R asks: "Are we still talking about the same two weeks?" Answer: "Yes."

YES...1
NO 5

---

*A13. People sometimes feel down on themselves, no good, or worthless. Did you feel this way during that two week period?

Interviewer: If R asks: "Are we still talking about the same two weeks?" Answer: "Yes."

YES...1
NO 5

---

*A14. Did you think a lot about death — either your own, someone else's, or death in general during those two weeks?

Interviewer: If R asks: "Are we still talking about the same two weeks?" Answer: "Yes."

YES...1
NO 5

---

*A15. INTERVIEWER CHECKPOINT — (COUNT "YES" RESPONSES IN *A9c-*A14)

ZERO "YES" RESPONSES ON *A9c, *A12, *A13, *A14, AND (EITHER
*A10=4-5 OR *A10a IS LESS THAN 10 POUNDS) AND (EITHER *A11=5
OR *A11a=3)...1 GO TO *B1
ALL OTHERS...2 GO TO *A16

---

*A16. To review, you had two weeks in a row during the past 12 months when you lost interest in most things and also had some other things like (READ UP TO THE FIRST 3 "YES" RESPONSES TO *A9c-*A14). About how many weeks did you feel this way during the past 12 months?

_____ # OF WKS
(IF VOLUNTEERED) ENTIRE YEAR...52 GO TO *A16b

*A16a. Think about this most recent time when you had two weeks in a row when you felt this way. How long ago was that?

5

_____ MONTHS in the past

*A16b. Did you tell a doctor about these problems? (By "doctor" I mean either a medical doctor or osteopath, or a student in training to be either a medical doctor or osteopath.)

YES 1
NO 5

*A16c. Did you tell any other professional (such as a psychologist, social worker, counselor, nurse, clergy, or other helping professional)?

YES 1
NO 5

*A16d. Did you take medication or use drugs or alcohol more than once for these problems?

YES 1
NO 5

*A16e. How much did these problems interfere with your life or activities — a lot, some, a little, or not at all?

A LOT 1
SOME 2
A LITTLE 3
NOT AT ALL 4

6

SECTION B: GENERALIZED ANXIETY DISORDER

*B1. During the past 12 months, did you ever have a period lasting one month or longer when most of the time you felt worried, tense, or anxious?

YES...1 **GO TO *B2**
NO..5

> ***B1a.** People differ a lot in how much they worry about things. Did you have a time in the past 12 months when you worried a lot more than most people would in your situation?
>
> YES...1
> NO...5 **GO TO *C1**

---

*B2. Has that period ended or is it still going on?

ENDED...1
STILL GOING ON...2 **GO TO *B2b**

> ***B2a.** How many months or years did it go on before it ended?
>
> _____ # OF MONTHS OR   **GO TO *B3**
> _____ # OF YEARS   **GO TO *B3**
> (IF VOLUNTEERED) "ALL MY LIFE" OR "AS LONG AS I
> CAN REMEMBER"..89 **GO TO *B3**

> ***B2b.** How many months or years has it been going on?
>
> _____ # OF MONTHS OR
> _____ # OF YEARS
> (IF VOLUNTEERED) "ALL MY LIFE" OR "AS LONG AS I CAN REMEMBER" 89

---

*B3. INTERVIEWER CHECKPOINT

*B2a/*B2b IS SIX MONTHS OR LONGER, OR (IF VOLUNTEERED) "ALL
MY LIFE" OR "AS LONG AS I CAN REMEMBER 1
*B2a/*B2b IS LESS THAN SIX MONTHS ....2 **GO TO *C1**

---

*B4. (During that period, was your/Is your) worry stronger than in other people?

YES...1
NO..5

---

*B5. (Did/Do) you worry most days?

YES...1
NO..5

7

CIDI-SF 12 MONTH DSM-IV VERSION- V1.1, December 2002

*B6. (Did/Do) you usually worry about <u>one</u> particular thing, such as your job security or the failing health of a loved one, or <u>more than</u> one thing?

ONE THING 1
MORE THAN ONE THING 2

*B7. (Did/Do) you find it difficult to stop worrying?

YES...1
NO...5

*B8. (Did/Do) you ever have different worries on your mind at the same time?

YES...1
NO...5

*B9. How often (was/is) your worry so strong that you (couldn't/can't) put it out of your mind no matter how hard you (tried/try) — often, sometimes, rarely, or never?

OFTEN 1
SOMETIMES..2
RARELY...3
NEVER...4

*B10. How often (did/do) you find it difficult to control your worry — often, sometimes, rarely, or never?

OFTEN 1
SOMETIMES..2
RARELY...3
NEVER...4

*B11. What sort of things (did/do) you mainly worry about? (PROBE: Any other main worries?)

_____ .
_____
_____
_____
_____

8

CIDI-SF 12 MONTH DSM-IV VERSION- V1.1, December 2002

*B12.   When you (were/are) worried or anxious, (were/are) you also...

	YES (1)	NO (5)
* B12a. Restless?	1	5
* B12b. (Were/Are) you keyed up or on edge?	1	5
* B12c. (Were/Are) you easily tired?	1	5
* B12d. (Did/Do) you have difficulty keeping your mind on what you (were/are) doing?	1	5
* B12e. (Were/Are) you more irritable than usual?	1	5
* B12f. (Did/Do) you have tense, sore, or aching muscles?	1	5
* B12g. (Did/Do) you often have trouble falling or staying asleep?	1	5

*B13.   CHECKPOINT

0-1 YES RESPONSE IN THE *B12 SERIES ....1 GO TO *C1
ALL OTHERS...2

---

*B14.   Did you tell a doctor about your worry or about the problems it was causing? (By "doctor" I mean either a medical doctor or osteopath, or a student in training to be either a medical doctor or osteopath.)

YES..1
NO..5

---

*B15.   Did you tell any other professional (such as a psychologist, social worker, counselor, nurse, clergy, or other helping professional)?

YES..1
NO 5

---

*B16.   Did you take medication or use drugs or alcohol more than once for the worry or the problems it was causing?

YES..1
NO..5

9

CIDI-SF 12 MONTH DSM-IV VERSION- V1.1, December 2002

*B17. How much (did/does) the worry or anxiety interfere with your life or activities — a lot, some, a little, or not at all?

    A LOT 1
    SOME 2
    A LITTLE 3
    NOT AT ALL 4

10

SECTION C: SPECIFIC PHOBIA

*C1. The next questions are about things that make some people so afraid that they avoid them, even when there is no real danger. Do you have an unreasonably strong fear or avoid any of the following things...

(Do you have an unreasonably strong fear or avoid...)	YES (1)	NO (5)
*C1a. First, heights, storms, thunder, lightning, or being in still water, like a swimming pool or lake? (Do you have an unreasonably strong fear or avoid any of these things?)	1	5
*C1b. (How about) being in a closed space like a cave, tunnel, elevator, or airplane? (Do you have an unreasonably strong fear or avoid any of these things?)	1	5
*C1c. (How about) snakes, birds, rats, bugs, or other animals? (Do you have an unreasonably strong fear or avoid any of these things?)	1	5
*C1d. (How about) seeing blood, getting a shot or injection, seeing a dentist, or going to a hospital? (Do you have an unreasonably strong fear or avoid any of these things?)	1	5

*C2. INTERVIEWER CHECKPOINT — SEE *C1a-*C1d

ONE OR MORE "YES" RESPONSES IN *C1a-*C1d 1
ALL OTHERS..2 GO TO *D1

*C3. Thinking only of the situation(s) that we just reviewed that cause(s) you unreasonably strong fears, do you get very upset every time you are in (this/these) situation(s), most of the time, only some of the time, or never?

EVERY TIME...1
MOST OF THE TIME 2
SOME OF THE TIME ....3 GO TO *D1
NEVER...4 GO TO *D1
(IF VOLUNTEERED) ONLY ONE OR TWO TIMES EVER ....7 GO TO *D1

*C4. How long have you had (this/these) fear(s) — less than 1 year, between 1 and 5 years, or more than 5 years?

LESS THAN 1 YEAR...1
BETWEEN 1 AND 5 YEARS ....2 GO TO *C5
MORE THAN 5 YEARS ....3 GO TO *C5

11

*C4a. About how many months?

_____ # OF MONTHS

---

*C5. During the past 12 months, how much did (this/these) fear(s) interfere with your life or activities — a lot, some, a little, or not at all?

A LOT 1
SOME..2
A LITTLE...3
NOT AT ALL...4

---

*C6. During the past 12 months were you ever very upset with yourself for having (this/these) fear(s)?

YES...1
NO 5

---

*C7. Is your fear <u>unreasonable</u> — that is, much stronger than it should be?

YES...1
NO 5

---

*C8. Is your fear much stronger than in other people?

YES...1
NO 5

12

SECTION D: SOCIAL PHOBIA

*D1. Here's another list of situations that can cause unreasonably strong fears. They involve doing things in front of other people or being the center of attention. Do you have an unreasonably strong fear or avoid any of the following situations...

(Do you have an unreasonably strong fear or avoid...)	YES (1)	NO (5)
*D1a. First, giving a speech or speaking in public? (Do you have an unreasonably strong fear or avoid these things?)	1	5
*D1b. (How about) eating or drinking where someone could watch you? (Do you have an unreasonably strong fear or avoid these things?)	1	5
*D1c. (How about) talking to people because you might have nothing to say or might sound foolish? (Do you have an unreasonably strong fear or avoid this type of situation?)	1	5
*D1d. (How about) writing while someone watches? (Do you have an unreasonably strong fear or avoid this situation?)	1	5
*D1e. (How about) taking part or speaking in a meeting or class? (Do you have an unreasonably strong fear or avoid this type of situation?)	1	5
*D1f. (How about) going to a party or other social outing? (Do you have an unreasonably strong fear or avoid this type of situation?)	1	5

*D2. INTERVIEWER CHECKPOINT —SEE *D1a-*D1f.

ONE OR MORE 'YES" RESPONSES IN ***D1a-*D1f** ....1.
ALL OTHERS...2 **GO TO *E1**

---

*D3. Thinking only of the situation(s) that we just reviewed that cause(s) you unreasonably strong fears, do you get very upset every time you are in (this/these) situation(s), most of the time, only some of the time, or never?

EVERY TIME...1
MOST OF THE TIME 2
SOME OF THE TIME ....3 **GO TO *E1**
NEVER..4 **GO TO *E1**
(IF VOLUNTEERED) ONLY ONE OR TWO TIMES EVER ....7 **GO TO *E1**

13

*D4. How long have you had (this/these) fear(s) — <u>less than 1 year</u>, <u>between 1 and 5 years</u>, or <u>more than 5 years</u>?

```
LESS THAN 1 YEAR..................................................................1
BETWEEN 1 AND 5 YEARS ...........................................2 GO TO *D5
MORE THAN 5 YEARS ...................................................3 GO TO *D5
```

    *D4a.   About how many months?

            _____ # OF MONTHS

---

*D5. During the past 12 months, how much did (this/these) fear(s) interfere with your life or activities — a lot, some, a little, or not at all?

```
A LOT ..............................................................................1
SOME................................................................................2
A LITTLE..........................................................................3
NOT AT ALL.....................................................................4
```

---

*D6. During the past 12 months were you ever very upset with yourself for having (this/these) fear(s)?

```
YES....................................................................................1
NO......................................................................................5
```

---

*D7. Is your fear <u>unreasonable</u> — that is, much stronger than it should be?

```
YES....................................................................................1
NO......................................................................................5
```

---

*D8. Is your fear much stronger than in other people?

```
YES....................................................................................1
NO......................................................................................5
```

14

SECTION E: AGORAPHOBIA

*E1.   Here's a final list of situations that cause unreasonably strong fears. Do you have an unreasonably strong fear or avoid any of the following...

(Do you have an unreasonably strong fear or avoid...)	YES (1)	NO (5)
*E1a. First, being in a crowd or standing in line? (Do you have an unreasonably strong fear or avoid either of these situations?)	1	5
*E1b. (How about) being away from home alone? (Do you have an unreasonably strong fear or avoid this situation?)	1	5
*E1c. (How about) traveling alone? (Do you have an unreasonably strong fear or avoid this situation?)	1	5
*E1d. (How about) traveling in a bus, train, or car? (Do you have an unreasonably strong fear or avoid any of these situations?)	1	5
*E1e. (How about) being in a public place like a department store? (Do you have an unreasonably strong fear or avoid this type of situation?)	1	5

*E2.   INTERVIEWER CHECKPOINT —SEE *E1a-*E1e

ONE OR MORE "YES" RESPONSES IN *E1a-*E1e 1
ALL OTHERS..2 GO TO *F1

---

*E3.   Thinking only of the situation(s) that we just reviewed that cause(s) you unreasonably strong fears, do you get very upset every time you are in (this/these) situation(s), most of the time, only some of the time, or never?

EVERY TIME..1
MOST OF THE TIME 2
SOME OF THE TIME..3 GO TO *F1
NEVER...4 GO TO *F1
(IF VOLUNTEERED) ONLY ONE OR TWO TIMES EVER ....7 GO TO *F1

---

*E4.   How long have you had (this/these) fear(s) — less than 1 year, between 1 and 5 years, or more than 5 years?

LESS THAN 1 YEAR...1
BETWEEN 1 AND 5 YEARS ....2 GO TO *E5
MORE THAN 5 YEARS ....3 GO TO *E5

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*E4a.   About how many months?

_____NUMBER OF MONTHS

---

*E5.   When you are in (this/these) situation(s), are you afraid that you might faint, lose control, or embarrass yourself in other ways?

YES...1
NO...5

---

*E6.   When you are in (this/these) situation(s), do you worry that you might be trapped without any way to escape?

YES...1
NO...5

---

*E7.   When you are in (this/these) situation(s), do you worry that help might not be available if you needed it?

YES...1
NO...5

---

*E8.   During the past 12 months, how much did (this/these) fear(s) interfere with your life or activities — a lot, some, a little, or not at all?

A LOT...1
SOME..2
A LITTLE...3
NOT AT ALL...4

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SECTION F: PANIC ATTACK

*F1. During the past 12 months, did you ever have a spell or an attack when all of a sudden you felt frightened, anxious, or very uneasy?

YES..1
NO..5 GO TO *G1

*F1a. Did any of these attacks occur when you were in a life-threatening situation?

YES..1
NO..5 GO TO *F2
(IF VOLUNTEERED) DK...8 GO TO *F2

*F1b. Did any of these attacks occur when you were not in a life-threatening situation?

YES..1
NO..5 GO TO *G1

---

*F2. About how many attacks did you have in the past 12 months?

_____NUMBER

---

*F3. How long ago did you have the most recent (one/attack)?

_____MONTHS in the past

---

*F4. Did (this attack/all of these attacks) happen in a situation when you were not in danger or not the center of attention?

YES..1
NO..5 GO TO *G1

---

*F5. A moment ago, we discussed situations that cause unreasonably strong fears. When you have attacks of the sort you just described, do they usually occur in situations that cause you unreasonably strong fear?

YES..1
NO..5 GO TO *F6

*F5a. Did you ever have an attack in the past 12 months when you were not in a situation that usually causes you to have unreasonably strong fears?

YES..1
NO..5 GO TO *G1

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*F6.   When you have attacks, ...

	YES (1)	NO (5)
*F6a. ...does your heart pound or race?	1	5
*F6b. ...do you have tightness, pain, or discomfort in your chest or stomach?	1	5
*F6c. ...do you sweat?	1	5
*F6d. ...do you tremble or shake?	1	5
*F6e. ...do you have hot flashes or chills?	1	5
*F6F. ...do you, or things around you, seem unreal?	1	5

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SECTION G: ALCOHOL DEPENDENCE

*G1. The next questions are about how frequently you drink alcoholic beverages. By a "drink" we mean either a bottle of beer, a wine cooler, a glass of wine, a shot of liquor, or a mixed drink. With these definitions in mind, what is the <u>largest</u> number of drinks you had in any <u>single</u> day during the past 12 months—<u>none</u>, between <u>one and three</u>, <u>four to ten</u>, <u>eleven to twenty</u>, or <u>more than twenty</u> drinks in a single day?

Interviewer: If R Volunteers "I never drink", Accept the answer and check "NONE" in the response options

```
NONE ....................................................................................................1 GO TO *H1
1-3 .......................................................................................................2 GO TO *H1
4-10 .....................................................................................................3
11-20 ...................................................................................................4
MORE THAN 20 .................................................................................5
```

Interviewer: The next questions are awkwardly worded. Read slowly.

*G2. In the past 12 months, was there <u>ever</u> a time when your drinking or being hung over interfered with your work at school, or a job, or at home?

```
YES......................................................................................................1
NO .......................................................................................................5 GO TO *G3
(IF VOLUNTEERED) I AM A CASUAL/SOCIAL DRINKER.........................9 GO TO *H1
```

*G2a. How often — <u>once or twice</u>, between <u>3 and 5 times</u>, <u>6 to 10 times</u>, <u>11 to 20 times</u>, or <u>more than 20 times</u> in the past year?

```
Once or Twice .....................................................................................1
Between 3 and 5 times.........................................................................2
Between 6 and 10 times.......................................................................3
Between 11 and 20 times.....................................................................4
More than 20 times..............................................................................5
```

---

*G3. During the past 12 months, were you <u>ever</u> under the influence of alcohol in a situation where you could get hurt — like when driving a car or boat, using knives or guns or machinery, or anything else?

```
YES......................................................................................................1
NO .......................................................................................................5
(IF VOLUNTEERED) I AM A CASUAL/SOCIAL DRINKER.........................9 GO TO *H1
```

---

*G4. During the past 12 months, did you have any emotional or psychological problems from using alcohol — such as feeling uninterested in things, feeling depressed, suspicious of people, paranoid, or having strange ideas?

```
YES......................................................................................................1
NO .......................................................................................................5
(IF VOLUNTEERED) I AM A CASUAL/SOCIAL DRINKER.........................9 GO TO *H1
```

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CIDI-SF 12-MONTH DSM-IV VERSION- V1.1, December 2002

*G5. During the past 12 months, did you have such a strong desire or urge to drink that you could not keep from drinking?

YES...1
NO...5
(IF VOLUNTEERED) I AM A CASUAL/SOCIAL DRINKER.........................9 **GO TO *H1**

---

*G6. During the past 12 months, did you have a period of a month or more when you spent a great deal of time drinking or getting over the effects of alcohol?

YES...1
NO...5
(IF VOLUNTEERED) I AM A CASUAL/SOCIAL DRINKER.........................9 **GO TO *H1**

---

*G7. During the past 12 months, did you ever have more to drink than you intended to, or did you drink much longer than you intended to?

YES...1
NO...5 **GO TO *G8**
(IF VOLUNTEERED) I AM A CASUAL/SOCIAL DRINKER.........................9 **GO TO *H1**

> ***G7a:** How often — once or twice, between 3 and 5 times, 6 to 10 times, 11 to 20 times, or more than 20 times in the past year?
>
> ONCE OR TWICE...1
> BETWEEN 3 AND 5 TIMES..2
> BETWEEN 6 AND 10 TIMES..3
> BETWEEN 11 AND 20 TIMES..4
> MORE THAN 20 TIMES...5

---

*G8. During the past 12 months, was there ever a time when you had to drink much more than you used to to get the same effect you wanted?

YES...1
NO...5
(IF VOLUNTEERED) I AM A CASUAL/SOCIAL DRINKER.........................9 **GO TO *H1**

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SECTION H: DRUG DEPENDENCE

*H1. The next questions are about your use of drugs on your own. By "on your own" we mean either without a doctor's prescription, in larger amounts than prescribed, or for a longer period than prescribed. With this definition in mind, did you ever use any of the following drugs <u>on your own</u> during the <u>past 12 months</u>?

(How about/During the past 12 months, did you use...)	YES (1)	NO (5)
*H1a. sedatives, including either barbituates (bar-BIT-chew-its) or sleeping pills on your own? (e.g. Seconal, Halcion, Methaqualone)	1	5
*H1b. tranquilizers or "nerve pills" on your own? (e.g. Librium, Valium, Ativan, Meprobamate, Xanax)	1	5
*H1c. amphetamines (am-FET-ah-means) or other stimulants on your own? (e.g. Methamphetamine, Preludin, Dexedrine, Ritalin, "Speed")	1	5
*H1d. analgesics (an-uhl-JEEZ-icks) or other prescription painkillers on your own? (NOTE: this does not include normal use of aspirin, Tylenol without codeine, etc., but <u>does</u> include use of Tylenol with codeine and other Rx painkillers like Demerol, Darvon, Percodan, Codeine, Morphine, and Methadone)	1	5
*H1e. inhalants that you sniff or breathe to get high or to feel good? (e.g. Amylnitrate, Freon, Nitrous Oxide ("Whippets"), Gasoline, Spray paint)	1	5
*H1f. marijuana (mare-ih-WAH-nah) or hashish (HASH-eesh)?	1	5
*H1g. cocaine (KO-kane) or crack or free base?	1	5
*H1h. LSD or other hallucinogens (ha-LOOSE-en-oh-jens)? (e.g. PCP, angeldust, peyote, ecstasy (MDMA), mescaline)	1	5
*H1i. Heroin? (HAIR-oh-in).	1	5

Interviewer: If necessary, clarify: "By 'on your own' we mean either without a doctor's prescription, in larger amounts than prescribed, or for a longer period than prescribed."

*H2. INTERVIEWER CHECKPOINT

AT LEAST ONE YES RESPONSE IN *H1a THROUGH *H1i.............1 GO TO *H3
ZERO YES RESPONSES IN *H1a THROUGH *H1i......................2 GO TO *I1

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CIDI-SF 12 MONTH DSM-IV VERSION- VI.1, December 2002

Interviewer: The next questions are awkwardly worded. Read slowly.

*H3.   In the past 12 months, did your use of (NAME OF DRUG/any of these substances) ever interfere with your work at school, or a job, or at home?

YES..1
NO..5 GO TO *H4

    *H3a: How often — once or twice, between 3 and 5 times, 6 to 10 times, 11 to 20 times, or more than 20 times in the past year?

        ONCE OR TWICE..1
        BETWEEN 3 AND 5 TIMES..2
        BETWEEN 6 AND 10 TIMES...3
        BETWEEN 11 AND 20 TIMES...4
        MORE THAN 20 TIMES...5

*H4.   During the past 12 months, were you ever under the influence of (NAME OF DRUG/any of these substances) in a situation where you could get hurt — like when driving a car or boat, using knives or guns or machinery, or anything else?

YES..1
NO..5

*H5.   During the past 12 months, did you have any emotional or psychological problems from using (NAME OF DRUG/any of these substances) — such as feeling uninterested in things, feeling depressed, suspicious of people, paranoid, or having strange ideas?

YES..1
NO..5

*H6.   During the past 12 months, did you have such a strong desire or urge to use (NAME OF DRUG/any of these substances) that you could not keep from using it?

YES..1
NO..5

*H7.   During the past 12 months, did you have a period of a month or more when you spent a great deal of time using (NAME OF DRUG/any of these substances) or getting over (its/their) effects?

YES..1
NO..5

*H8.   During the past 12 months, did you ever use much larger amounts of (NAME OF DRUG/any of these substances) than you intended to or did you use (it/them) for a longer period of time than you intended to?

YES..1
NO..5 GO TO *H9

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CIDI-SF 12 MONTH DSM-IV VERSION- V1.1, December 2002

*H8a. How often — once or twice, between 3 and 5 times, 6 to 10 times, 11 to 20 times, or more than 20 times in the past year?

ONCE OR TWICE 1
BETWEEN 3 AND 5 TIMES 2
BETWEEN 6 AND 10 TIMES 3
BETWEEN 11 AND 20 TIMES 4
MORE THAN 20 TIMES 5

---

*H9. During the past 12 months, was there ever a time when you had to use more (NAME OF DRUG / any of these substances) than you used to, to get the same effect you wanted?

YES..1
NO..5

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SECTION I: OBSESSIVE COMPULSIVE DISORDER

*I1.   I want to ask you next about whether you have been bothered by having certain unpleasant thoughts of your own that kept entering your mind against your wishes. An example would be the persistent idea that your hands are dirty or have germs on them. In the past 12 months, have you had any unpleasant thoughts like that?

        YES..1
        NO..5

*I2.   Another example of an unpleasant thought would be the persistent idea that you might harm someone, even though you really didn't want to. Or you might have had thoughts you were ashamed of, but couldn't keep out of your mind. In the past 12 months, have you had any unpleasant and persistent thoughts like that?

        YES...1
        NO..5

*I3.   INTERVIEWER CHECKPOINT

        EITHER *I1 OR *I2 CODED 1 1
        ALL OTHERS ....5 GO TO *I8

*I4.   In the past 12 months, did some of these thoughts seem to you to be unreasonable?

        YES...1
        NO..5

*I5.   In the past 12 months, did these thoughts keep coming back again and again into your mind no matter how hard you tried to resist, ignore, or get rid of them?

        YES...1
        NO..5

*I6.   In the past 12 months, did you tell a doctor about these thoughts?

        YES...1
        NO..5

*I7.   In the past 12 months, did thinking about these ideas interfere with your life or work, or cause you difficulty with your relatives or friends, or upset you a great deal?

        YES...1
        NO..5

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CIDI-SF 12 MONTH DSM-IV VERSION- V1.1, December 2002

*I8. Some people have the unpleasant feeling that they have to <u>do something over and over again</u> even though they know it is foolish, but they can't resist doing it – things like washing their hands again and again or going back several times to be sure they've locked a door or turned off the stove. In the past 12 months, have you had to do something like that over and over?

YES 1
NO 5

*I9. In the past 12 months, was there a time when you felt you had to do <u>something in a certain order</u>, like getting dressed perhaps, and had to start all over again if you did it in the wrong order?

YES 1
NO 5

*I10. In the past 12 months, has there been a period of several weeks when you felt you had to <u>count something</u>, like the squares in a tile floor, and couldn't resist doing it even when you tried to?

YES 1
NO 5

*I11. In the past 12 months, did you have a period when you had to <u>say certain words</u> over and over, either aloud or to yourself?

YES 1
NO 5

*I12 INTERVIEWER CHECKPOINT

ANY OF *I8 THROUGH *I11 CODED 1 1
ALL OTHERS ....5 **GO TO CLOSING**

*I13. You mentioned that you had to (SX CODED 1 IN *I8-*I11). Did you think that this was unnecessary or that you overdid it?

YES 1
NO 5

*I14. Did you tell a doctor about having to (SX CODED 1 IN *I8-*I11)?

YES 1
NO 5

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CIDI-SF 12-MONTH DSM-IV VERSION- V1.1, December 2002

*I15.   In the past 12 months, did having to (SX CODED 1 IN *I8-*I11) interfere with your life or work, or cause you difficulty with your relatives or friends, or upset you a great deal?

      YES...1
      NO..5

CLOSING SALUTATION: THANK YOU VERY MUCH FOR YOUR TIME. YOUR PARTICIPATION IS GREATLY APPRECIATED. HAVE A NICE (DAY / EVENING).

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APPENDIX 7: FOLLOW UP QUESTIONNAIRE
INTRODUCTORY LETTER.

UNIVERSITY OF TASMANIA
DEPARTMENT OF RURAL HEALTH

Locked Bag 1-372, Launceston
Tasmania 7250 Australia
Telephone: 03 6324 4000
Fax: 03 6324 4040

Email: Alistair.Campbell@utas.edu.au

Mental Health Research Project

Recently you will have spoken with my colleague, Jo Campbell. I am very grateful for your assistance with the research that we are doing.

The next part of the research asks you to give a more detailed description of any psychological or emotional difficulties that you might be having. This will help us to better understand how the short sets of questions that you have already answered can be used to quickly identify people who need our help.

The enclosed questionnaire consists of quite a number of questions. But, most people have found that it takes less than 15 minutes to complete. Once you have completed the questionnaire place it in the Reply Paid envelope provided and post it back to me.

You have already been extremely helpful. I hope that I am not imposing when I say I would like to be able to follow you up some more.

The main reason is so that we can see how people's psychological and emotional states change over time. This is important so that we can start to tell whether counselling, or medication, or other treatments are better or worse than no treatment at all for some conditions.

If you would be willing for me to contact you again in about 6 months could you indicate your willingness below and send this letter back to me with the above questionnaire.

I am/am not willing for you to contact me for further research.
(Please circle the phrase which is true for you)

Full Name:_____ Phone:_____

Thank you so much.

Alistair Campbell
Senior Clinical Psychologist
Primary Researcher, UDRH

APPENDIX 8: OUTCOMES QUESTIONNAIRE

Outcomes Questionnaire

Research project into Mental Health in rural Primary Care practice

University Department
of Rural Health,
Tasmania

Instructions
Thank you for agreeing to be part of this project. On the pages following are two questionnaires that we would like you to fill in. There are separate instructions for each questionnaire. But, if you would like any assistance please ring and speak to Alistair Campbell on 6336 2867.

NAME		ID #

GENDER	AGE	DATE	
O Male			20___
O Female			

Symptom Checklist(90-R)

Below is a list of problems people sometimes have. Please read each one carefully, and circle the number to the right that best describes how much that problem has distressed or bothered you during the past two weeks. Circle only one number for each problem and do not skip any items. If you change your mind, erase your first mark and circle your next choice.

	In the past 2 weeks, How Much Were You Distressed By...	NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	EXTREMELY
1	Headaches	0	1	2	3	4
2	Nervousness or shakiness inside	0	1	2	3	4
3	Repeated unpleasant thoughts that won't leave your mind	0	1	2	3	4
4	Faintness or dizziness	0	1	2	3	4
5	Loss of sexual interest or pleasure	0	1	2	3	4
6	Feeling critical of others	0	1	2	3	4
7	The idea that someone else can control your thoughts	0	1	2	3	4
8	Feeling others are to blame for most of your troubles	0	1	2	3	4
9	Trouble remembering things	0	1	2	3	4
10	Worried about sloppiness or carelessness	0	1	2	3	4
11	Feeling easily annoyed or irritated	0	1	2	3	4
12	Pains in heart or chest	0	1	2	3	4
13	Feeling afraid in open spaces or on the streets	0	1	2	3	4
14	Feeling low in energy or slowed down	0	1	2	3	4
15	Thoughts of ending your life	0	1	2	3	4
16	Hearing voices that other people do not hear	0	1	2	3	4
17	Trembling	0	1	2	3	4
18	Feeling that most people cannot be trusted	0	1	2	3	4
19	Poor appetite	0	1	2	3	4
20	Crying easily	0	1	2	3	4
21	Feeling shy or uneasy with the opposite sex	0	1	2	3	4
22	Feelings of being trapped or caught	0	1	2	3	4
23	Suddenly scared for no reason	0	1	2	3	4

Page 2

Outcomes

	In the past 2 weeks, How Much Were You Distressed By...	NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	EXTREMELY
24	Temper outbursts that you could not control	0	1	2	3	4
25	Feeling afraid to go out of your house alone	0	1	2	3	4
26	Blaming yourself for things	0	1	2	3	4
27	Pains in lower back	0	1	2	3	4
28	Feeling blocked in getting things done	0	1	2	3	4
29	Feeling lonely	0	1	2	3	4
30	Feeling blue	0	1	2	3	4
31	Worrying too much about things	0	1	2	3	4
32	Feeling no interest in things	0	1	2	3	4
33	Feeling fearful	0	1	2	3	4
34	Your feelings being easily hurt	0	1	2	3	4
35	Other people being aware of your private thoughts	0	1	2	3	4
36	Feeling others do not understand you or are unsympathetic	0	1	2	3	4
37	Feeling that people are unfriendly or dislike you	0	1	2	3	4
38	Having to do things slowly to ensure correctness	0	1	2	3	4
39	Heart pounding or racing	0	1	2	3	4
40	Nausea or upset stomach	0	1	2	3	4
41	Feeling inferior to others	0	1	2	3	4
42	Soreness of your muscles	0	1	2	3	4
43	Feeling that you were watched or talked about by others	0	1	2	3	4
44	Trouble falling asleep	0	1	2	3	4
45	Having to check and double-check what you do	0	1	2	3	4
46	Difficulty making decisions	0	1	2	3	4
47	Feeling afraid to travel on buses, subways, or trains	0	1	2	3	4
48	Trouble getting your breath	0	1	2	3	4
49	Hot or cold spells	0	1	2	3	4
50	Having to avoid certain things, places, or activities because they frighten you	0	1	2	3	4
51	Your mind going blank	0	1	2	3	4
52	Numbness or tingling in parts of your body	0	1	2	3	4
53	A lump in your throat	0	1	2	3	4
54	Feeling hopeless about the future	0	1	2	3	4
55	Trouble concentrating	0	1	2	3	4
56	Feeling weak in parts of your body	0	1	2	3	4
57	Feeling tense or keyed up	0	1	2	3	4

Questionnaire

	In the past 2 weeks, How Much Were You Distressed By...	NOT AT ALL	A LITTLE BIT	MODERATELY	QUITE A BIT	EXTREMELY
58	Heavy feelings in your arms or legs	0	1	2	3	4
59	Thoughts of death or dying	0	1	2	3	4
60	Overeating	0	1	2	3	4
61	Feeling uneasy when people are watching or talking about you	0	1	2	3	4
62	Having thoughts that are not your own	0	1	2	3	4
63	Having urges to beat, injure, or harm someone	0	1	2	3	4
64	Awakening in the early morning	0	1	2	3	4
65	Having to repeat the same actions such as touching, counting or washing	0	1	2	3	4
66	Sleep that is restless or disturbed	0	1	2	3	4
67	Having urges to break or smash things	0	1	2	3	4
68	Having ideas or beliefs that others do not share	0	1	2	3	4
69	Feeling very self-conscious with others	0	1	2	3	4
70	Feeling uneasy in crowds, such as shopping or at a movie	0	1	2	3	4
71	Feeling everything is an effort	0	1	2	3	4
72	Spells of terror or panic	0	1	2	3	4
73	Feeling uncomfortable about eating or drinking in public	0	1	2	3	4
74	Getting into frequent arguments	0	1	2	3	4
75	Feeling nervous when you are left alone	0	1	2	3	4
76	Others not giving you proper credit for your achievements	0	1	2	3	4
77	Feeling lonely even when you are with people	0	1	2	3	4
78	Feeling so restless that you couldn't sit still	0	1	2	3	4
79	Feelings of worthlessness	0	1	2	3	4
80	The feeling that something bad is going to happen to you	0	1	2	3	4
81	Shouting or throwing things	0	1	2	3	4
82	Feeling afraid you will faint in public	0	1	2	3	4
83	Feeling that people will take advantage of you if you let them	0	1	2	3	4
84	Having thoughts about sex that bother you a lot	0	1	2	3	4
85	The idea that you should be punished for your sins	0	1	2	3	4
86	Thoughts and images of a frightening nature	0	1	2	3	4
87	The idea that something serious is wrong with your body	0	1	2	3	4
88	Never feeling close to another person	0	1	2	3	4
89	Feelings of guilt	0	1	2	3	4
90	The idea that something is wrong with your mind	0	1	2	3	4

The EuoQol Quality of Life Scale

By placing a tick (thus √) in at least one box in each group below, please indicate which statements best describe your own health state today.

Mobility	
1	I have no problems in walking about	
2	I have some problems in walking about	
3	I am confined to bed	

Self-care	
1	I have no problems with self care	
2	I have some problems with self care	
3	I am unable to wash or dress myself	

Usual activities	
1	I have no problems with performing my main activity(e.g. work, study, housework, family or liesure activities)	
2	I have some problems with performing my usual activities	
3	I am unable to perform my usual activities	

Pain/discomfort	
1	I have no pain or discomfort	
2	I have moderate pain or discomfort	
3	I have extreme pain or discomfort	

Anxiety/Depression	
1	I am not anxious or depressed	
2	I am moderately anxious or depressed	
3	I am extremely anxious or depressed	

To help people say how good or bad a health state is, we have drawn a scale(like a thermometer) where the best state you can imagine is marked by 100 and the worst state is marked by 0. Please indicate on the scale below by drawing a line how good or bad your health state is - in your opinion.

```
0    10   20   30   40   50   60   70   80   90   100
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
```

| Worst imaginable health state | | Best imaginable health state |
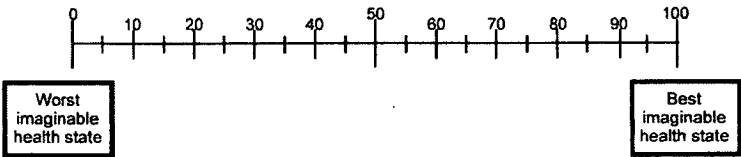
THANK YOU FOR COMPLETING THESE QUESTIONS. <u>PLEASE GIVE THE FORM BACK TO YOUR COUNSELLOR.</u>

APPENDIX 9: ETHICS APPROVAL

COPY

University of Tasmania   Research and Development Office

MEMORANDUM

to: Associate Professor Judi Walker

from: Chris Hooper, Executive Officer,
         Human Research Ethics Committee

date: 12 May 2000

subject: **H5732 Developing a best practice model for the delivery of community
           mental health care in a rural area**
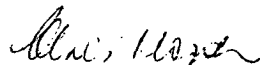
The Chair, on behalf of the Human Research Ethics Committee, on 11/5/2000
recommended approval of this project. Formal approval will be recommended to
Academic Senate in accordance with normal procedure.

You are required to report immediately anything which might affect ethical acceptance
of the project, including:

- serious or unexpected adverse effects on participants;
- proposed changes in the protocol;
- unforeseen events that might affect continued ethical acceptability of the project.

You are also required to inform the Committee if the project is discontinued before the
expected date of completion, giving the reasons for discontinuation.

Approval is subject to annual review. You will be asked to submit your first report on
this project by 31 January 2001.

Chris Hooper

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