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**A Survey of Patients in the
Whitehorse Division of General Practice:
2000**

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Abstract

Health status profiles of a population can be useful for planning purposes. In 2000, the Whitehorse Division of General Practice commissioned The Centre for Health Programme Evaluation at The University of Melbourne to provide such a profile of their patients, together with some assessment of the extent of loneliness and social isolation in that community.

This Research Report is the account of that survey: it reports the use of the SF-36 to assess health status and of the specifically designed Solitariness Scale to assess social isolation, and the findings of the survey. The limitations associated with the study design are identified; and the findings are discussed with respect to relevant evidence from the literature, and the relationship between the results of each tool for sub-groups of the population.

This information should add to the knowledge of their community already present within the Whitehorse Division, and prove useful in planning future services to target particular needs within the population they serve.

1 Introduction

Divisions of General Practice are networks of local general practitioners working together to improve the delivery of health services in their area. Among their functions are the planning of these services, and the development of specific health programs (Whitehorse Division of General Practice, 2000b; Duckett, 1995).

Effective planning of local health services requires an understanding of the community using those services, and health status profiles can contribute to this understanding (Hawthorne, 2000; Bucquet and Curtis 1986).

In 2000 The Whitehorse Division of General Practice commissioned the Centre for Health Program Evaluation at The University of Melbourne to provide such a profile of patients using their GP services. A similar cross-sectional study was done in 1998 and the results, published elsewhere (Hawthorne, 2000), informed the Division's needs assessment and development of programs (Whitehorse 2000a).

In addition to this survey being repeated, the Division requested specific information be obtained about the extent of loneliness within their client population.

This report describes that survey: the rationale for each section of the questionnaire, the methodology and limitations of the study, and the findings are discussed with respect to the evidence drawn from the literature.

2 Methods

2.1 Measuring health

Self-reported poor health has been found to be both a good predictor of health service use (Haynes 1991) and of total mortality (Sundquist and Johansson, 1997).

Because of this link between perceived health and service demand, measurement of self-reported health and wellbeing contributes to understanding the demand for health care (Bucquet and Curtis, 1986) and facilitates the targeting of services (Brazier et al, 1992). Monitoring over time may assist in tracking health status changes in populations (McHorney et al, 1994) as well as understanding patterns of patient attendance, and in providing better quality services in response to those patterns (Saltman et al, 1998).

Traditional health outcome measures related to the clinical management and cure of disease are increasingly becoming inappropriate for general practice, as the health problems experienced by the community are changing from acute illnesses to chronic conditions which can be very complex to manage (Saltman et al, 1998; Hawthorne, 2000; Bowling, 1995). Many conditions experienced by patients of general practitioners are incurable, and a significant proportion of consultations comprise two or more health issues for the patient (Saltman et al, 1998). In this context simple measures assessing whether or not the patient is cured may be inadequate by themselves. Consequently greater emphasis is now being placed on broader outcome measures, such as the patient's own assessment of their health and functional status, and of how their health impacts on their quality of life. The focus has also moved from negative health, or the presence of disease or disability, to a more holistic definition of positive health which includes wellbeing (Bowling, 1995).

Social health is as much a dimension of wellbeing as physical health and mental health. It has been defined as both a dependent variable and an intervening variable; as "a component of health-status outcomes" (Bowling, 1991:7) and as "social support systems that might intervene and modify the effect of the environment and life stress events on physical and mental health" (Donald et al, 1978 in Bowling 1991:7).

For the effects of ill health on quality of life and wellbeing to be understood, this interrelationship between the concepts requires that any assessment process must be multidimensional. It must also be subjective, to allow the patient to disclose their perceptions of the impact of ill health on his or her life and functioning (Bowling, 1995; McCallum, 1995; McHorney et al, 1993; Hunt et al, 1985).

A number of generic broad health status measures – tools which incorporate psychological and social aspects in addition to physical wellbeing – have been developed as a means of assessing outcomes of health care (Hayes et al, 1995) and health related quality of life (HRQoL) (Bowling, 1991); and of obtaining population health status profiles. The Short Form-36 (SF-36) is one of these tools.

2.1.1 The SF-36

An extensive literature describes the SF-36 and its use in a variety of situations, and this was briefly summarized in the 1998 report (Hawthorne, 2000). It measures eight dimensions (Physical Function, Role Physical, Bodily Pain, General Health, Vitality, Social Function, Role Emotional, and Mental Health) which can also be combined into two scales, summaries of Physical Health and Mental Health.

It is one of a number of available generic health status measures, each with a slightly different emphasis. Some of the perceived advantages of the SF-36 over the Nottingham Health Profile, for example, are its greater sensitivity to low levels of perceived ill health (Brazier et al, 1992; Hayes et al, 1995; McCallum, 1995); and, in assessing older adults, its emphasis on everyday functioning (Hayes et al, 1995).

However the literature also identifies some concerns about using the SF-36 with elderly populations. For self-completion the amount of missing data has been found to be related to age, with older people missing more responses (Brazier et al, 1992; McHorney et al, 1994; Hayes et al, 1995). Lyons et al (1994) found that in an interview setting the amount of missing data with this age-group was very low, although it has been suggested the elderly tended to regard some of the questions as not applicable to them (Hayes et al, 1995).

The SF-36 is short (it generally takes no more than 10 minutes for self-completion) and in comparison with the Sickness Impact Profile was found to be quicker to complete (Hayes et al, 1995). It is easy to administer, is applicable across a range of social and demographic groups, and is acceptable to patients (Lin and Ward, 1998; Hayes et al, 1995). It has been widely validated and is comprehensive, covering the major health concepts (McCallum, 1995); and has been demonstrated to provide a reliable health status profile when used with GP patients in an Australian practice (Lin and Ward, 1998).

In addition to being used for evaluating change in health status following an intervention for a wide variety of medical conditions and being used for health promotion activities, the SF-36 has been used for population surveys. Australian norms were ascertained by the Australian Bureau of Statistics as part of the National Health Survey conducted in the mid-1990s (ABS 1995); and these norms are used for comparative purposes in this report.

The SF-36 was used in the 1998 Whitehorse study, and was therefore included in this study to facilitate comparisons between the studies. The SF-36 formed the first part of the questionnaire, which is included in Appendix 1.

2.2 Loneliness and social isolation

Humans need to belong (Cantor and Sanderson, 1999) and “to feel connected with others in enduring, close relationships” (Myers, 1999:374). While close relationships may contribute to stress and related morbidity if their impact is negative, they are more likely to be positive and to contribute to health and wellbeing (Myers, 1999; Peterson, 1999). Supportive social networks help people cope with life experiences (Morris, 1999) and those with close relationships and

strong support networks are less likely than those without to die prematurely, and “broken social ties” increase the likelihood of disease (Myers, 1999:377).

While loneliness is a different construct from social isolation — being isolated does not automatically imply the individual is lonely — there is a strong relationship. In their review of the loneliness literature Jones et al (1990) found evidence of an inverse relationship between loneliness and measures of social relationships where those not currently in a relationship experienced greater loneliness. The prevalence of loneliness is generally accepted as being between 3% and 25%, and there is a perception that loneliness and social isolation is a substantial problem in later life. A major British study in 1963 identified that 20% of older people were isolated, and 10% lonely (Victor et al, 2000).

Loneliness and social isolation concern those providing health care services because of their impact on health status and on HRQoL. Loneliness is a significant factor in both psychological issues and in other morbidity and mortality (Cacioppo et al, 2000); and those who lack social connections also have an increased risk of poor health outcomes (Berkman, 2000; Kawachi et al 1999; Sapolsky 1999; Jones et al 1990). Consequently higher demands are made on the resources of the health care system (Hawthorne and Griffith, 2000). Recently published studies have shown a significant association between loneliness and the frequency of general practice consultations (Ellaway et al, 1999); and suggested a link between social isolation and dementia (Fratiglioni, et al 2000).

Loneliness is subjective and is “an unpleasant and distressing psychological condition” (Jones et al, 1990:248) which is generally perceived as the absence of significant relationships, and negative feelings about this absence (Victor et al, 2000; Hansson et al, 1986). It is being alone, rather than living alone, which is the crucial factor (Berkman, 2000), and there is some evidence that loneliness causes less distress for the elderly than it does for younger age groups (Rokach, 2000). It can be a temporary experience for some, but for others it can be chronic (Cacioppo et al, 2000).

The perception that social support is available is associated with better physical and mental health (Manning and Fullerton 1988 in Myers 1999:378), and with better tolerance of stress or hardship (Berenbaum 1999; Cantor and Sanderson, 1999). For example, those who do not share feelings of pain or distress are more likely to suffer health problems than those who do (Myers, 1999), and there is some evidence the presence of a close, confiding relationship can prevent grief from turning into depression (Morris, 1999). It is suggested that social support networks contribute to a sense of belonging, as well as providing reciprocal material assistance (Young, 1998). However, it is the perceived quality of this support rather than the frequency or quantity of social interactions which is important (Fratiglioni et al, 2000), and this is a significant issue with respect to the measurement of social isolation (Hawthorne and Griffith, 2000).

2.2.1 Measuring loneliness and social isolation

For the purposes of this study loneliness is considered a subset of social isolation, which is the absence of social support in terms of connections with others (Bowling, 1991; Kawachi et al, 1999). In addition to experiencing feelings of loneliness, a person who is socially isolated is likely to find making contact with others, and getting on with them, difficult. They are also likely to lack

trusted significant others who provide a sense of worth and intimacy (Weiss, 1974), and to whom they can turn in a crisis (Hawthorne and Griffith, 2000).

The Solitariness Scale

While the SF-36 includes questions about social activities this information is insufficient for identifying the extent of loneliness or social isolation. Consequently an additional tool was required for this survey. It needed to be short as it was to be completed at the same time as the SF-36 and the demographic details; and it was considered that the inclusion of a long tool would have made the task too onerous for patients. (Experience with this survey supported this, as some patients were deterred by the information that the questionnaire could take 20 minutes to complete.) It was also important that it covered the domains of isolation and its intensity and duration; and that it could be easily scored. None of the available instruments fit these criteria, so the Solitariness Scale (SS)¹ was developed.

The development, psychometric properties and initial validation of the SS is described in more detail elsewhere (Hawthorne and Griffith, 2000). The results are included in this study as initial validation suggested that the SS is valid, reliable and sensitive, and that the results can be used with some confidence (Hawthorne and Griffith, 2000).

The scale consists of 5 statements about the respondent's experience over the previous 4 weeks. Each statement concerns one domain (getting on with others, feelings of loneliness, intimacy, making contact with others, and feeling dependent on them), and responses are given on a 5-point Guttman-type scale from *Almost always* to *Not at all* (Hawthorne and Griffith, 2000). A copy of the scale is included in the questionnaire forming Appendix 1.

Items were scored from 1 to 5 and summed, with a high score indicating greater isolation. Responses to Q2 and Q5 (items in which the wording was reversed to reduce the possibility of response bias) were reversed for consistency in scoring. The range of possible scores was 5 to 25, and for simplicity this was reduced to 0 to 20 by deducting a value of 5 from each individual's score.

The implications of this are that a total score of 0 indicates that respondent reported social support was always available over the previous 4 weeks; and that a score of 20 indicates such support was never available over that period. The latter person would have a greater feeling of isolation, and would have reported that during the previous 4 weeks he or she did not get on with others, was almost always lonely, had nobody to share feelings with, did not find it easy to make contact with other people and felt a burden to others.

2.3 Demographic data

The demographic questionnaire used in 1998 was used in this survey to facilitate comparison between the two sets of data. A copy can be found in Appendix 1.

¹ We originally called the Solitariness Scale the 'Friendship Scale'. See Hawthorne & Griffith (2000).

The questions included gender, date of birth, country of birth, proficiency in speaking English, marital status, and highest completed education level. Annual household income after tax was requested to the nearest \$5,000 and respondents were asked if they were receiving any social security, pension or sickness benefits payments. Those who responded that they were receiving such payments are subsequently referred to in this report as Cardholders. Other questions were about current working status, and current or most recent occupation.

Respondents were asked how frequently they saw their doctor, and whether they had a significant illness, how long they had been ill, and whether it was acute or chronic. They were also asked for their postcode and nearest intersection, and this information helped to determine the relative socioeconomic disadvantage of the respondents place of residence. The nearest intersection was used to confirm the postcode if necessary.

2.4 About the survey

2.4.1 Recruitment

The Whitehorse Division of General Practice undertook the preliminary recruitment of GP practices to be involved in the study, and this was done by a combination of advertising in the Division's newsletter (Whitehorse 2000a) and direct approach to clinics. Twenty-nine clinics initially responded but for a variety of reasons only 24 eventually participated. The commencement of data collection coincided with the influenza season, the introduction of the Goods and Services Tax, and school holidays, and some clinics felt there was so much other activity, including their own satisfaction surveys required for accreditation, that they did not wish to be involved in this.

Between early July and mid-August 2000 two researchers made 38 separate visits to 24 clinics across the Division. These visits occurred at times which suited both the clinics and the researchers. Visits were usually of 3 to 4 ½ hours duration. Most took place in the morning, afternoon or late afternoon/evening on weekdays, although some visits were made on Saturday mornings.

The number of doctors associated with each clinic varied from 1 to 23; and the number on duty at the time of each visit also varied considerably, with the most being 10. For example one Saturday morning visit was made to one clinic with which 6 doctors were associated, but only one was on duty. Table 1 summarises this information.

Table 1 Basic details of participating clinics

N.doctors in clinic	N.Clinics	N.respondents	Respondents per clinic (a)
1	5	28	6
2	10	113	11
3	8	147	18
4	6	130	22
5	4	84	21
6	2	89	45
8	1	20	20
9	1	27	27
10	1	47	47
TOTAL	38	685	18

Note: (a) = mean number of respondents per visit

Within the constraints mentioned earlier, an attempt was made to spend more time at those clinics with which more doctors were associated, so the larger clinics generally received more visits than the smaller clinics. The number of questionnaires collected at a visit ranged from 2 to 47, with 63 being collected at one of the larger clinics over the course of a whole day. The most collected from any one clinic was 117.

2.4.2 Sample size

Where a single sample is to be used for estimating a population parameter with confidence intervals, Kish (1965) advanced the following formula:

$$n = \frac{\left[(Z_a \cdot Z_b) \cdot \frac{(p(1-p))}{D^2} \right]}{1 + \left[\frac{\left[(Z_a \cdot Z_b) \cdot \frac{(p(1-p))}{D^2} \right]}{P} \right]}$$

Where:

- p = the proportion of the population with the variable of interest. The proportion of cases reporting their health as Fair/Poor from the previous study was used (Hawthorne 2000), ie 0.18.
- D = the estimated maximum difference between the population (true) mean rate and the sample (observed) mean rate. For example, if the true rate was 0.10 (10%) and a researcher was willing to accept 0.08 (8%) then $D = 0.10 - 0.08 = 0.02$, equivalent to a 4% sampling error rate.

-
- P = the population size which the sample represents. The Whitehorse Division provides services to a population estimated to be 985,000 (Hawthorne, 2000).
 - Za = the test size, $p = 0.05$.
 - Zb = the test power, $p = 0.2$.

Using these values, the required sample size was calculated as 608.

A total of 1532 approaches were made to 974 women and 518 men (gender information is not available for a few clinics). Of these, 1139 (74.35%) were eligible and 393 (25.65%) were ineligible. Reasons for ineligibility included not actually seeing the doctor, being under 18, being deaf or legally blind, and inadequate English.

The number of questionnaires returned was 685; a response rate of 60%. However only 636 (93% of returns) contained enough data to be useable; and only 568 obtained SF-36 summary scale scores (ie 89% of useable questionnaires; or 83% of all returns; or 50% of those in scope (1139)).

2.4.3 Interview procedure

Potential participants were approached while waiting to see the doctor. Before being given the questionnaire the patient was given the Plain Language Statement (Appendix 2) to read, and then asked to complete a Consent Form (Appendix 3). Once the consent form was completed and returned, the questionnaire was handed over for completion at the time. In a small number of cases (14) assistance was given in terms of reading the questions aloud and/or completing the form as directed by the participant, but this occurred in the less busy environments, or if the patient was accompanied by someone who could assist her/him.

In both the Plain Language Statement and the Consent Form it was made clear to participants that they could withdraw at any time. Only one person did so after having commenced the questionnaire.

Researchers observed some suspicion about the purpose of the survey and the level of privacy which would be maintained, even though the Plain Language Statement included this assurance; and some resistance because of the number of other surveys being conducted throughout the community. Some of those approached volunteered other reasons for not participating and these included:

- not having reading glasses with them
- not feeling strong enough/well enough
- they felt they were too old
- they would not have enough time
- being unwilling to sign a Consent Form.

While an attempt was made to approach everyone in each waiting room, this was not always achieved. Patients could be called for their appointment before an approach could be made, or at any stage prior to completing the questionnaire. While some returned to complete the process

once their consultation was over, this was not possible for everyone. In fact a total of 701 people completed consent forms, and only 685 questionnaires were returned.

2.4.4 Data entry

As in 1998, double-entry into EpiInfo (Dean et al, 1994) facilitated cleansing and verification of the data.

Where a respondent provided more than one response to a question the more conservative option was used (for example Very Good and Good would become Good), or the higher value used (for example if Primary school and Trade/Apprenticeship were both ticked, Trade/Apprenticeship would be used).

Under frequency of visiting the GP no intermediate option between Monthly and About every six months was provided; and a number of respondents wrote in alternative values. If this value was three monthly, or more frequently, this was coded as Monthly. If it was less frequently than three monthly, it was coded to About every six months.

3 Results

3.1 Demographics

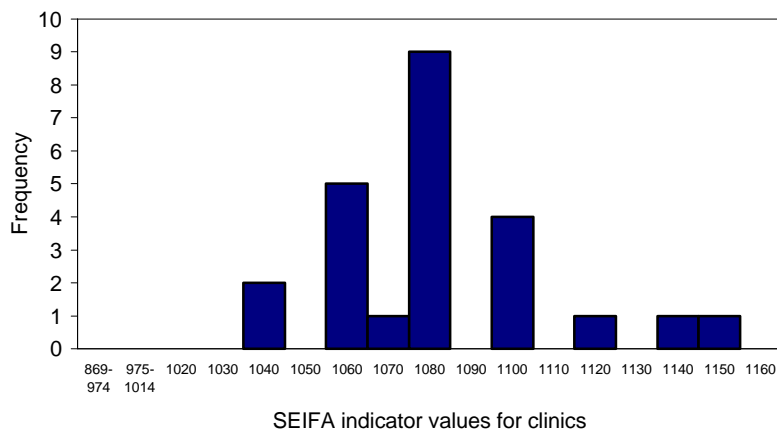
The demographic information established a profile of the population who participated in this study. It should be noted that the method of recruitment into this study means it is not possible to determine how typical of GP patients within the Division these respondents are.

It should also be noted some of this data are missing and not all 685 questionnaires contained complete demographic information. This came about either as a result of lack of time, as described earlier in the discussion about response rates, or because individuals did not respond to certain questions. As a consequence the proportions being discussed in the following sections are likely to be conservative.

3.1.1 The study population

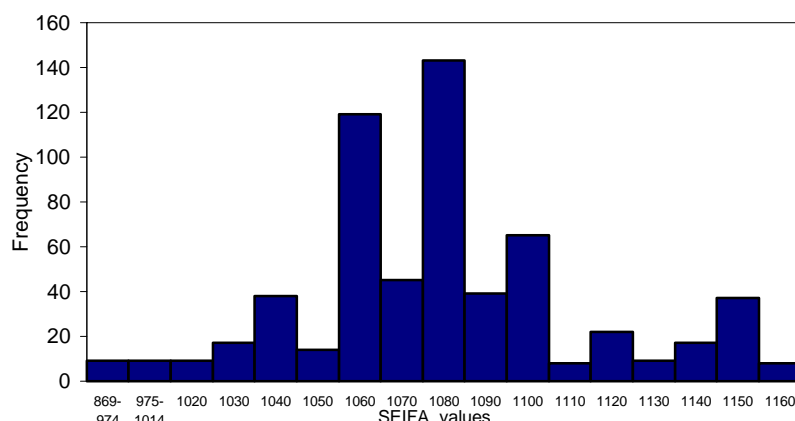
The Australian Bureau of Statistics disadvantage socioeconomic indicators for Australia (SEIFA) provides a guide to the relative socioeconomic disadvantage by postcode of all areas within Australia. For Victorian postcodes, the interquartile range was from 977 (25th percentile) to 1053 (75th percentile) with the median and 50th percentile being 1014 (ABS 1996).

Figure 1 SEIFA indicators for participating clinics



The participating clinics were all situated in areas with SEIFA values of 1040 or above, as demonstrated by Figure 1, with the majority being in the top quartile (a value higher than 1053). Figure 2 demonstrates the distribution of the areas of residence of the 608 patients (89%) participating in the study who provided this information. A comparison of the two figures reveals that the two distributions are similar, which could be anticipated if the majority of GP patients attend a clinic close to their homes. However the patients came from areas with a wider spread of values, and a small number (18, or 3% of the sample) lived in areas rated lower than the 50th percentile. The mean score for patients was 1079 ± 37.8 , and as can be seen from Figure 2 the significant majority (84%) lived in areas in the top 25th percentile for Victoria (ie above 1053).

Figure 2 SEIFA indicators for respondents



3.1.2 Personal characteristics

Table 2 gives some of the personal details of respondents, by gender. Females formed 64% of respondents and males 36%; and the average ages of the two groups were similar: 48 years for females and 50 years for males.

Table 2 Personal details of respondents

		Female	Male	All	Statistics
Number		409 (64%)	227 (36%)	636 (100%)	
Age	(mean±stdev.years)	47.7±18.2	49.7±19.4	48.4±18.7	ANOVA, F = 1.53, df = 1, p = 0.22, NS
Birthplace	Australia	317 (78%)	174 (78%)	491 (78%)	
	Asia	17 (4%)	11 (5%)	28 (4%)	
	Europe/UK	61 (15%)	30 (14%)	91 (14%)	
	Rest of world	13 (3%)	7 (3%)	20 (3%)	$\chi^2 = 0.42$, df = 3, p = 0.94, NS
	Missing data			6 (1%)	
English level	Very well	378 (93%)	202 (89%)	580 (92%)	
	Well	25 (6%)	22 (10%)	47 (7%)	
	Not well/Not (limited English)	3 (1%)	2 (1%)	5 (1%)	Fisher's Exact Test, p = 0.23 NS
	Missing data			4 (1%)	
Marital Status	Single	80 (20%)	56 (25%)	136 (22%)	
	Married/de facto	239 (59%)	146 (65%)	385 (61%)	
	Divorced/Separated/Widowed	86 (21%)	24 (11%)	110 (17%)	$\chi^2 = 12.17$, df = 3, p < 0.01*
	Missing data			5 (1%)	
Education level	Primary	19 (5%)	11 (5%)	30 (5%)	
	Trade	13 (3%)	27 (12%)	40 (6%)	
	High	183 (45%)	67 (30%)	250 (40%)	

TAFE	67 (17%)	40 (18%)	107 (17%)	
University/degree	121 (30%)	79 (35%)	200 (32%)	$\chi^2 = 27.64, df = 4, p < 0.01^*$
Missing data			9 (1%)	

There were no significant differences for birthplace either. Seventy-eight percent of respondents were born in Australia, 14% in Europe (including the UK), 4% in Asia and 3% in other parts of the world; and only 1% reported they did not speak English well. This is not surprising given the questionnaire was only provided in English, and patients whose English was insufficient for them to understand the approach being made were deemed ineligible.

Most of the sample were in a relationship: 61% of all respondents reported they were married or had a defacto partner, while 22% were single and 17% divorced, separated or widowed. More of the men reported they were married/defacto (65% compared to 59% of the women) or single (25% cf 20%), and more of the women were divorced, separated or widowed (21% of women, 11% of men). These differences were statistically significant.

Significant differences were also observed for education: the largest group (40% of respondents) were those who had completed high school. However, a greater proportion of women were in this category (45% compared to 30% of the men). More men than women reported both trade qualifications (12% compared to 3%), and had completed university (35% compared to 30%).

Socioeconomic details

Over half the respondents (56%) reported they were working either full- or part-time, and 23% were either retired or on sickness benefits (Table 3). There were significant differences between men and women in several categories: 63% of the men were working, compared to 53% of women; 20% of women reported they were homemakers while only 1% of males were in this category; and 28% of the men and 20% of the women reported they were retired or on sickness benefits. Similar proportions of males and females reported they were students (5% and 4% respectively) or unemployed or looking for work (4% and 3%).

Table 3 Socioeconomic details of respondents

		Female	Male	All	Statistics
Working status	Working fulltime/Parttime	211 (53%)	140 (63%)	351 (56%)	
	Unemployed/looking for work	12 (3%)	9 (4%)	21 (3%)	
	Homemaker	79 (20%)	2 (1%)	81 (13%)	
	Student	19 (5%)	9 (4%)	28 (5%)	
	Retired/Sickness benefits	79 (20%)	62 (28%)	141 (23%)	$\chi^2 = 46.48, df = 4, p < 0.01^*$
	Missing data			14 (2%)	
Occupation	Professional/Manager	106 (28%)	90 (42%)	196 (33%)	
	Paraprof/Clerical/Personal	214 (56%)	61 (29%)	275 (46%)	
	Trade/Driver/Labourer	36 (9%)	54 (25%)	90 (15%)	
	Other	27 (7%)	7 (3%)	34 (6%)	$\chi^2 = 57.39, df = 3, p < 0.01^*$
	Missing data			41 (6%)	

Household income \$0 - \$14,999	49 (19%)	19 (11%)	68 (16%)	
\$15,000 - \$29,999	46 (17%)	36 (21%)	82 (19%)	
\$30,000 - \$59,999	77 (29%)	53 (31%)	130 (30%)	
\$60,000 +	91 (35%)	64 (37%)	155 (36%)	$\chi^2 = 4.76, df = 3, p = 0.19 NS$
Missing data			201 (32%)	

Information about occupation was obtained from an additional question, and coded according to ABS schema (ABS 1986). Most of the respondents reported their current or most recent employment was in the paraprofessional, clerical or personal positions (46%); the next largest group was those in professional or managerial positions (33%). Fifteen percent were in trade, driver or labourer positions. There were significant differences between the genders – men were more likely to report they were professionals or managers (42% compared with 28% of women); and were more likely to be a tradesman, driver or labourer (25% cf 9%). Women were more likely to work in paraprofessional, clerical or personal employment (56% of women compared to 29% of men).

The question about Household income provided the most difficulty for respondents, and was not answered by 32% of the sample. Of those who did answer, 16% reported their annual household income after tax as being less than \$15,000, and another 19% reported theirs was in the range of \$15,000 to \$29,999. It is likely that these figures are on the low side as in the study done only two years earlier 53% reported their income as being less than \$15,000. In the more recent study the researchers observed that, while some respondents did not answer for reasons of privacy, many study participants either had no idea, or were unable to work it out. Given that no information is available concerning data collection methodology for the first study, it is not possible to establish the reasons for these differences.

3.2 Health service use and health status

Details of health service use and health status, by gender, are given in Table 4. No significant differences were observed for this information.

Table 4 Health service use and health status by gender

		Female		Male		All		Statistics
Cardholder	Yes	144	(36%)	67	(30%)	211	(34%)	$\chi^2 = 1.93, df = 1, p = 0.16, NS$
	No	258	(64%)	154	(70%)	412	(66%)	
	Missing data					13	(2%)	
Visit doctor	Weekly, or more often	16	(4%)	7	(3%)	23	(4%)	$\chi^2 = 3.77, df = 5, p < 0.58, NS$
	Fortnightly	23	(6%)	9	(4%)	32	(5%)	
	Monthly	120	(30%)	54	(24%)	174	(28%)	
	Six monthly	177	(44%)	110	(50%)	287	(46%)	
	Yearly	49	(12%)	30	(14%)	79	(13%)	
	Less often	19	(5%)	11	(5%)	30	(5%)	
	Missing data					11	(2%)	
Illness	No	236	(59%)	141	(64%)	377	(61%)	$\chi^2 = 1.55, df = 1, p < 0.21, NS$
	Yes	166	(41%)	80	(36%)	246	(39%)	
	Missing data					13	(2%)	
Type of illness (a)	Acute	47	(29%)	19	(25%)	66	(28%)	$\chi^2 = 0.35, df = 1, p < 0.55, NS$
	Chronic	117	(71%)	57	(75%)	174	(73%)	

Note: (a): *Illness was a filter question for this question, and therefore the number eligible to answer this question was 246. All other cases would be regarded as having no significant illness.*

Respondents were asked if they were cardholders, and 34% (36% of women and 30% of men) reported they were. Slightly more women than men visited a GP monthly or more frequently (40% compared with 31%). Nine percent of respondents reported visiting a GP every two weeks or more frequently (10% of women and 7% of the men); while 18% (17% of women and 19% of men) visited yearly or less often. The largest group (46%) was those who visited twice a year (44% of the women and 50% of the men).

Respondents were asked if they had a significant illness at the time of completing the survey and 39% reported they did. It should be noted that, even though this information was obtained while patients were consulting their GP, 59% of females and 64% of males reported they did not have a significant illness at the time. Where such an illness was reported, respondents were asked to identify whether it was an acute illness from which they would recover fairly quickly, or a chronic illness lived with for an extended period of time. A slightly larger proportion of women (41% compared with 36% of men) reported such an illness; and almost three quarters (73%) of these illnesses were chronic.

3.2.1 Age, health service use and status

Examining service use and health status by age rather than by gender reveals a different story, and significant differences can be observed between age-groups (see Table 5). The age-groups used were 17 to 29 (20% of respondents), 30 to 49 (34%), 50 to 69 (30%) and 70+ (16%).

The largest proportion of participants reporting being cardholders was in the 70+ age group (83%), and the smallest was in the 17 to 29 group (12%).

The proportion visiting their GP on a weekly or fortnightly basis was similar across all age groups: from 7% to 10%; and the remaining frequencies of visits within the three younger age groups were similar, with the largest sub-group being those who reported six-monthly visits (between 45% and 51%). However, within the 70+ age-group, the largest proportion (46%) visited monthly, with 36% visiting six-monthly.

Differences were also observed between age-groups when analysed with respect to having a significant illness. Approximately half of all respondents aged 50 or older reported a significant illness at the time of the study (49% of those aged 70+ and 53% of those aged 50 to 69); while a third or less of the younger respondents (33% of those aged 30 to 49 and 23% of those aged 17 to 29) reported they were ill. Further analysis of this information by type of illness (acute or chronic) revealed that just over half of the youngest group (54%) reported a chronic illness. This proportion was larger in the older age groups (71% for those aged 30 to 49; 74% of those aged 50 to 69; and 85% of the 70+ group).

Table 5 Health service use and health status by age group

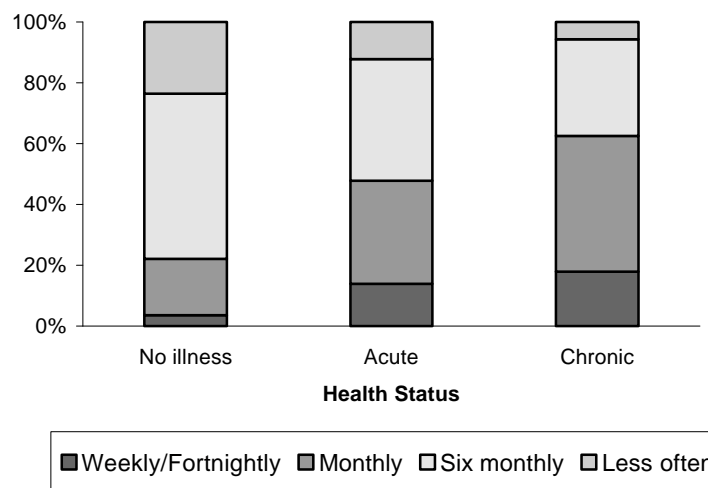
		Age Group (years)				Statistics
		17-29	30-49	50-69	70+	
Cardholder	Yes	15 (12%)	44 (21%)	68 (37%)	84 (83%)	$\chi^2 = 150.46, df = 3, p < 0.01^*$
	No	109 (88%)	163 (79%)	116 (63%)	17 (17%)	
	Missing data				20 (3%)	
Visit doctor	Weekly/Fortnightly	9 (7%)	19 (9%)	16 (9%)	10 (10%)	$\chi^2 = 25.65, df = 9, p < 0.01^*$
	Monthly	25 (20%)	51 (24%)	50 (27%)	46 (46%)	
	Six monthly	62 (51%)	95 (45%)	91 (49%)	36 (36%)	
	Yearly/Less often	26 (21%)	44 (21%)	29 (16%)	9 (9%)	
	Missing data				18 (3%)	
Illness	No	95 (77%)	140 (67%)	86 (47%)	53 (51%)	$\chi^2 = 35.98, df = 3, p < 0.01^*$
	Yes	28 (23%)	68 (33%)	97 (53%)	50 (49%)	
	Missing data				19 (3%)	
Type of illness (a)	Acute	13 (46%)	19 (29%)	25 (26%)	7 (15%)	$\chi^2 = 9.32, df = 3, p < 0.03^*$
	Chronic	15 (54%)	46 (71%)	71 (74%)	41 (85%)	
	Missing data				6 (1%)	

Note: (a) Illness was a filter question for this question, and therefore the number eligible to answer this question was 246. All other cases would be regarded as having no significant illness.

The relationship between the nature of the illness, if any, and the frequency of visits to the doctor is demonstrated in Figure 3. These differences in proportions were statistically significant ($\chi^2 = 98.0, df = 6, p < 0.01$). Of those reporting they did not have a significant illness at the time, 78% reported they visited their GP six-monthly or less frequently. Three percent visited weekly or fortnightly, and 19% visited monthly.

Respondents who reported an acute illness (10% of all respondents) were more likely to visit more frequently. Almost half (48%) visited monthly or more frequently; while 64% of those with a chronic illness (25% of all respondents) visited that frequently (18% weekly and 45% monthly).

Figure 3 Frequency of visiting the GP by health status



3.3 SF-36

Histograms of the SF-36 dimensions and scales are shown in Figures 4 to 13. As noted in the earlier report (Hawthorne, 2000) the distribution of scores is non-interval and several of the scales have substantial gaps, reflecting their construction. These histograms demonstrate those gaps and the non-interval distribution; and that the data are skewed towards the healthy end of each scale, although the Role Physical and Role Emotional scales both reveal considerable numbers with low scores.

It should be noted that the following analysis uses non-parametric statistical tests because of the distributions described above. Mean scores are generally presented for these data, and are therefore used in this report, but any interpretation of the figures should be done in the knowledge that the data are non-normally distributed.

Figure 4 SF-36 Physical function scale

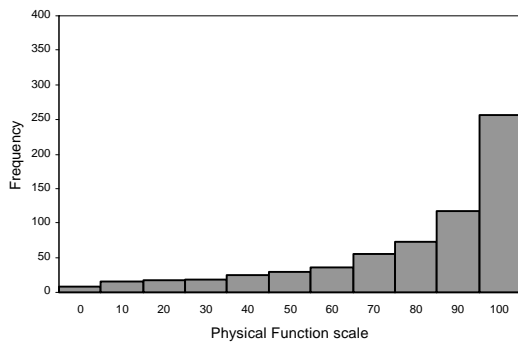


Figure 5 SF-36 Role physical scale

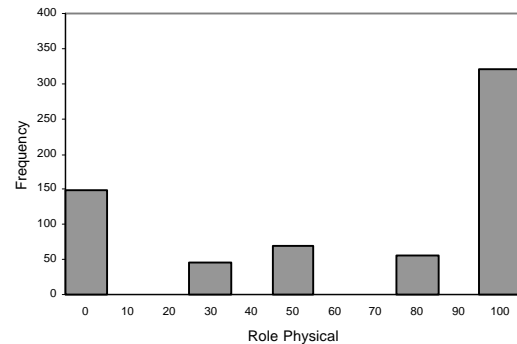


Figure 6 SF-36 Bodily pain scale

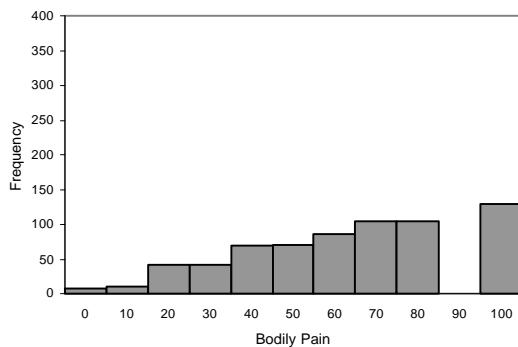


Figure 7 SF-36 General health scale

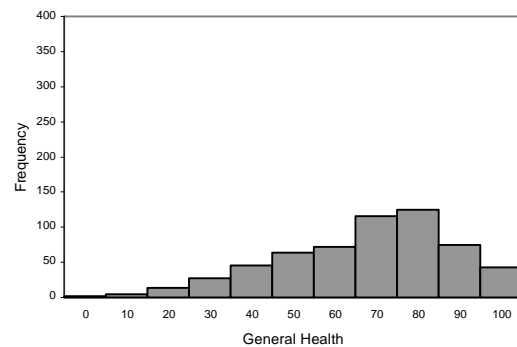


Figure 8 SF-36 Vitality scale

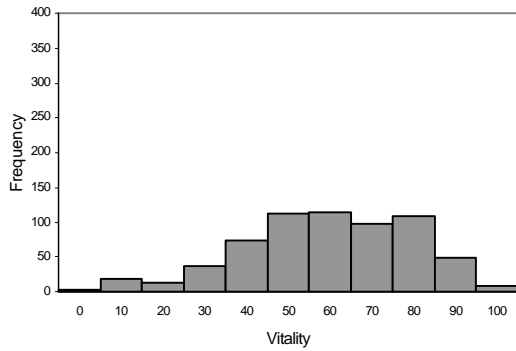


Figure 9 SF-36 Social function scale

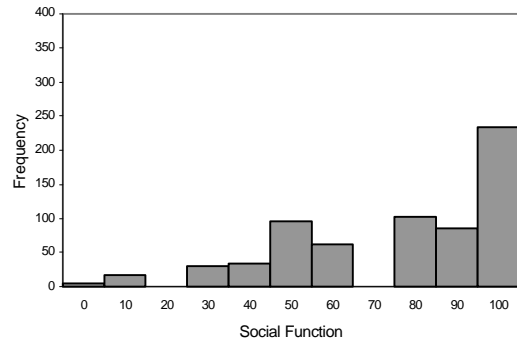


Figure 10 SF-36 Role emotional scale

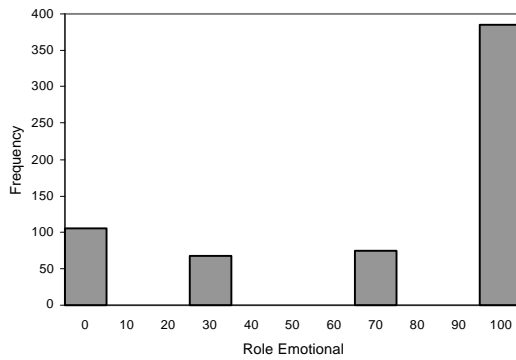


Figure 11 SF-36 Mental health scale

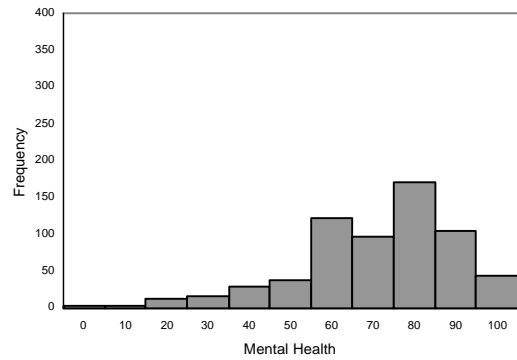


Figure 12 SF-36 Physical health summary scale

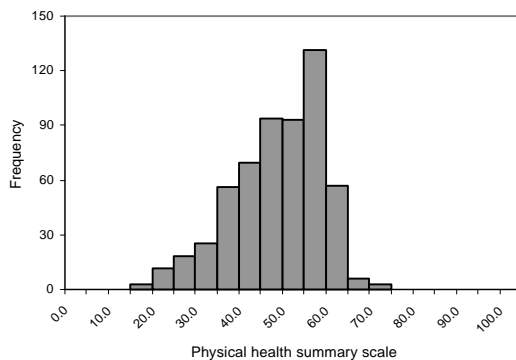
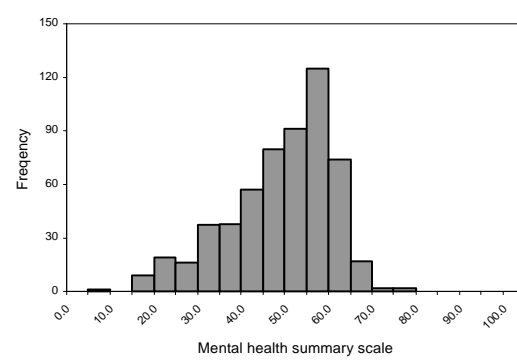


Figure 13 SF-36 Mental health summary scale



3.3.1 General health

The first question of the SF-36 concerns general health and requires a rating on a scale from 'excellent' to 'poor'. Excellent health was reported by 11%, very good by 36%, 34% reported good, 15% reported fair and 4% rated their health as poor. This is shown in Figure 14. The second question asks about any change compared with 12 months ago and this is demonstrated in Figure 15. More than half (58%) said their health was the same as 12 months previously, 19% that it was worse, 14% better, 8% much better, and only 1% much worse.

Figure 14 Health status of respondents

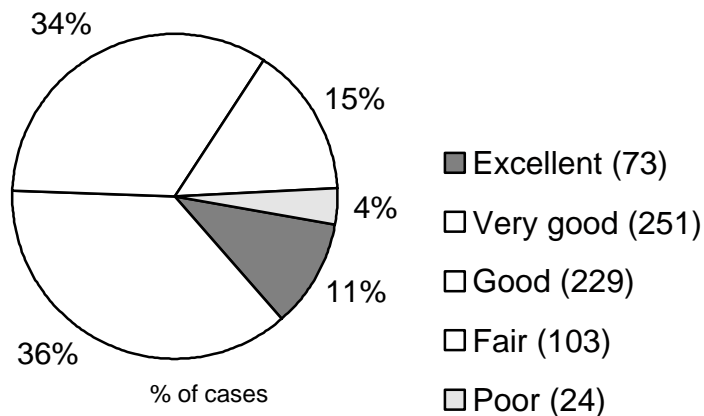
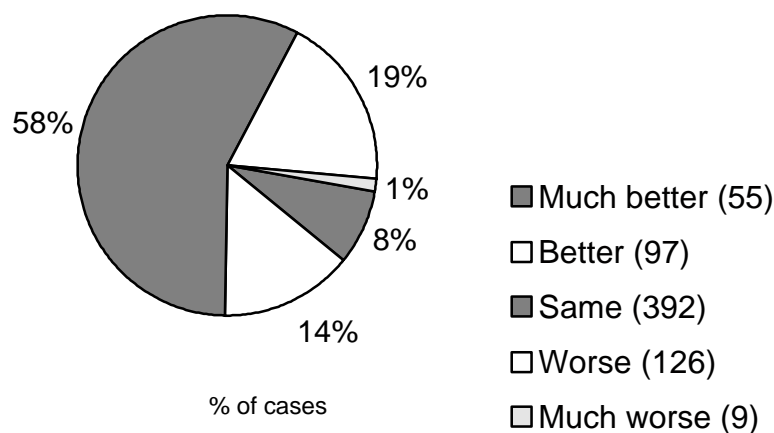


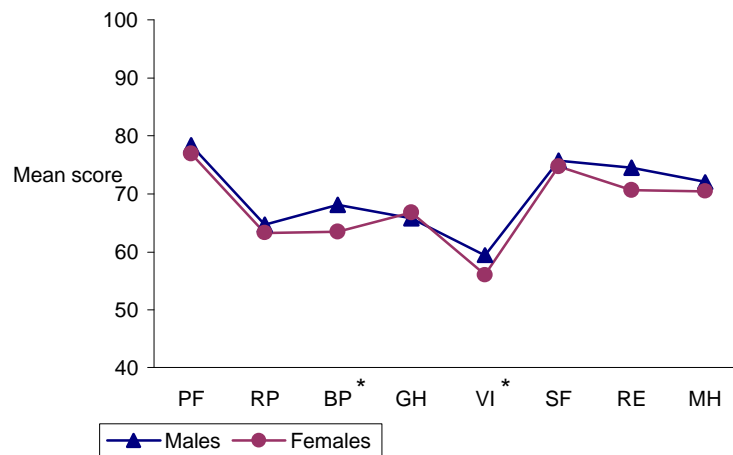
Figure 15 Change in health status of respondents



3.3.2 Analysis of the SF-36 dimensions

Figure 16 plots the mean scores on each SF-36 dimension by gender. No significant differences were observed for the Physical Function, Role Physical, General Health, Social Function, Mental Health or Role Emotional dimensions. Significant differences were observed on the Bodily Pain and Vitality dimensions; and males reported better health on both. For Bodily Pain the difference was 7% ($p = 0.02$) and for Vitality it was 5% ($p = 0.04$).

Figure 16 SF-36 Dimension by gender



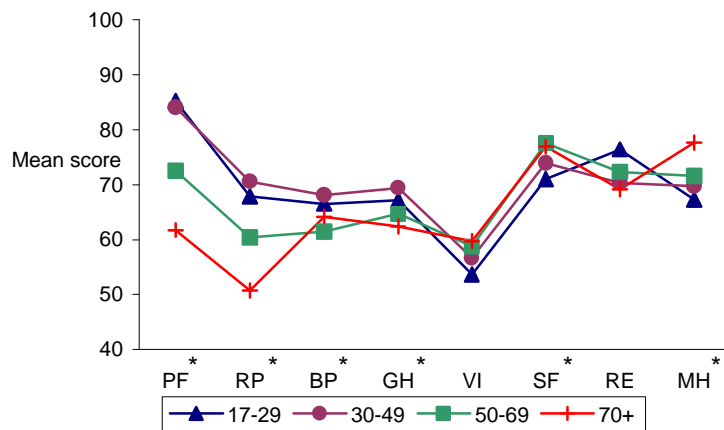
Notes: $n = 583$ (minimum number of respondents)
 * Significant difference, Kruskal-Wallis H, $p < 0.05$

Figure 17 illustrates that, when the SF-36 scores are examined by age, the two older groups (70+ and 50–69 years) achieved the lowest scores on four dimensions. This difference is particularly significant for Physical Function and Role Physical. For Physical Function the health reported by the 70+ age-group is 18% worse than that reported by the 50 to 69 age-group; and in turn this was 15% worse than that reported by the 30 to 49 age-group. For Role Physical the 70+ age-group was 17% worse than the 50 to 69 age-group, and in turn they were 13% worse than next group, the 17 to 29s.

The youngest group (17 to 29) achieved the lowest scores on 3 dimensions. For Vitality this was 6% worse than the next group, and 11% lower than the best score; for Social Function these figures were 4% and 10%; and for Mental Health this was 4% worse than those aged 30 to 49 and 16% worse than the oldest group, who achieved a score significantly higher than any other group.

The differences ($p \leq 0.05$) were significant for Physical Function, Role Physical, Bodily Pain, General Health, Social Function and Mental Health. In fact the first two and the last were significant at the $p < 0.01$ level; and Vitality was suggestive of worse health ($p = 0.08$).

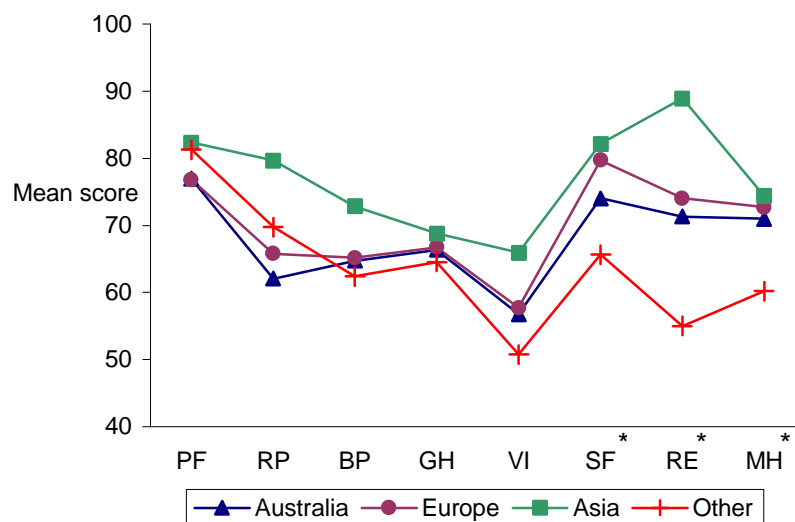
Figure 17 SF-36 Dimension by age-group



Notes: $n = 577$
 * Significant difference, Kruskal-Wallis H, $p < 0.05$

When the SF-36 scores were broken down by country of birth (Figure 18) significant differences were observed on three of the dimensions: Social Function, Role Emotional and Mental Health, and the differences on Vitality were suggestive ($p = 0.09$). On every dimension those born in Asia reported the best health, but it should be noted that the numbers in Asia and Other groups were small (28 and 20 – 7% of all respondents). Having said that, the Other group were 12% worse than those born in Australia on the Social Function dimension, 29% worse on the Role Emotional dimension, and 23% worse on Mental Health.

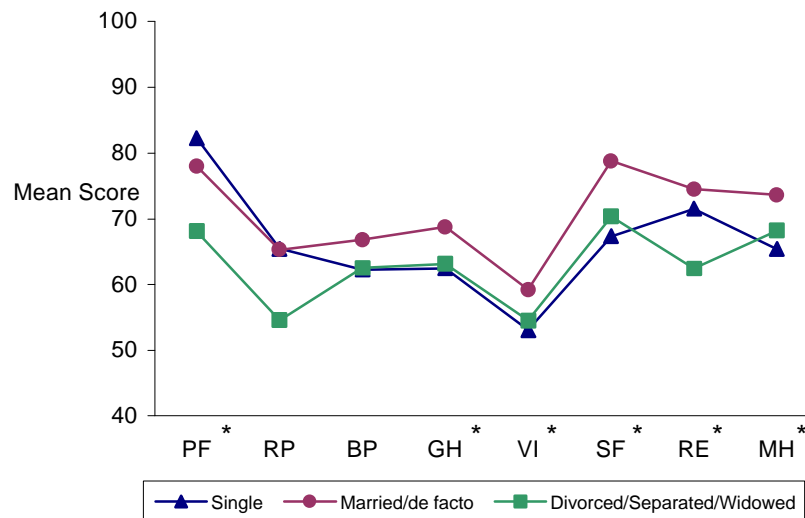
Figure 18 SF-36 Dimension by country of birth



Notes: $n = 578$
 * Significant difference, Kruskal-Wallis H, $p < 0.05$

Figure 19 illustrates the results analysed by marital status and shows that those who were married or in a de facto relationship reported better health on all dimensions than those who were divorced, separated or widowed; and better health than single people on all dimensions except Physical Function or Role Physical. The scores achieved for Physical Function by the divorced/separated/widowed group were 21% lower than those achieved by the single group, and 15% worse than those of the married/de facto group; and for Role Physical they were 18% worse than the other groups (while not statistically significant this difference was suggestive at $p = 0.07$).

Figure 19 SF-36 Dimension by marital status



Notes: $n = 579$

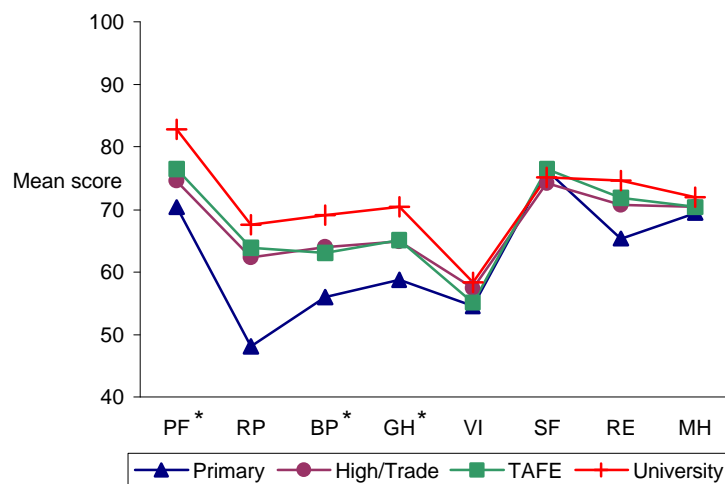
* Significant difference, Kruskal-Wallis H, $p < 0.05$

For all the other dimensions, except Role Emotional, the scores for the divorced/separated/widowed group were similar to those who reported they were single, and for all except Bodily Pain these differences were significant when compared to the married group. For General Health those not in a married/de facto relationship reported health at least 10% worse; for Vitality at least 9% lower; for Social Function it was worse by 13% or more; and 7% or worse for Mental Health. The divorced/separated/widowed group achieved scores 21% lower than the married group for Role Emotional; while the single group's mean score was closer to that of the married group.

In the questionnaire five options were provided for reporting highest completed education level. In the earlier Hawthorne study these were recoded to provide four groups (primary, high/trade, TAFE, and university/college) because of the small number of trade respondents (Hawthorne, 2000). For consistency this recoding was repeated in this study, and the results are illustrated in Figure 20. The high school/trade and TAFE groups achieved very similar scores on all dimensions. The university educated group reported better health on 7 of the 8 dimensions, and those with a primary school education reported worse health on 7 dimensions. For Physical Function the health of the university educated group was 8% better than any other group, while for the primary school group it was 7% worse than the nearest group. For Bodily Pain these figures were 9% better and 13% worse; and for General Health they were 7% better and 10% worse respectively. For Role Physical the primary school group scores were 29% worse than the

closest group, but this difference was not statistically significant because of the amount of variance within this group. This group was a very small proportion of respondents (5%). No significant differences were observed for the remaining dimensions, and with the exception of the primary group for Role Emotional the scores were very similar across all groups and all four dimensions.

Figure 20 SF-36 Dimension by education level

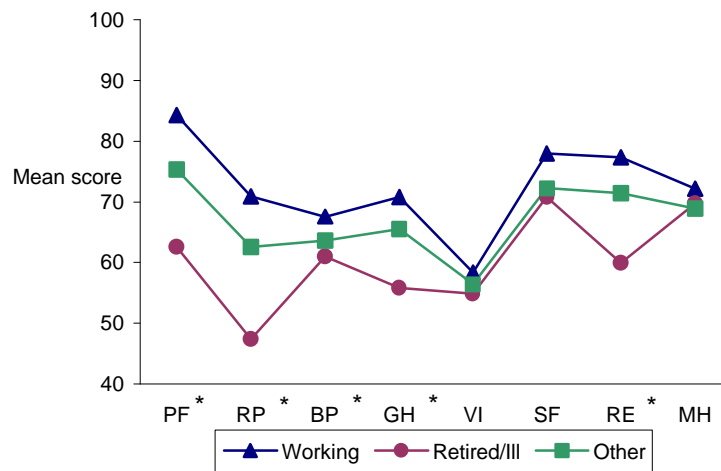


Notes: $n = 575$

* Significant difference, Kruskal-Wallis H , $p < 0.05$

Working status (Figure 21) was similarly recoded into three groups: working, retired/ill and other (students, homemakers and those looking for work). Significant differences were observed for Physical Function, Role Physical, Bodily Pain, General Health and for the Role Emotional dimension. Those working reported the best health overall, while the retired/ill group achieved the lowest scores on all dimensions except Mental Health. The scores for this dimension were very similar across all three groups. For Physical Function the retired/ill reported health which was 19% worse than the other group, for Role Physical 34% worse, for Bodily Pain 5% worse; for General Health 18% worse; and for Role Emotional 18% worse.

Figure 21 SF-36 Dimension by working status



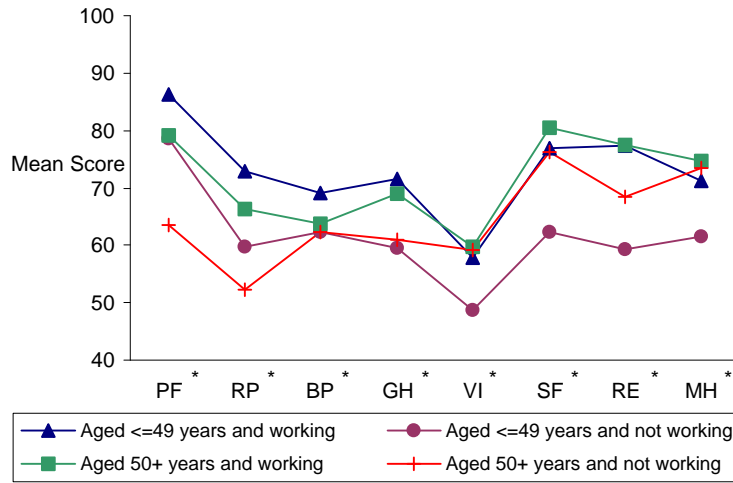
Notes: $n = 574$

* Significant difference, Kruskal-Wallis H, $p < 0.05$

As with the previous study (Hawthorne, 2000) these data were investigated further because of the implied relationship between age, work status and health. To facilitate this participants were recoded into two age-groups — those aged 50 and over and those aged 49 or less — and within each age-group into those working and those not working, giving four groups altogether. The result is shown in Figure 22 and demonstrates an interesting relationship between age, working status and health: on all dimensions the differences were significant. The two working groups reported generally better health than those not working, and while the older of these two groups achieved lower scores on four of the dimensions their scores on the other four were better or equal to the younger group.

Those who were not working had the poorest health, with the poorest overall being the younger of the two groups. While those aged 50+ achieved the lowest scores on Physical Function (23% worse than any other group) and Role Physical (15% worse), those aged 49 or younger had the lowest scores on the remaining 6 dimensions. While this score was very similar to that achieved by 2 other groups for Bodily Pain, and General Health scores were very similar for both not working groups, on the remaining four dimensions the younger not working group demonstrated much poorer health status. For Vitality it was 18% worse than the nearest group; for Social Function 23% worse; for Role Emotional 15% worse than the 50+ group, which in turn was 13% worse than either of the working groups; and for Mental Health the younger not working group was 15% worse than any of the other groups.

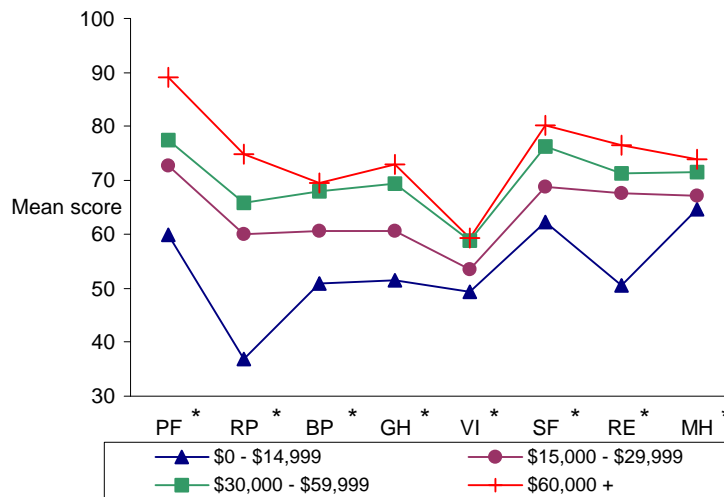
Figure 22 SF-36 Dimension by age and working status



Notes: $n = 574$
 * Significant difference, Kruskal-Wallis H, $p < 0.05$

The household income groupings were again kept consistent with the 1998 study (Hawthorne, 2000), and the data are demonstrated in Figure 23. There is a clear association between income and health status — the lower the income the poorer the health — and this difference was significant across all dimensions. However it should be noted that this question caused the most difficulty for respondents, and we do not have this information for 32%.

Figure 23 SF-36 Dimension by income



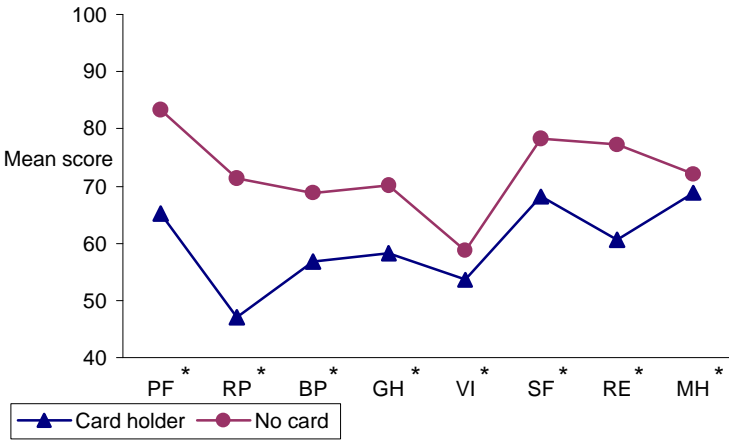
Notes: $n = 400$
 * Significant difference, Kruskal-Wallis H, $p < 0.05$

The lowest income group reported the poorest health by 22% for Physical Function (48% worse than the highest income group), by 62% for Role Physical, 18% for Bodily Pain, 20% for General

Health, 10% for Vitality, 11% for Social Function, 33% for Role Emotional, and 3% for Mental Health.

Cardholders reported poorer health on all dimensions (Figure 24), and the differences were significant for all except Mental Health. The smallest significant difference between the two groups was for Vitality, where the cardholders achieved scores which were 9% lower than non-cardholders. The biggest difference was for Role Physical, where the cardholders' health was 51% worse than the other group. On Physical Function, Bodily Pain and General Health the cardholders' health was at least 21% worse; and for Role Emotional it was 26% worse.

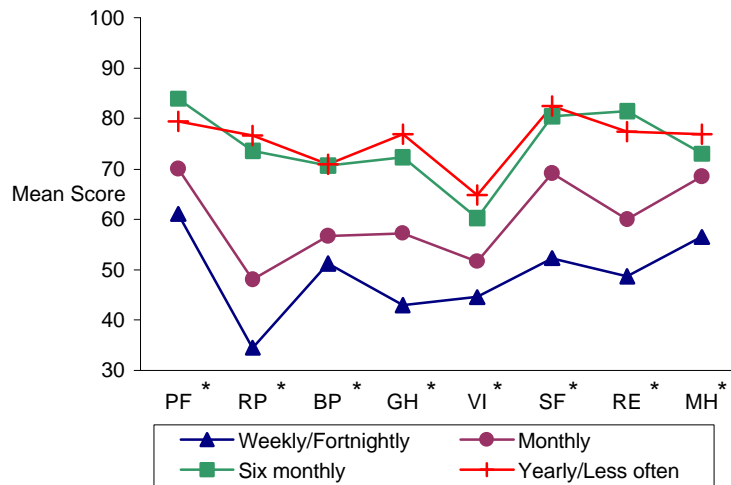
Figure 24 SF-36 Dimension by cardholder



Notes: *n* = 574
 * Significant difference, Kruskal-Wallis *H*, *p* < 0.05

Respondents were asked how frequently they visited their GP (Figure 25), and as could be anticipated the data demonstrates a significant relationship between reported health status and the frequency of such visits. There are basically two groups, with patients who visit monthly or more frequently reporting poorer health than those visiting six-monthly or less frequently. Within the frequent visitors, the group reporting weekly or fortnightly visits (9% of respondents) achieved lower scores on all dimensions than the monthly visitors (28% of respondents). For Physical Function the most frequent visitors achieved scores 15% lower than the Monthly visitors, whose scores were, in turn, 13% lower than the lower of the groups visiting less frequently. The largest differences were observed for the Role Physical dimension, 37% and 52% respectively. For Bodily Pain the figures were 12% and 25%; for General Health 32% and 26%; for Vitality 16% and 15%; for Social Function 33% and 16%; for Role Emotional 22% and 28%; and for Mental Health 19% and 7%.

Figure 25 SF-36 Dimension by frequency of GP visits

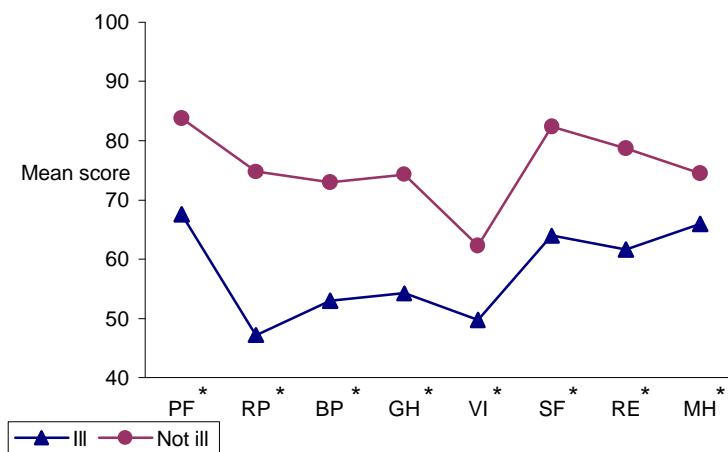


Notes: $n = 575$
 * Significant difference, Kruskal-Wallis H, $p < 0.05$

The two groups of less frequent visitors achieved significantly better scores. They reported similar levels of health, although the six-monthly visitors were slightly (but not statistically significantly) lower on five dimensions than those visiting annually or less often.

As could also be anticipated, those who reported they had a significant illness at the time of completing the questionnaire (39% of respondents), reported significantly worse health than those who were not ill (Figure 26). The differences ranged from 60% worse for Role Physical to 14% worse for Mental Health.

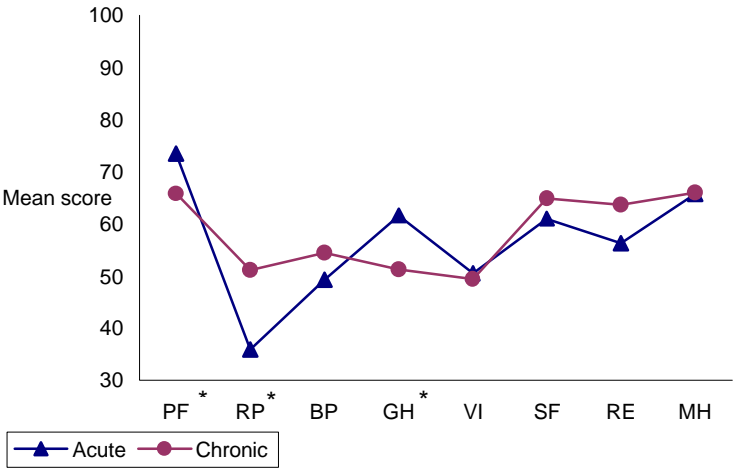
Figure 26 SF-36 Dimension by reported illness



Notes: $n = 573$
 * Significant difference, Kruskal-Wallis H, $p < 0.05$

Of those who reported an illness, 73% (25% of all respondents) reported their illness was Chronic. Those who reported an acute illness were 28% of those who were ill, and 10% of all respondents. Three percent did not nominate whether their significant illness was acute or chronic. Significant differences were observed between the acutely ill and the chronically ill on three dimensions: Physical Function, Role Physical and General Health (Figure 27). On the Physical Function dimension the chronically ill group reported health which was 11% worse than the acutely ill, while on the Role Physical dimension this was reversed and the acutely ill reported their health as 42% worse than the chronically ill. For General Health the chronically ill reported their health as 22% worse than the acutely ill.

Figure 27 SF-36 Dimension by type of illness



Notes: *n* = 214
 * Significant differences, Kruskal-Wallis *H*, *p* < 0.05

3.4 Solitariness Scale results

The SS scores ranged from 0 to 20, with 0 indicating high levels of social support, and 20 indicating a complete absence of such support. As anticipated, the majority of responses indicated respondents had social support and did not feel isolated. Table 6 shows the results for each item of the scale and reveals that 50% reported they almost always found it easy to get on with others, and for a further 42% this was the case most of the time; 48% never felt lonely and another 40% felt lonely only occasionally; 76% had someone to share their feelings with most of the time or more frequently; 83% found it easy to make contact with others most of the time or more often; 63% did not feel they were a burden to others, and 29% said they only felt a burden to others occasionally.

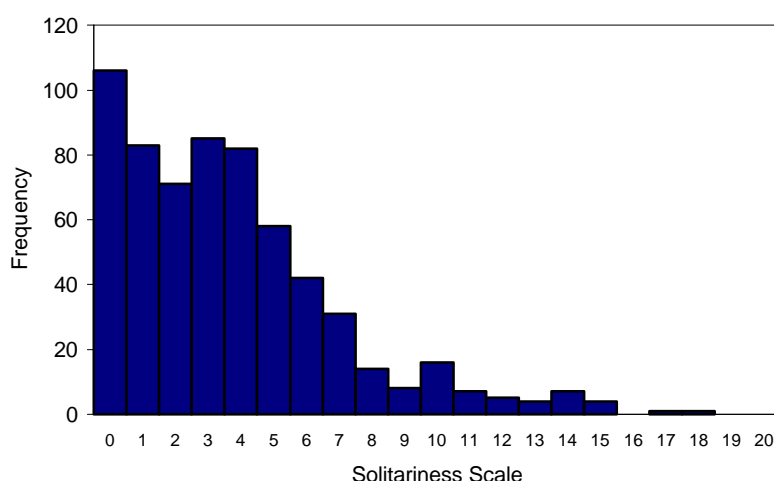
The distribution of total scores demonstrates a similar picture (Figure 28): 68% achieved scores of between 0 and 4, with 17% of these scoring the lowest possible score of 0. Only 5% (29 respondents) scored more than 10, and only 2 individuals were in the top 20% of the scale (16 to 20).

Table 6 Solitariness Scale item scores

	Item response (a)					Total	Missing
	1	2	3	4	5		
I found it easy to get on with other people	315 (50%)	267 (42%)	35 (6%)	13 (2%)	6 (1%)	636	49
I felt lonely (b)	302 (48%)	252 (40%)	37 (6%)	32 (5%)	7 (1%)	630	55
I had someone to share my feelings with	294 (46%)	189 (30%)	48 (8%)	87 (14%)	18 (3%)	636	49
I found it easy to make contact with people	265 (42%)	262 (41%)	57 (9%)	39 (6%)	10 (2%)	633	52
I felt I was a burden to people (b)	398 (63%)	186 (29%)	21 (3%)	17 (3%)	11 (2%)	633	52

Notes: (a) 1 = Almost always
 2 = Most of the time
 3 = About half the time
 4 = Occasionally
 5 = Not at all
 (b) Items 2 & 5 reversed.

Figure 28 Distribution of Solitariness Scale scores



Because these distributions are so skewed, it would be inappropriate to use means and standard deviations (Hawthorne and Griffith, 2000) therefore medians and interquartile ranges are reported.

3.4.1 Personal characteristics

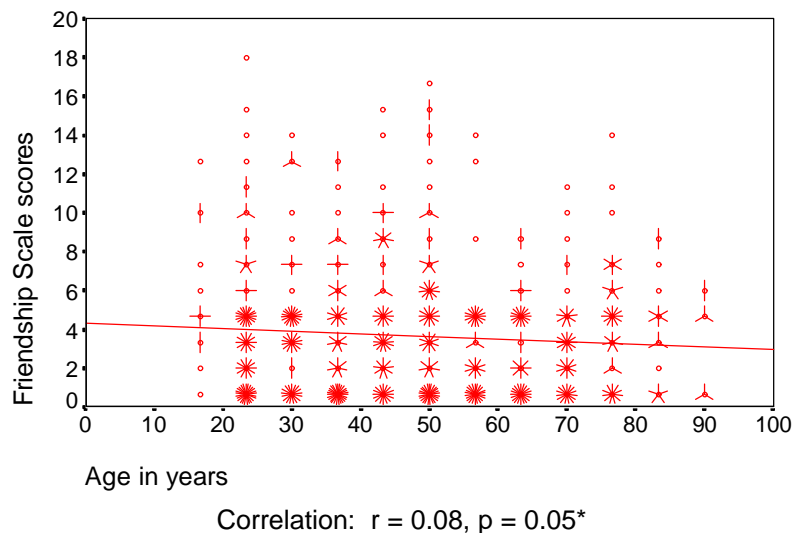
For age, while the correlation is slight (Pearson's $r = -0.08$, $p = 0.05^*$) a significant association can be observed (Figure 29). Other personal characteristics are set out in Table 7: the differences for gender, birthplace and education were not significant.

Table 7 Personal details of respondents by Solitariness Scale scores

		Solitariness Scale		Statistics (a)
		Median	IQR (b)	
Gender	Male	3.0	3.0	$\chi^2 = 3.19, p = 0.07, NS$
	Female	3.0	4.0	
Birthplace	Australia	3.0	4.0	$\chi^2 = 6.00, p = 0.11, NS$
	Asia	2.0	3.0	
	Europe/UK	3.0	4.0	
	Rest of world	4.5	6.0	
English level	Very well	3.0	4.0	$\chi^2 = 7.22, p = 0.03^*$
	Well	4.0	4.0	
	Not well	7.0	5.5	
Marital Status	Single	4.0	4.0	$\chi^2 = 66.38, p < 0.01^*$
	Married/de facto	2.0	3.0	
	Divorced/Separated	4.0	5.0	
	Widowed	5.0	3.0	
Education level	Primary	4.0	3.0	$\chi^2 = 5.14, p = 0.27, NS$
	High	3.0	4.0	
	Trade	3.0	4.5	
	TAFE	3.0	4.0	
	University/degree	3.0	4.0	

Notes: (a) *Kruskall-Wallis One Way ANOVA*
 (b) *Interquartile range*

Figure 29 Solitariness Scale scores by age



Significant differences were observed for reported ability to speak English: the SS scores obtained by those who reported they spoke English Not Well were higher (median = 7.0, IQR = 5.5) than for those who spoke English Well (4.0, 4.0) or Very Well (3.0, 4.0). However, there were only 5 individuals in this group.

Those who were married or in a de facto relationship reported significantly lower levels of social isolation (median = 2.0, IQR = 3.0) than any of the other groups (Singles = 4.0, 4.0; Divorced and Separated = 4.0, 5.0; and Widowed = 5.0, 3.0).

Significant differences were also observed with respect to the socioeconomic status factors of working status and reported household income, although the nature of the occupation followed did not appear to be as important (Table 8). The unemployed reported the highest levels of social isolation (median = 5.0, IQR = 8.0). Students and those who were retired or on sickness benefits were the next most isolated (4.0, 4.0), with those who were working or reported they were homemakers the least isolated groups (3.0, 4.0). There was a similar relationship for income: those on lower incomes reported higher levels of social isolation than those on higher incomes. These scores demonstrate a gradient between a median of 4.0 and IQR of 5.0 for the lowest income group to a median of 3.0 and IQR of 3.0 for the highest income group.

Table 8 Personal details of respondents by Solitariness Scale scores

		Solitariness Scale		Statistics (a)
		Median	IQR	
Working status	Working fulltime/Parttime	3.0	4.0	$\chi^2 = 21.15, p < 0.01^*$
	Unemployed/looking for work	5.0	8.0	
	Homemaker	3.0	4.0	
	Student	4.0	4.0	
	Retired/Sickness benefits	4.0	4.0	
Working status by age	<=49 and working	3.0	4.0	$\chi^2 = 23.63, p < 0.01^*$
	<=49 and not working	4.0	5.0	
	50+ and working	2.0	4.0	
	50+ and not working	3.0	4.0	
Occupation	Professional/Manager	3.0	4.0	$\chi^2 = 7.12, p = 0.07, NS$
	Paraprof/Clerical/Personal	3.0	4.0	
	Trade/Driver/Labourer	3.0	4.0	
	Other	4.0	4.0	
Household income	\$0 - \$14,999	4.0	5.0	$\chi^2 = 21.13, p < 0.01^*$
	\$15,000 - \$29,999	3.5	5.0	
	\$30,000 - \$59,999	3.0	4.0	
	\$60,000 +	3.0	3.0	

Note: (a) *Kruskal-Wallis H One Way Analysis of Variance*

3.4.2 Health status and use of services

This relationship was repeated when the SS score was analysed by cardholding status: cardholders achieved scores significantly higher (median = 4.0, IQR = 4.0) than non-cardholders (3.0, 4.0), as shown in Table 9.

Table 9 Health service use by Solitariness Scale scores

		Solitariness Scale		Statistics (a)
		Median	IQR	
Cardholder	Yes	4.0	4.0	$\chi^2 = 17.39, p < 0.01^*$
	No	3.0	4.0	
Visit doctor	Weekly, or more often	5.5	8.0	$\chi^2 = 24.35, p < 0.01^*$
	Fortnightly	5.0	7.0	
	Monthly	4.0	6.0	
	Six monthly	3.0	4.0	
	Less often	3.0	3.0	
Illness	No	3.0	4.0	$\chi^2 = 15.22, p < 0.01^*$
	Yes	4.0	4.0	
Type of illness	Acute	4.0	5.0	$\chi^2 = 0.01, p = 0.93, NS$
	Chronic	4.0	4.0	
General Health (b)	Excellent	1.0	3.0	$\chi^2 = 69.55, p < 0.01^*$
	Very Good	3.0	3.0	
	Good	3.0	4.0	
	Fair	4.0	4.0	
	Poor	8.0	5.0	

Note: (a) *Kruskal-Wallis H One Way Analysis of Variance*

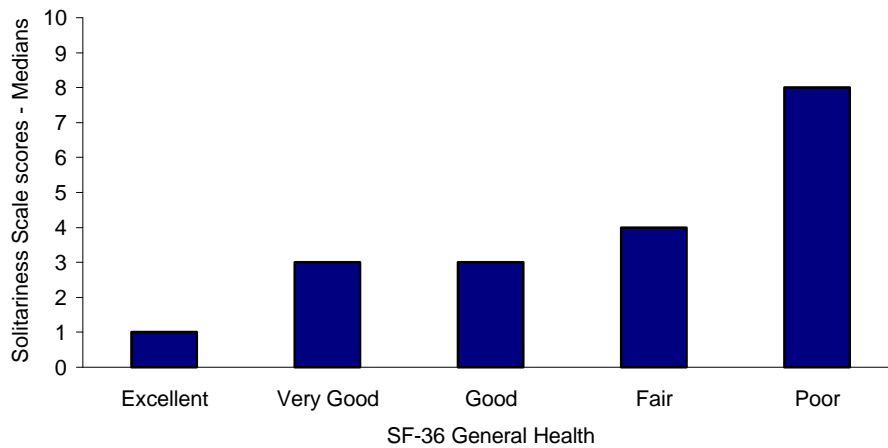
Table 9 also demonstrates a relationship between scores achieved on the SS, health status and use of GP services. In addition to the significant association between higher levels of social isolation and receipt of benefits, there was a clear gradient for the relationship between SS scores and the frequency of visits to the GP, with the most frequent visitors being the most socially isolated (median = 5.5, IQR = 8.0), and the less frequent visitors being the least socially isolated (3.0, 3.0).

The difference between those reporting an illness and those reporting none was also significant: those who were ill were more socially isolated (median = 4.0, IQR = 4.0 compared to 3.0 and 4.0 for those with no illness). However the type of illness (chronic or acute) did not make much difference.

3.4.3 General health status

When the relationship between the General health status question on the SF-36 and SS scores was examined (Figure 30), another clear association was revealed. Those who reported their general health as excellent achieved the lowest scores for social isolation, while those who considered their general health to be poor achieved much higher SS scores. Again there was a gradient: from a median of 1.0 and IQR of 3.0 for those in excellent health to a median of 8.0 and IQR of 5.0 for those in poor health.

Figure 30 General health and Solitariness Scale scores



3.4.4 SF-36 summary scales and the Solitariness Scale

When SS scores were analysed against scores obtained on the summary scales of the SF-36 a statistically significant correlation was found for both (Figures 31 and 32), although the relationship for the Mental Health summary was considerably stronger than that observed for the Physical Health summary (Hawthorne and Griffith, 2000).

Figure 31 Mental health and Solitariness Scale scores

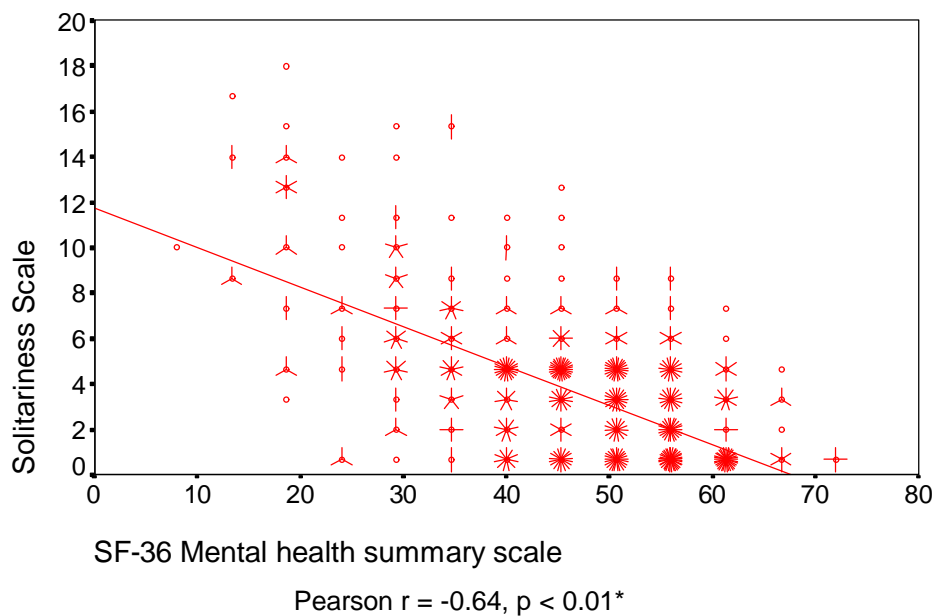
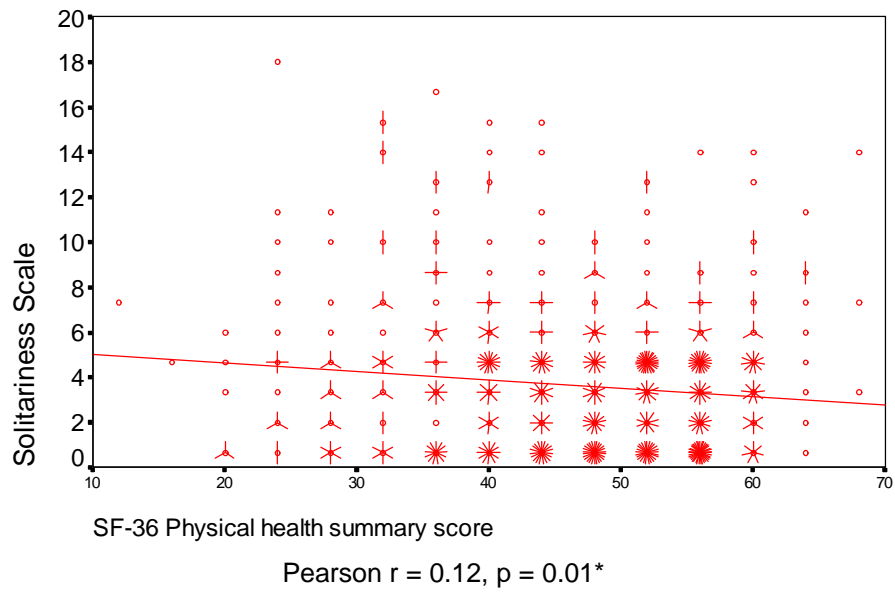


Figure 32 Physical health and Solitariness Scale scores



4 Discussion

4.1 Study limitations

A number of limitations should be taken into account when considering the results. These include the method of sampling and recruitment; the amount of missing data; the number of statistical analyses which have been performed; and the use of the SS.

Sampling and recruitment

A combination of resource constraints and the small number of clinics participating meant it was not possible to achieve any level of randomisation in the selection of patients for this study, and this seriously limits the generalisability of these results to any other population. As described earlier the sample was a convenience sample of patients who were in GP clinics at the same time as the researchers. Those clinics had volunteered to be involved in the study and, in turn respondents who participated were also volunteers. It is unlikely this population is representative of the wider Victorian population: the clinics were located in areas of relatively high socio-economic status; most of the patients lived in similar areas; and participants were also predominantly English speaking. Because of the voluntary nature of the participation at both clinic and patient level, it is also possible that respondents were not particularly representative of the population serviced by the Whitehorse Division of General Practice.

Missing data

The amount of missing data is also a concern. Some of the data was missing as a consequence of the study design: some clinics did not keep their patients waiting for long, and so some questionnaires were started and could not be completed. While some patients did return to finish following their consultation this was not possible for everyone. However much of the missing data appears to be a consequence of respondents either being unable to answer a question, or choosing not to answer (for example the household income question was affected by both the last two points, as discussed earlier).

While 685 questionnaires were returned, only 636 contained enough data to be analysed, and only 568 obtained SF-36 summary scores. These scores cannot be computed if too few responses have been completed. Another study, evaluating data completeness and quality for the SF-36, found that with self-completion the rate of missing data was significantly higher for disadvantaged subgroups such as the elderly, those living in poverty and those with less than nine years of education (McHorney et al, 1994). This study data were therefore analysed to establish if there were any systematic differences between those who did or did not obtain SF-36 summary scores.

The results are consistent with the amount of missing data increasing with age and infirmity, and with disadvantage. Table 10 reveals that within this study those without SF-36 summary scores were more likely to be:

- over 70 years of age: 38% of those without SF summary scores were in the 70+ age-group. When each age-group is examined individually the one with the highest proportion of missing data is the 70+ group (Figure 33), and 35% of this group did not provide sufficient responses to obtain a summary score. While the 30 to 49 age-group provide 31% of all missing scores, this equates to only 12% of this much larger group;
- someone who reported speaking English less than very well;
- the less well educated;
- not working;
- in the other occupational grouping;
- living in a lower income household: only 9% of those without SF summary scores reported an income in excess of \$60,000; and those reporting the two lowest levels of income form 32% of those with SF summary scores, and 56% each of those without summary scores;
- a cardholder: 58% of those without SF summary scores reported being Cardholders, compared to 31% of those with scores; or
- someone who reported a significant illness: only 38% of those who obtained summary scores reported an illness, but 50% of those without summary scores reported an illness.

It was also slightly more likely the respondent was female. While the difference for gender was not statistically significant it was suggestive ($p = 0.07$). No significant difference was observed for place of birth, marital status, frequency of visiting the doctor or whether the illness was acute or chronic.

Table 10 Missing SF-36 data

		SF Summary Score		Statistics
		Yes	No	
Gender	Male	208 (37%)	19 (26%)	$\chi^2 = 3.36, p = 0.07, NS$
	Female	355 (63%)	54 (74%)	
Age-group	17-29	122 (22%)	4 (6%)	$\chi^2 = 30.11, df = 3, p < 0.01^*$
	30-49	189 (34%)	22 (31%)	
	50-69	168 (30%)	19 (26%)	
	70+	78 (14%)	27 (38%)	
Birthplace	Australia	436 (78%)	55 (76%)	$\chi^2 = 1.59, df = 3, p = 0.66, NS$
	Asia	25 (4%)	3 (4%)	
	Europe/UK	78 (14%)	13 (18%)	
	Rest of world	19 (3%)	1 (1%)	
English level	Very well	524 (94%)	56 (77%)	Fishers Exact Test $p < 0.01$
	Well	33 (6%)	14 (19%)	
	Not well	2 (0%)	3 (4%)	
Marital Status	Single	123 (22%)	13 (16%)	$\chi^2 = 0.68, df = 3 p < 0.88 NS$
	Married/de facto	340 (61%)	54 (67%)	
	Divorced/Separated	54 (10%)	8 (10%)	
	Widowed	42 (8%)	6 (7%)	

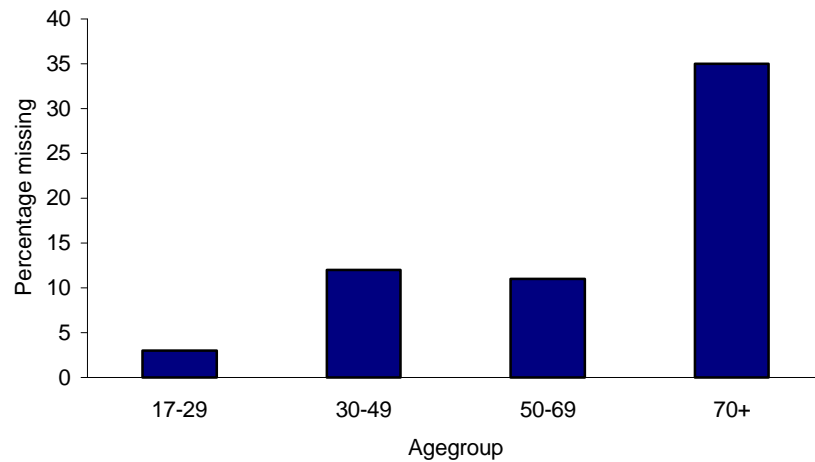
...Cont'd

Table 10 (Cont'd)

		SF Summary Score		Statistics
		Yes	No	
Education level	Primary	24 (4%)	6 (8%)	$\chi^2 = 10.10, df=4 p = 0.04^*$
	High	214 (39%)	38 (51%)	
	Trade	36 (6%)	4 (5%)	
	TAFE	94 (17%)	13 (18%)	
	University/degree	187 (34%)	13 (18%)	
Working status	Working fulltime/Parttime	330 (60%)	21 (30%)	$\chi^2 = 29.02, df = 4 p <0.01^*$
	Unemployed/looking for work	18 (3%)	3 (4%)	
	Homemaker	61 (11%)	21 (30%)	
	Student	25 (5%)	4 (6%)	
	Retired/Sickness benefits	120 (22%)	21 (30%)	
Occupation	Professional/Manager	183 (34%)	14 (22%)	$\chi^2 = 18.39, df = 3, p < 0.01^*$
	Paraprof/Clerical/Personal	246 (46%)	29 (45%)	
	Trade/Driver/Labourer	80 (15%)	10 (16%)	
	Other	24 (5%)	11 (17%)	
Household income	\$0 - \$14,999	55 (14%)	13 (28%)	$\chi^2 = 18.50, df=3, p<0.01^*$
	\$15,000 - \$29,999	70 (18%)	13 (28%)	
	\$30,000 - \$59,999	114 (29%)	17 (36%)	
	\$60,000 +	151 (39%)	4 (9%)	
Cardholder	Yes	172 (31%)	40 (58%)	$\chi^2 = 19.91, p <0.01^*$
	No	383 (69%)	29 (42%)	
Visit doctor	Weekly, or more often	21 (4%)	2 (3%)	$\chi^2 = 8.12, df = 5, p = 0.15, NS$
	Fortnightly	25 (5%)	7 (10%)	
	Monthly	150 (27%)	26 (36%)	
	Six monthly	258 (46%)	29 (40%)	
	Yearly	74 (13%)	5 (7%)	
	Less often	27 (5%)	3 (4%)	
Illness	No	342 (62%)	36 (50%)	$\chi^2 = 3.74, p=0.05^*$
	Yes	211 (38%)	36 (50%)	
Type of illness	Acute	56 (27%)	10 (30%)	$\chi^2 = 0.15, p = 0.70, NS$
	Chronic	151 (73%)	23 (70%)	

As discussed earlier the suitability of the SF-36 for use with the elderly and infirm has been the subject of some debate in the literature, and this analysis supports that it may not be particularly appropriate as a self-completion tool with this group. It has also been suggested that the amount of missing data may be due, in part, to some of the questions about physical function being considered irrelevant by this age-group (Hayes et al, 1995) and anecdotal observations by the researchers in this study provide some support for this.

Figure 33 Missing SF-36 summary scales



Multiple analyses

As in the 1998 study, the data have been analysed in a number of ways, which will have resulted in a slight increase in the probability of Type 1 errors (finding significant differences), although the test size was preserved at $\alpha = 0.05$.

The Solitariness Scale

The SS was developed for this study and tested on this population, and the sampling concerns described earlier are particularly relevant. Early indications are that this is a valid tool (Hawthorne and Griffith, 2000) and the results have been used within this study on that basis, but considerable further research and validation is required.

*

A significant amount of data was collected and analysed in this study: demographics, health status, and the level of social isolation experienced. Subject to the limitations identified, and that it is inappropriate to make inferences from such population data to individual cases (Pini et al, 1995; Marantz, 1990), the findings will be discussed with reference to relevant evidence from the literature. This discussion should contribute to the knowledge about and understanding of this population, its perceived health and level of social isolation, and some of the implications for the Division's services.

4.2 Comparisons with the 1998 survey

4.2.1 Demographics

In comparison with the 1998 study more clinics participated (24 compared to 17); and participants came from a wider range of areas of socioeconomic disadvantage. In 1998 441 questionnaires were useable, while in 2000 this figure was 636 (of a total of 685 questionnaires returned). More males participated in 2000 (36% compared to 28%); the average age of all participants was 48.4 compared to 47.7; and the proportions born in Australia or elsewhere were very similar. In 2000,

78% were born in Australia, while in the earlier study this was 80%; the figures for Asia were 4% and 5% respectively; for Europe/UK 14% and 13%; and for the Rest of the World 3% and 2%. The proportions responding they spoke English very well, well and not well were identical (92%, 7% and 1%).

In 2000 a slightly smaller proportion reported they were in a marital relationship (61% compared to 65%), and more were single (22% compared to 18%). Slightly more of the 2000 study reported completing university (32% compared to 29%), and slightly fewer reported primary education only (5% compared to 8%).

In 2000 more respondents were working (56% compared to 44%), fewer were homemakers (13% compared to 22%) and in both studies 23% reported they were either retired or on sickness benefits. A larger proportion reported their occupation as professional/manager (33% compared to 24% in 1998) and there was a corresponding decrease in the paraprofessional/clerical/personal group (46% in 2000 compared to 55% in 1998).

The household income figures are very different in 2000 to those reported in 1998, but it should be remembered that 32% of respondents were unable or unwilling to respond to this question. In 1998 53% reported their household income as less than \$15,000; and 37% reported their income as more than \$30,000. In 2000 these figures were 16% and 66% respectively. In 1998, 34% reported receiving social security, pension or sickness benefits – in 2000 this was 38%.

Most of these differences are small. A certain amount of variation between any two samples can be anticipated, and in view of the sampling limitations discussed earlier it is likely these differences are a consequence of that variation. Given the study is a cross-sectional study rather than a longitudinal one, it is not appropriate to make inferences about causation (Kahn et al, 2000).

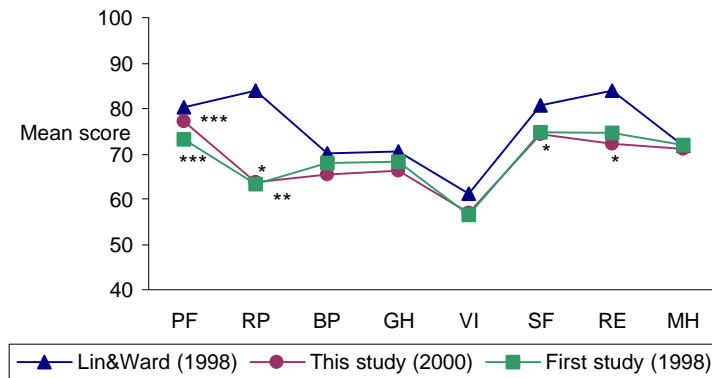
The self-reported health status of the study population was very similar to that of the 1998 survey. A substantial majority of respondents (81% in both surveys) reported their general health as good or better than good, and for almost half of all respondents this rating was excellent or very good (47% in 2000 and 50% in 1998). This was despite the fact that the information was collected while patients were waiting to see their GP. A similar majority said their health was either the same or better than 12 months ago (80% in 2000, 78% in 1998). Poorer health status was more likely to be reported by those with a significant illness ($\chi^2 = 138.07$, $p < 0.01$) (Hawthorne and Griffith, 2000) and over one third of respondents had a significant illness at the time of completing the questionnaire (39% in 2000, 36% in 1998). Almost three-quarters of those with a significant illness reported it was chronic (73% in 2000; 71% in 1998). However this reported level of chronic illness may be low for the 2000 survey, as the researchers reported anecdotally that a few respondents advised them they had conditions such as diabetes or arthritis, but did not consider these to be significant illnesses because they were under control.

4.2.2 The SF-36

Figure 34 demonstrates that overall, while the respondents' health was significantly better in 2000 than in 1998 on Physical Function; on all other dimensions similar scores were achieved. These scores are lower than those obtained in a study of GP patients from an area of Sydney of relatively high socioeconomic status (Lin and Ward, 1998); indicating that on both occasions the

Whitehorse Division respondents were reporting worse health. In 1998 the only significant difference was on Role Physical; while in 2000 significant differences were also observed for the Social Function and Role Emotional scores when compared with the Lin and Ward study.

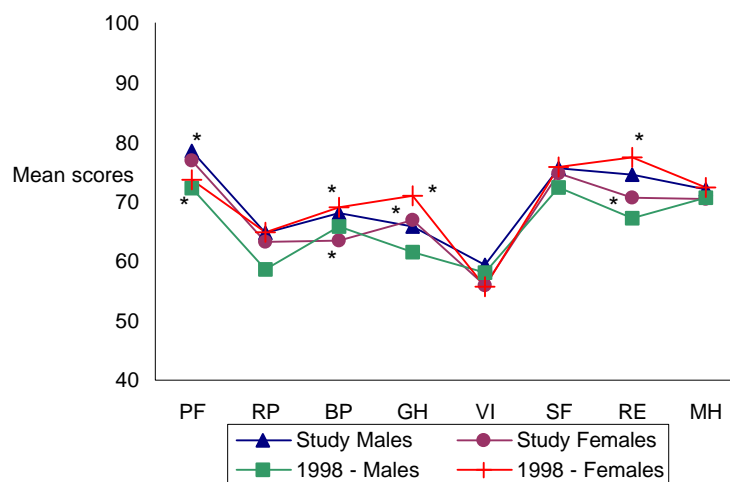
Figure 34 Study comparisons (SF-36 scores)



Note: *Significant difference*
 * (Lin and Ward: 2000) ANOVA, $p \leq 0.05$
 ** (Lin and Ward: 1998) ANOVA, $p < 0.05$
 *** (1998: 2000) ANOVA, $p < 0.05$

Figure 35 presents the two Whitehorse Division results broken down by gender, and this reveals a few significant differences. Males in 2000 achieved a higher mean score for Physical Function than males in 1998; and female scores in 2000 were significantly worse than in 1998 for Bodily Pain, General Health and Role Emotional.

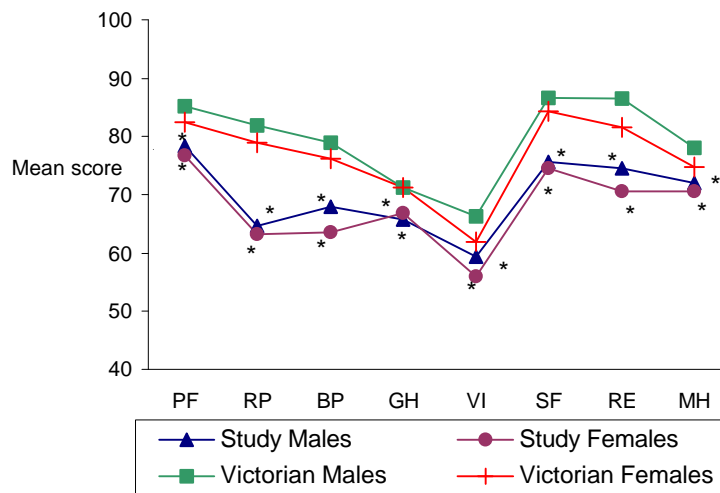
Figure 35 1998 and 2000 scores compared by gender



Note: * *Significant difference, ANOVA, $p \leq 0.05$*

When compared with the Victorian population norms (ABS 1995) it is noticeable that, for the 2000 study both genders had significantly poorer health on all dimensions (Fig 36). However, in the 1998 study, while male respondents achieved scores significantly worse than the Victorian norms on all dimensions, females were worse on only five dimensions. It could be anticipated that the Whitehorse populations would have poorer health, as they were seeing their GP.

Figure 36 Comparison of study scores with Victorian norms



Note: * Significant difference, ANOVA, $p < 0.05$

4.2.3 Social isolation as measured by the Solitariness Scale

The Solitariness Scale was not used in the 1998 survey. In the 2000 study, the majority of respondents had good social support and did not feel isolated. While 22% scored more than 5, only 5% (29 respondents) scored 11 or more, indicating a substantial level of social isolation or loneliness. Analysis of this data indicates the most socially isolated respondents in this study were more likely to have been born in parts of the world other than Europe, Asia or Australia; and whose English is not good; to be without a spouse or de facto partner; to be unemployed or otherwise not working or a homemaker; to be living in a low income household; or receiving benefits.

4.3 Contextualising the findings

This section discusses the findings in relation to the various sub-group analyses undertaken.

4.3.1 Gender

It is an interesting contrast that women tend to report higher rates of morbidity, and are more likely to seek treatment than men; yet in the longer term men tend to have more chronic disease and disability, and a shorter life span (Lawrence 1999; Naidoo and Wills, 1994; Verbrugge 1983).

This study was not designed to examine mortality rates and did not find evidence of men having more chronic disease or disability than women. However it did find evidence of more females than males attending the GP, and reporting poorer health. Males reported slightly better health than females on 7 of the 8 SF-36 dimensions (Figure 16), the difference was significant for Bodily Pain and Vitality. The difference for SS scores was not significant (Table 7) although it was suggestive ($p=0.07$) – the interquartile range was greater among female respondents.

4.3.2 Age

In general the two older groups reported worse health than the younger groups on Physical Function, Role Physical, Bodily Pain and General Health, but better health on Vitality, Social Function and Mental Health (Figure 17); and the youngest group reported the lowest scores for Vitality, Social Function and Mental Health.

When the relationship between age and SS scores is examined (Figure 29) the association is significant, if slight (Pearson $r = -0.08$, $p = 0.05$). This suggests that loneliness is not specifically a problem for the elderly, but can be an issue for any age-group (Rokach 2000; Ellaway et al 1999; Hansson et al 1986).

If social isolation became more of an issue as the Whitehorse population aged we would expect the correlation to be positive, and the line to rise with age. That the slope is negative tends to support the theory that people adjust to their circumstances as they age; and that loneliness causes less distress for the elderly than it does for younger age groups (Rokach, 2000). Studies of happiness or subjective wellbeing have found that older people tend to be more satisfied, despite having lower incomes, poorer physical health and being less likely to be married; and the suggestion is this is a result of adjustment over time to lower aspirations. With increasing maturity and experience of life people observe similar circumstances occurring in others and this assists their acceptance of their own (Rokach, 2000; Argyle 1999; Hansson et al 1986). However, comparisons of self with happier or more successful others can be painful (Kahneman, 1999) and Rokach (2000) suggests that younger people suffer more distress because they do not have that maturity.

4.3.3 Migration status

Migration is a significant life event associated with loneliness and isolation (Victor et al, 2000). Some ethnic minority groups in Britain experience both higher morbidity and mortality rates (Naidoo and Wills 1994) and it has been suggested that conflicting cultural values may cause stress and feelings of vulnerability and consequently promote poorer health (Young 1998; Davis and George 1988). There is little information about the health of migrants living in Australia, and what there is suggests that immigrants generally have better health than people born in Australia. However, a review of recent literature has found this is not the case for all immigrants, and particular groups have worse health than the Australian born (Hawthorne et al, forthcoming).

As noted earlier, inadequate English was one of the exclusion criteria for this study and 77 of those approached were ineligible for this reason. Consequently these results cannot be generalized to the wider immigrant community. Subject to this caveat, some differences were

observed particularly in the two smaller groups: those born in Asia (n = 28) or the Rest of the World (n = 20).

Compared to those born in Australia or Europe the Asian group reported the best health on the SF-36 dimensions (Figure 18), and the lowest levels of social isolation on the SS (Table 7); while those from the Rest of the World reported the worst health on 6 of the SF-36 dimensions. For Social Function, Role Emotional and Mental Health these differences were significant, and for Vitality it was suggestive. They also reported greater levels of social isolation, and when this latter group was compared with the remainder the difference in SS scores was significant ($\chi^2 = 4.85, p = 0.03$). In addition, although the numbers of those who reported they spoke English as anything other than very well were also small (47 speaking English well, and 5 not well), these respondents reported higher levels of social isolation, while those who responded not well achieved the highest median score.

These results could be an artifact of the way that particular groups respond to questionnaires, although this is unlikely given that each of these groups comprises a number of different cultures. It could also be an indication that the relatively large Asian community within Whitehorse Division's catchment area is socially supportive, while those born in countries categorised in this study as Rest of the World or Other are experiencing a loss of social networks as a consequence of their small numbers. Lack of proficiency in English is probably a surrogate measure of other factors contributing to feelings of isolation (Hawthorne and Griffith, 2000).

4.3.4 Marital status

Marital status is recognized as being related to health, with married people being more likely to have better health (Argyle, 1999; Verbrugge 1983). Married people "are more likely to enjoy an enduring, supportive, intimate relationship and are less likely to suffer loneliness" (Myers, 1999:380); and report more satisfaction with life than those who are not married (Argyle, 1999; Myers 1999). They are more likely to cope with stressful life events, to adopt healthy behaviours and to be less social isolated (Ren, 1997). Compared to married people, the unmarried tend to have higher mortality, to be higher users of health services, to suffer more psychological distress, and to be more likely to assess their general health and wellbeing as poor (Ren, 1997). The results of this study are consistent with this.

Within the Whitehorse Division, being married or in a defacto relationship appears to be related to both better health (Figure 19) and lower levels of isolation (Table 7). Single people reported worse health than married people on all dimensions except Physical Function and Role Physical; and they also reported higher levels of isolation. The divorced/separated/widowed group reported worse health than the married group on all 8 SF-36 dimensions, and the highest levels of isolation, with the widowed sub-group achieving the highest median scores on the SS.

Living alone is one of the factors associated with loneliness and isolation, and has also been found to be a strong predictor for mortality, providing support for an association between social isolation and mortality (Sundquist and Johansson, 1997). Living alone is also associated with later life. Fratiglioni et al identified an increased risk of dementia for those who were living alone and who had no relatives or friends; and there was a significant gradient in the risk of dementia for different levels of social connectedness (Fratiglioni et al, 2000). They suggest that onset may

be delayed by the stimulation (both emotional and intellectual), and the practical support that an extensive social network provides.

4.3.5 Economic status

The relationship between socioeconomic status (SES) and health has been recognized for some time — lower socioeconomic status is associated with higher rates of morbidity and mortality — and this was confirmed within Australia by the National Health Strategy (Lawrence 1999; Podger 1998). It is interesting that, even when the data was adjusted for the higher level of risk factors experienced by the lower socioeconomic groups, this relationship remained (Sapolsky, 1999; Lawrence, 1999; Labonte 1998).

Socioeconomic status affects standards of living by determining access to economic resources, and therefore to the resources required for living a healthy and fulfilled life (Lawrence, 1999). It encompasses a number of interrelated dimensions, and there is no real consensus in the literature about the most appropriate way to measure it. A variety of measures have been used over time, and terms such as socioeconomic status and social class are often used interchangeably. Traditional measures such as occupation, income, or education may have been used alone or in any combination, while more recently material indicators such as house and car ownership have increasingly been used (Young, 1998; Naidoo and Wills, 1994).

A sense of control has been shown to be associated with health, with those who have a low sense of control experiencing poorer health regardless of their socioeconomic status (Marmot et al, 1997). Similarly, low socioeconomic status can mean less control over choices such as employment, nutrition and accommodation. For example Haynes (1991) found that those living in rented accommodation and without access to a car reported both poorer health and more limited access to health care, and Sundquist and Johansson (1997) found non-owner-occupiers had higher total mortality risks. Less control often means more stress, and stress related diseases have been found to have much steeper gradients with respect to socioeconomic status than non-stress related diseases (Sapolsky, 1999). Less control may also mean more risk-taking behaviours as strategies to cope with the stress, and there is some evidence that behaviours such as smoking are used in this way (Naidoo and Wills, 1994; Graham, 1994); and Sapolsky (1999) suggests that aggressive or abusive behaviour towards others, including spouses and children, may be related to lessening the effects of such stresses.

Whether poor health causes disadvantage, or disadvantage causes poor health is the subject of some debate. One theory is that such inequalities occur because of social selection, and a person's class is determined by their health. Those with better health move up the scale, and those with poorer health move downwards, thus contributing to the poorer health in the lower parts of the scale. There is some evidence that chronic illness or disability contribute to this because they limit employment options. However there seems to be more evidence that ill health is a consequence of low socioeconomic status because of the deprivation and stress involved (Young, 1998; Naidoo and Wills 1994; Verbrugge, 1983).

While this study was not designed to identify any of the issues discussed above, these may be contributing, among other factors, to the health and wellbeing of the community studied.

For this study the socioeconomic status indicators used were postcode of the place of residence, household income, working status and education.

Income

Even though this study was conducted in an area of relatively high socioeconomic status — as noted earlier the majority of participants in this study lived in areas of relatively high socioeconomic status, with 84% living in areas rating in the top 25th percentile for Victoria — a considerable number reported low incomes. A relationship was observed between the level of household income and health status, with lower incomes predicting poorer health status (Figure 23); and a similar relationship was demonstrated for social isolation (Table 8).

Income is obviously a crucial component of socioeconomic status and standard of living, and the link between material deprivation and poor health is well established. Low income may cause poor health, both directly and indirectly, or it may be the result of unemployment caused by poor health (Podger, 1998). Lack of income in particular may contribute to poor health by limiting the ability to make healthy choices (Naidoo and Wills, 1994) and because of “the exhaustion of living on a low income, the stresses of having to ... hunt for bargains and worry about paying debts and bills” (Macran et al, 1996:1206). This may be compounded by a sense of isolation and lack of social support if such poverty prevents participation in the wider social environment with the consequent loss of the associated protective effects (Sapolsky, 1999; Podger, 1998; Macran et al, 1996; Naidoo and Wills, 1994). While the association between income and wellbeing has been demonstrated to be weak (Cantor and Sanderson, 1999) it is strongest for lowest incomes (Argyle, 1999).

Four percent of respondents reported their general health as poor, and a further 15% as fair. All of those who answered the income question and reported their general health as Poor reported an income of less than \$30,000, and most (63%) reported it as less than \$15,000. Of those who considered their health to be fair, more than half were in these two income groups: 31% in the lowest group and 25% the next lowest. These results are consistent with the effect of household income on health observed by Kennedy et al (1998). The unemployed and pensioners are among the most likely to be living in or close to poverty (Naidoo and Wills, 1994) and in the Whitehorse Division those in receipt of benefits were significantly more likely to report poorer health (Figure 24), and higher isolation levels (Table 9).

There is a considerable body of literature, and several different hypotheses, about the link between income inequality within a community, and the health of the population (Wagstaff and van Doorslaer, 2000; Kahn et al, 2000; Kennedy et al, 1998; Kawachi et al, 1999; Labonte, 1998). Australia has been found to have a significant level of health related inequality (Clarke and Smith, 2000), but as yet there seems to be little agreement about the reasons for this. Greater inequality of income is associated with an increased likelihood of self-reported health being fair or poor (Kennedy et al, 1998) and has been observed to increase the risk of poor health amongst the poorest women (Kahn et al, 2000).

Education

This study found a relationship between health and education, with poorer health being reported by those with the least education (Figure 20), although no relationship was detected with levels of isolation (Table 7). Those who completed primary school only achieved the lowest scores on 7 of the 8 SF-36 dimensions, and those with university education achieved the highest scores on 7 dimensions; although the differences were only significant for 3 dimensions. This is consistent with evidence that better educated people tend to have better health (Podger, 1998; Kennedy et al, 1998; Davis and George, 1988) and of “a graded dose-response” relationship between education and mortality risks – the risk is higher for those with a lower educational level (Sundquist and Johansson, 1997:39). There is also some evidence that higher levels of education may be protective against dementia (Katzman, 1995).

Working status

In general, being in employment is related to better health status (Warr, 1999; Verbrugge 1983). Although some find their employment stressful, and this can have an adverse effect on their health (Hibbard and Pope, 1993) “most adults want to be in paid employment, report high satisfaction with their job, and wish to avoid unemployment” (Warr, 1999:393).

In her investigation of the health impact of individuals having multiple roles, Verbrugge (1983) found that employment had the strongest relationship with health with employed people having the best health. And, as discussed earlier, there is evidence that unemployment has a negative effect on health, although whether that is a direct effect, or a consequence of the associated lower income level, is unclear (Naidoo and Wills, 1994).

Once again, the results of this study are consistent with this evidence. A clear relationship between working status and health is demonstrated for the SF-36 dimensions (Figure 21): those in work reported the best health; they also reported the lowest scores on the SS (Table 8). The worst health was reported by those who were retired or on sickness benefits, and they reported higher levels of isolation than the workers. The highest levels of isolation were reported by the unemployed, who also reported worse health than those who were working.

When this information was broken down by age (Figure 22), those under 50 who were not working had the worst health on 6 SF-36 dimensions and the highest level of isolation (Table 8). The older not working group had the lowest scores on Physical Function and Role Physical, and similar scores to the younger not working group for Bodily Pain and General Health, but their health was similar to the workers for three of the remaining dimensions. The older group who were working reported the lowest level of isolation; while the older not-working group reported the same level as the younger workers. It could be that these results demonstrate some level of adaptation as discussed under the section on age, however if this were the case then it could be expected that the Role Emotional score would have been better than that observed.

The analysis of missing data from the SF-36 suggests that it was the most disadvantaged members of this population who had the most problems completing the SF-36, and if they also have the worst health (as the literature suggests) it will not have been captured in this survey. This therefore implies that the findings of this survey are conservative, and the perceived illhealth in this population may well be lower than the results indicate. There are other reasons for

concluding that this may be the case: those who were obviously not well were deemed ineligible and were therefore not approached, and others advised the researchers they did not feel strong enough to complete a questionnaire, or felt they were too old.

4.4 Implications of the findings for health services

The study's findings suggest that the most socially isolated are also those with poorer health, and that these are likely to be the most frequent attenders at GP clinics. Respondents reporting a significant illness; or who rated their general health as poor; or those who reported they visited the GP frequently were more likely to report higher levels of social isolation.

Figures 31 and 32 demonstrate that there is a relationship between both the Physical Health and Mental Health Summary Scales of the SF-36 and the SS scores. In both cases negative correlations are observed, although the relationship with the Mental Health Summary Scale (Pearson $r = -0.64$, $p < 0.01^*$) is considerably stronger than that observed with the Physical Health Summary Scale (Pearson $r = -0.12$, $p < 0.01^*$).

Figure 30 demonstrates the relationship between SS scores and the General Health question from the SF-36. Those who reported their health as excellent (11% of respondents) scored the lowest on the SS, that is the lowest level of isolation. In contrast, those considering their health to be poor (4% of respondents) reported the highest level of social isolation.

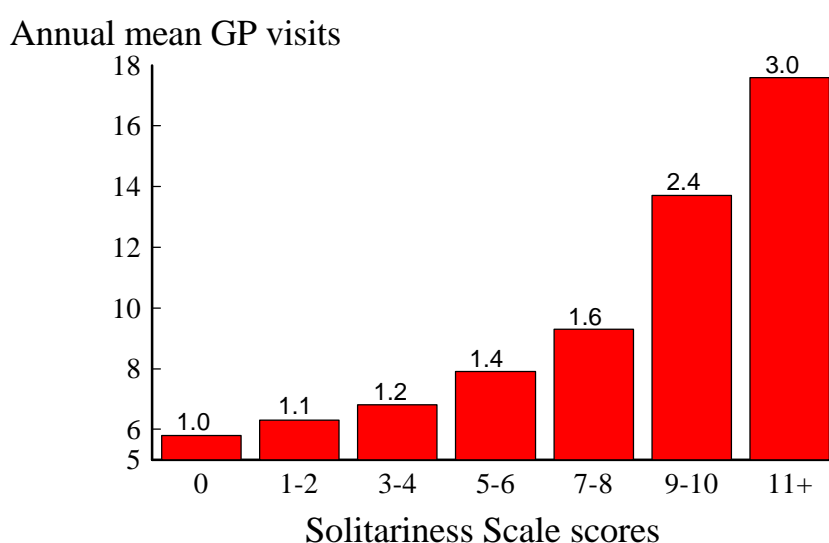
There is a clear relationship between health status and frequency of visits to the GP, with the more frequent visitors reporting poorer health than those who visit less frequently. Patients visiting weekly or fortnightly formed 9% of respondents. Within this group 25% reported they did not have a significant illness. Of the 75% who reported they were ill, 58% reported their illness as chronic and 17% as acute. Patients visiting monthly were 28% of all respondents. A chronic illness was reported by 46% of this group, while 13% reported an acute illness, and 41% reported no significant illness. Patients visiting less frequently were much less likely to report a significant illness. Those visiting six-monthly were the largest group at 42% of respondents, and of this group 72% did not have a significant illness, 19% were chronically ill and 9% reported their illness as acute. 16% of respondents reported visiting annually or less frequently. Only 16% of these reported an illness (9% chronic and 7% acute). A large majority of these less frequent visitors (83%) were not ill.

These results are consistent with evidence that illness or physical symptoms are major factors in influencing attendance in GP clinics (Westhead, 1985; Pini et al 1995); and of a high prevalence of chronic illness in frequent attenders (Westhead 1985).

However, frequency of appointments is also associated with social isolation. A comparison of frequent and infrequent GP attenders found the frequent attenders spent less time in social activities, more time discussing their problems, and reported more symptoms. Those same symptoms would be ignored by the infrequent attenders – implying those with social support are better able to cope with daily stresses (Robinson and Granfield, 1986). Women attending GPs were less likely than women drawn from the wider community to report the availability of friends as confidants; and GP attenders were more likely to be having problems in their relationship (Pini et al, 1995), or have suffered a marriage breakdown (Westhead, 1985).

In the Whitehorse population, those visiting weekly or fortnightly achieved the highest median SS scores of 5.5 and 5.0 respectively, while those visiting six-monthly or less often scored 3.0 (Table 9). When the predicted mean number of GP visits per year was calculated based on the reported frequency of visits and analysed against SS scores this also showed a similar relationship (Figure 37) (Hawthorne and Griffith, 2000). The socially isolated, who scored 11 or more, visit the GP three times as often as those who scored 0 (indicating they are not at all isolated). Both results are consistent with findings that frequent attenders were only 10% of patients but were involved in more than 30% of consultations (Westhead, 1985); and, more recently, that loneliness is significantly related to the number of GP consultations. Socially isolated people have almost twice as many consultations as those who seldom feel lonely (Ellaway et al, 1999).

Figure 37 Predicted GP visits by Solitariness Scale score



Note: *Statistics: ANOVA, $F = 6.54$, $p < 0.01^*$
 Values on columns are relative number of predicted GP visits where $SS = 0$ is set at 1.00*

Factors associated with loneliness or isolation include life events, such as the loss of significant relationships through marriage breakdown, bereavement or migration, demographics and resources. Another significant factor is individual, personal characteristics (Victor et al, 2000). This study has discussed (albeit briefly) the first three factors. It was not designed to seek any information about the individual characteristics of the more isolated respondents and this would need to be investigated further before any conclusions could be drawn.

However, it is likely that the provision of services to combat such isolation may present particular challenges. There is some evidence that the behaviour of lonely people can make the development of relationships difficult (Hansson et al, 1986). Together with evidence that loneliness is associated with lack of social skills, and low levels of self-esteem and confidence this suggests it may be that the anxiety experienced in social situations affects interactions with others in such a way that the development and maintenance of supportive networks are adversely affected (Jones et al, 1990).

With respect to the elderly, Hansson et al (1986) found that lonelier older adults were less able to move around their neighbourhood and more likely to feel that neighbourhood was unsafe. These people tended to be less aware of programmes for the elderly, be more likely to hold negative attitudes towards these programmes, and be more wary of letting people involved in these programmes into their homes.

5 Conclusion

This survey has provided a detailed profile of the population of those GP patients within the Whitehorse Division of General Practice who chose to participate, including their demographic circumstances, their perceived health status and their experience of isolation.

Subject to the limitations, the results demonstrate that the overall health profile provided by the SF-36 and demographic questionnaire is similar to that of the 1998 Whitehorse study. Both populations were drawn from an area of relatively high socio-economic status, and both provided a poorer health profile than that obtained for the wider Victorian population.

The results also provide some evidence of the relationship between demographic circumstances, their perceived health status and their experience of isolation. The more disadvantaged members of the community tend to report both the poorest health and the highest levels of social isolation; and place the greatest demands on GP services. Because this population was not randomly selected the generalisability of these results to the wider population is limited, however the discussion has demonstrated that the results are consistent with much of the evidence presented in the literature about these relationships.

These results also suggest that in the event this survey is repeated the method of assessing household income in particular be reconsidered; and that any future surveys should consider alternative methods of surveying particular sub-groups, especially the over-70s.

The information provided by this survey should prove useful to the Whitehorse Division of General Practice in their planning of services to meet particular needs, and in identifying the most appropriate areas for further investigation.

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Appendices

Appendix 1

WHITEHORSE DIVISION OF GENERAL PRACTICE

SURVEY OF PATIENTS

Instructions:

- Please answer every question
- If you are unsure about how to answer a question, please give the best answer you can
- Please give this back to the researcher when you have finished it

AUSTRALIA / NEW ZEALAND

SF-36

11/94

IQOLA SF-36 Australia/New Zealand
Acute Version 1.0

SF-36 HEALTH SURVEY

INSTRUCTIONS: This questionnaire asks for your views about your health, how you feel and how well you are able to do your usual activities.
Answer every question by marking the answer as indicated. If you are unsure about how to answer a question, please give the best answer you can.

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(IQOLA SF-36 English (Australia) Acute Version 1.0; prepared by the Centre for Health Program Evaluation)

1 In general, would you say your health is:

(Circle one)

Excellent	1
Very good	2
Good	3
Fair	4
Poor	5

2 Compared to one year ago, how would you rate your health in general now?

(Circle one)

Much better now than one year ago	1
Somewhat better now than one year ago	2
About the same as one year ago	3
Somewhat worse now than one year ago	4
Much worse now than one year ago	5

3 The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

(circle one number on each line)

Activities	Yes, Limited A Lot	Yes, Limited A Little	No, Not Limited At All
a) Vigorous activities , such as running, lifting heavy objects, participating in strenuous sports	1	2	3
b) Moderate activities , such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	1	2	3
c) Lifting or carrying groceries	1	2	3
d) Climbing several flights of stairs	1	2	3
e) Climbing one flight of stairs	1	2	3
f) Bending, kneeling or stooping	1	2	3
g) Walking more than one kilometre	1	2	3
h) Walking half a kilometre	1	2	3
i) Walking 100 metres	1	2	3
j) Bathing or dressing yourself	1	2	3

4 During the past four weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

(circle one number on each line)

	Yes	No
a) Cut down on the amount of time you spent on work or other activities	1	2
b) Accomplished less than you would like	1	2
c) Were limited in the kind of work or other activities	1	2
d) Had difficulty performing the work or other activities (for example, it took extra effort)	1	2

5 During the past four weeks have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

(circle one number on each line)

	Yes	No
a) Cut down on the amount of time you spent on work or other activities	1	2
b) Accomplished less than you would like	1	2
c) Didn't do work or other activities as carefully as usual	1	2

6 During the past four weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbours, or groups?

(circle one)

Not at all	1
Slightly	2
Moderately	3
Quite a bit	4
Extremely	5

7 How much bodily pain have you had during the past four weeks?

(circle one)

No bodily pain	1
Very mild	2
Mild	3
Moderate	4
Severe	5
Very severe	6

8 During the past four weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

(circle one)

Not at all	1
A little bit	2
Moderately	3
Quite a bit	4
Extremely	5

9 These question are about how you feel and how things have been with you during the past four weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past four weeks -

(circle one number on each line)

		All of the Time	Most of the Time	A Good Bit of the Time	Some of the Time	A Little of the Time	None of the Time
a)	Did you feel full of life?	1	2	3	4	5	6
b)	Have you been a very nervous person?	1	2	3	4	5	6
c)	Have you felt so down in the dumps that nothing could cheer you up?	1	2	3	4	5	6
d)	Have you felt calm and peaceful?	1	2	3	4	5	6
e)	Did you have a lot of energy?	1	2	3	4	5	6
f)	Have you felt down?	1	2	3	4	5	6
g)	Did you feel worn out?	1	2	3	4	5	6
h)	Have you been a happy person?	1	2	3	4	5	6
i)	Did you feel tired?	1	2	3	4	5	6

10 During the past four weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives etc)?

(circle one)

All of the time	1
Most of the time	2
Some of the time	3
A little of the time	4
None of the time	5

11 How TRUE or FALSE is each of the following statements for you?

(circle one number on each line)

		Definitely True	Mostly True	Don't Know	Mostly False	Definitely False
a)	I seem to get sick a little easier than other people	1	2	3	4	5
b)	I am as healthy as anybody I know	1	2	3	4	5
c)	I expect my health to get worse	1	2	3	4	5
d)	My health is excellent	1	2	3	4	5

The Solitariness Scale²

During the past four weeks:

1. I found it easy to get on with other people:

- Almost always
- Most of the time
- About half the time
- Occasionally
- Not at all

2. I felt lonely:

- Almost always
- Most of the time
- About half the time
- Occasionally
- Not at all

3. I had someone to share my feelings with:

- Almost always
- Most of the time
- About half the time
- Occasionally
- Not at all

4. I found it easy to make contact with people

- Almost always
- Most of the time
- About half the time
- Occasionally
- Not at all

5. I felt I was a burden to people:

- Almost always
- Most of the time
- About half the time
- Occasionally
- Not at all

²

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Questionnaire number: _____

Some questions about your background

To assist us with the study we need to know a little about your background. This will help us to better understand your answers to the other questions. The information you give is personal, and will remain confidential: no-one will have access to it, except for the researchers.

- Please read each question carefully, and then tick the box which best describes you.
- Remember, only select one box for each question.

Thank you very much for your help.

1. You are a:

- Male
 Female

2. Your date of birth: ____/____/____.

3. In which country were you born? _____

4. How well do you speak English?

- Very well
 Well
 Not well
 Not at all (you have very limited English)

5. You are:

- Single
 Married/de facto
 Divorced/Separated
 Widowed

-
6. What is your highest completed education level?
- Primary school
 - Trade/Apprenticeship Certificate
 - High school
 - Technical & Further education qualification
 - University/College degree
7. To the nearest \$5,000, what is your annual household income after tax, i.e. all the money your household earns or gets from a pension, superannuation or from investments?
- \$ _____
8. Are you receiving any Social Security, pension, or sickness benefits payments?
- Yes
 - No
9. What is your current working status?
- Working full-time or parttime
 - Unemployed, or looking for work
 - Homemaker
 - Student
 - Retired or on sickness benefits
10. What work do you do (or did the last time you worked)? _____
- Eg Plumber, Nurse, Houseworker, Unemployed, Teacher, Clerk etc)*
11. How often do you see your doctor?
- Once a week or more often
 - Fortnightly
 - Monthly
 - About every six months
 - About once a year
 - Less frequently

12. Do you currently have a significant illness?

- No
 Yes

If YES, how long have you had it for? _____ months

If YES, is it:

- Acute, i.e. temporary and you will get better.
 Chronic, i.e. you live with it over a long period of time.

Please complete the following three questions. The information you provide here will be kept confidential and no-one will have access to this except for the researchers.

12. Your name: _____

13. Your telephone number: _____

14. Your postcode: _____

15. The intersection nearest you home:
Corner of: _____
and: _____

Appendix 2

(Centre for Health Program Evaluation Letterhead)

A Survey of Patients in the Whitehorse Division of General Practice

The Whitehorse Division of General Practice has contracted The University of Melbourne to find out how healthy patients feel when they attend their GP, how well they can do their usual activities, and how they rate their own health. This information will help the Division and doctors plan better health services in the future.

If you choose to take part in this research, you will be asked to complete a short questionnaire. It will take about 20 minutes, and is in three parts:

- 36 questions about your health status (the SF-36 health survey)
- 5 questions about friendship and social support (the Solitariness Scale)
- some questions about your background.

Taking part in this research is voluntary: at any time you are free to withdraw and have any unprocessed information you have provided destroyed. The service or treatment you receive from your GP or this clinic will not be affected by whether or not you choose to take part in this research.

The information you provide is personal to you and is confidential. This means it will not be shown to anyone other than the researcher. No one else - including your doctor or the practice nurses - will have access to this information. To ensure your information is kept private, your questionnaire will be given a unique identity number. A master key will link this number to your name, and access to this key will be available only through the Principal Investigator. Once the data have been entered on to the computer and verified, the link to your name will be destroyed. It is however possible that the data may be subject to subpoena, a freedom of information claim or mandatory reporting. All source data relating to this project will be kept securely by The University of Melbourne for five years, and after that time it will be destroyed.

Some of the questions ask for details of your health or personal background. If you feel these questions are causing you any distress or inconvenience you may stop answering the questionnaire, hand it back to the researcher and ask that all your information be destroyed. If you are distressed by the questionnaire and would like to talk to someone about it, please telephone **DonCare** on **9848 4433**.

If you have any questions about this research, please feel free to ask; the researcher will try to answer your questions. If there are questions the researcher cannot answer, please telephone the Centre for Health Programme Evaluation at The University of Melbourne on **9496 4433** and ask to speak **with Dr Graeme Hawthorne**.

This project has been approved by the Ethics Committee of The University of Melbourne. If you have concerns about how this project is being conducted, you may contact the Executive Officer, Human Research Ethics at The University of Melbourne on **8344 7507**.

Thank you very much for taking the time to help with this important piece of research.

DR GRAEME HAWTHORNE
Principal Investigator

MS PHILIPPA GRIFFITH
Investigator

Appendix 3

(Centre for Health Program Evaluation Letterhead)

CONSENT FORM

Name of participant:

Project title: **A survey of patients in the Whitehorse Division of General Practice**

Name of investigator(s): **Dr Graeme Hawthorne and Ms Philippa Griffith**

1. I consent to participate in the above project, the particulars of which - including details of tests or procedures - have been explained to me. I have read the plain language statement attached to this form and understand that I will be asked to complete a questionnaire.
2. I authorize the investigator or his or her assistant to use with me the tests or procedures referred to under (1) above.
3. I acknowledge that:
 - (a) the possible effects of the procedures have been explained to me to my satisfaction;
 - (b) I have been informed that I am free to withdraw from the project at any time and to withdraw any unprocessed data previously supplied;
 - (c) The project is for the purpose of research and/or teaching and not for treatment;
 - (d) I have been informed that the confidentiality of the information I provide will be safeguarded subject to any legal requirements;
 - (e) I have been informed that the service or treatment I receive from my GP or the clinic will not be affected by whether or not I choose to take part in this research.

Signature

Date

(Participant)

Where participant is under 18 years of age:

I consent to the participation of
in the above project.

Signature

Date

(Signature of parent or guardian)

Signature

Date

(Witness to consent)
