

Te Rau Hinengaro: The New Zealand Mental Health Survey

Chapter 5: Comorbidity

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5 Comorbidity

Key results

Mental disorder comorbidity

- Some experience of mental disorder is widespread in the community (affecting 20.7% of the population), and while most (63%) people who experience a 12-month mental disorder have only one disorder, a sizeable group (37%) have more than one.
- Much of the burden of psychopathology (61.4% of all 12-month disorders) is carried by a small proportion of the population (7.7%) who experience multiple disorders.
- Mood and anxiety disorders commonly co-occur; by comparison, substance use disorders are less frequently comorbid with other categories of disorder. Comorbidity between substance use disorders was common, however, with 45.3% of those with a drug use disorder also meeting criteria for alcohol abuse and 30.7% meeting criteria for alcohol dependence.
- A clear relationship exists between the increasing number of disorders and case severity, with 59.6% of people experiencing multiple disorders classified as serious cases.
- A clear association exists between an increasing number of disorders and suicidal behaviour, especially suicide attempts.
- The more disorders experienced, the greater the likelihood of accessing health services of all kinds, particularly specialist mental health services.

Mental–physical comorbidity

- People with mental disorders have higher prevalences of several chronic physical conditions; namely, chronic pain, cardiovascular disease, high blood pressure and respiratory conditions. The prevalence of chronic disease risk factors is also higher among people with mental disorders.
- People with chronic physical conditions generally experience a higher prevalence of mental disorders compared with people without physical conditions.
- The sex difference in the prevalence of mental disorder in our survey (with females having a higher prevalence than males) is wider for people with some chronic conditions (cardiovascular disease and diabetes) compared with people without those chronic conditions.

5.1 Introduction

This chapter reports results relating to the co-occurrence of multiple disorders or conditions within individuals. The chapter is divided into two sections.

Section 5.2 is concerned with the extent to which individuals who experience mental disorder have more than one mental disorder. Previous research has indicated that this is a common phenomenon, one that has important implications for case severity and treatment.

Section 5.3 deals with the co-occurrence of mental disorders with chronic physical conditions and with the risk factors for physical disease. In addition to its principal focus on mental disorders, Te Rau Hinengaro: The New Zealand Mental Health Survey also gathered information about whether participants had one or more of a range of chronic physical conditions such as diabetes, heart disease and cancer. This allows the presentation of results on the extent of overlap between mental and physical disorders, the first such national information available in New Zealand.

5.2 Mental disorder comorbidity

5.2.1 Introduction

Since the development of psychiatric classification systems and the use of structured diagnostic interviews, studies in psychiatric epidemiology have found evidence for substantial mental disorder comorbidity (Andrews 1996; Wittchen 1996). With regard to mental disorders, the term ‘comorbidity’ refers to the co-occurrence of two or more mental disorders within the one individual, either at the same time or within a specified period such as 12 months or over the lifetime.

The first survey to report lifetime comorbidity was the Epidemiologic Catchment Area Study (ECA) in the United States (US) (see 1.7.1), which found that of those who met criteria for at least one disorder at some stage in their lives, 54% met criteria for two or more disorders (Regier et al 1990). A decade later a very similar estimate of 56% for lifetime comorbidity was obtained from the National Comorbidity Survey (see 1.7.3), also in the US (Kessler et al 1994). Closer to home, the Australian Survey of Mental Health and Well-being (see 1.7.4) found that of people who met criteria for at least one disorder in the 12 months before interview (‘12-month disorder’), nearly 40% met criteria for two or more disorders (Andrews et al 2001).

The analyses reported below investigate whether this finding of widespread comorbidity is replicated in New Zealand.

Understanding the phenomenon of comorbidity is important for several reasons. Recognising the clustering of disorders within individuals gives a greater appreciation of how and in whom the burden of psychopathology is concentrated. Lifetime comorbidity patterns, where adult-onset disorders typically occur to those who have already had at least one disorder, offer important opportunities for secondary prevention of mental disorder (Kessler and Walters 2002). International research has found that comorbidity is associated with more severe symptoms (Roy-Byrne et al 2000), a greater likelihood of suicide attempt (Vollrath and Angst 1989) and greater disability (Andrews et al 2002; Bijl and Ravelli 2000). It also increases the likelihood of treatment seeking (Galbaud Du Fort et al 1993; Rodriguez et al 2004) and frequently complicates treatment, leading to poor treatment response (O'Brien and Vincent 2003; Rowe et al 2004). The New Zealand results presented below on the contribution of comorbidity to case severity and service utilisation are consistent with this international research. These population-based findings can, in conjunction with service-based data, aid policy makers in modelling the funding and configuration of mental health services.

Several explanations exist for mental disorder comorbidity (Wittchen 1996). These include the perspective that it is not so much that individuals have multiple disorders, but rather that classification systems keep fragmenting, splitting diagnoses into separate classes that more properly belong together (First 2002). Another explanation is that a person's experience of one disorder predisposes them to a further specific disorder (Kessler et al 1996). Others have argued that disorders in the anxiety–depression spectrum are frequently comorbid because they share common vulnerability factors in the form of personality and coping style (Andrews 1996), adversity (Brown et al 1996) or genetics (Kendler 1996). Deciding between these explanations is beyond the scope of this survey.

The level of disability associated with comorbid disorders is reported in chapter 6.

5.2.2 Distribution of mental disorder comorbidity

Table 5.1 shows the proportion of *the population* with one disorder (13%), two disorders (4.4%) and three or more disorders (3.3%) over the past 12 months. This tells us something about the spread of psychopathology in the New Zealand population.

The table also shows the proportion of *cases* (ie, those with at least one 12-month disorder) who have one, two, or three or more disorders. This indicates that of the group of people with a 12-month mental disorder, 63.0% had one disorder, 21.1% had two disorders and 15.9% had three or more disorders. From this we can conclude that a little over a third (21.1% plus 15.9%) of those with any disorder have more than one disorder.

The ‘Diagnoses’ column considers the total number of 12-month *disorders* occurring to people and shows the proportion of these that occur to people with one disorder, two disorders, or three or more disorders. Only 38.6% of the total number of 12-month disorders occur to people with just one mental disorder, whereas the remaining 61.4% (35.5% plus 25.9%) of disorders occur to people with two or more disorders (who comprise 7.7% of the population). This tells us something about the concentration of psychopathology, in that the majority of disorders occur to those who already have a disorder (ie, they are comorbid disorders).

Table 5.1: Distribution of 12-month comorbidity among the population, cases and diagnoses¹

Number of mental disorders	Population % (95% CI)	Cases % (95% CI)	Diagnoses %
No disorder	79.3 (78.1, 80.5)		
One disorder	13.0 (12.1, 14.0)	63.0 (60.6, 65.3)	38.6
Two disorders	4.4 (3.9, 4.8)	21.1 (19.3, 23.2)	25.9
Three or more disorders	3.3 (2.9, 3.7)	15.9 (14.3, 17.7)	35.5

1 Assessed in the subsample who did the long form of the interview, see 12.4.2.

The table as a whole gives three perspectives on the distribution of disorders. First, they are widespread, in that 20% of the population have some experience of them in a year. Second, most people who experience mental disorder have one disorder, but a sizeable group (over a third) have more than one. Third, when considering the number of disorders (rather than the number of people), much of the burden of psychopathology is carried by a small proportion of the population who share the bulk of disorders among them (Kessler et al 1994).

5.2.3 Patterns of mental disorder comorbidity

Table 5.2 indicates which disorders tend to go together. It shows a good deal of overlap between anxiety and mood disorders, with approximately half (49.6%) of those experiencing a 12-month mood disorder also experiencing an anxiety disorder, while only 12.9% of the same group experienced a comorbid substance use disorder. Among those with anxiety disorders, 26.6% had a comorbid mood disorder and 9.4% had a comorbid substance use disorder. Twenty-nine percent of those with a 12-month substance use disorder had a comorbid mood disorder, and 40.0% had a comorbid anxiety disorder.

Table 5.2: Percentage with a 12-month mental disorder, by 12-month mental disorder group

Twelve-month mental disorder group ¹	Twelve-month mental disorder ¹ % (95% CI)		
	Any anxiety disorder ²	Any mood disorder	Any substance use disorder
Any anxiety disorder ²		26.6 (24.1, 29.3)	9.4 (7.8, 11.2)
Any mood disorder	49.6 (45.8, 53.4)		12.9 (10.6, 15.6)
Any substance use disorder	40.0 (34.6, 45.7)	29.0 (24.3, 34.3)	
Total population	14.8 (13.9, 15.7)	7.9 (7.3, 8.7)	3.5 (3.0, 4.0)

1 DSM-IV CIDI 3.0 disorder groups.

2 Assessed in the subsample who did the long form of the interview, see 12.4.2.

Table 5.2 also provides a further demonstration of the general phenomenon of comorbidity among mental disorders: the tendency for mental disorders to occur to those who already have them. Among those with any mood disorder, 49.6% experienced an anxiety disorder compared with 14.8% of the total population who experienced an anxiety disorder. Among those with any substance use disorder, 29.0% experienced a mood disorder compared with 7.9% of the general population who experienced a mood disorder.

Table 5.3 provides more detail on comorbidity within the substance use category. Comorbidity among substance use disorders was common. Around a quarter of those with alcohol dependence also met criteria for drug dependence (23.5%) or drug abuse (28.1%). For those with drug use disorders, even greater proportions had alcohol use disorder comorbidity. About half (49.9%) of those with drug dependence also reported alcohol abuse symptoms in the past 12 months, and 43.1% of those with drug dependence were also alcohol dependent. As with Table 5.2, this table demonstrates the clustering of disorders in those who already have disorders. The finding that nearly 50% of those with drug dependence also met criteria for alcohol abuse contrasts with the 2.6% of the general population who met criteria for alcohol abuse.

Table 5.3: Percentage with 12-month substance use disorders, by substance use disorders

Twelve-month disorder ¹	Twelve-month substance use disorder ¹			
	% (95% CI)			
	Drug abuse	Drug dependence	Alcohol abuse	Alcohol dependence
Alcohol abuse	20.3 (15.4, 26.3)	13.3 (9.4, 18.6)		39.1 (33.0, 45.7)
Alcohol dependence	28.1 (20.5, 37.3)	23.5 (16.5, 32.4)	79.9 (72.3, 85.8)	
Any alcohol use disorder	21.1 (16.4, 26.7)	13.9 (10.1, 18.9)		
Drug abuse		41.7 (32.2, 51.8)	45.9 (35.8, 56.4)	31.1 (22.7, 41.0)
Drug dependence	69.0 (53.8, 81.1)		49.9 (36.3, 63.4)	43.1 (30.4, 56.9)
Any drug use disorder			45.3 (35.8, 55.3)	30.7 (22.9, 32.9)
Total population	1.2 (0.9, 1.4)	0.7 (0.5, 0.9)	2.6 (2.3, 3.0)	1.3 (1.1, 1.5)

1 DSM-IV CIDI 3.0 substance use disorders.

5.2.4 Relationships between comorbidity and severity, and suicidal behaviour

Table 5.4 shows the association between increasing number of disorders and case severity. The increasing severity that goes along with increasing comorbidity can be seen by comparing the 11.7% classified as serious cases among those with one disorder with the 59.6% classified as serious among those with three or more disorders.

Similarly, a large proportion of those with one disorder are classified as mild cases (43.5%), with only 4.6% of those with three or more disorders classified as mild cases.

Table 5.4: Percentage in each category of severity, by number of 12-month mental disorders^{1,2}

Number of mental disorders ^{1,2}	Severity classification ¹			
	% (95% CI)			
	Total	Serious	Moderate	Mild
One disorder	13.0 (12.1, 14.0)	11.7 (9.9, 13.9)	44.8 (41.5, 48.0)	43.5 (40.4, 46.7)
Two disorders	4.4 (3.9, 4.8)	27.5 (23.4, 32.1)	55.5 (50.6, 60.3)	16.9 (13.5, 21.0)
Three or more disorders	3.3 (2.9, 3.7)	59.6 (53.9, 65.1)	35.8 (30.6, 41.4)	4.6 (2.7, 7.6)
Any disorder	20.7 (19.5, 21.9)	22.7 (20.8, 24.7)	45.6 (43.1, 48.2)	31.7 (29.4, 34.1)

1 DSM-IV CIDI 3.0 disorders with hierarchy, see 12.4.1.

2 Assessed in the subsample who did the long form of the interview, see 12.4.2.

A very clear relationship also exists between an increasing number of disorders and suicidal ideation, suicide plans and suicide attempts, as Table 5.5 demonstrates. This is particularly noticeable with suicide attempts, where the proportion with three or more disorders attempting suicide (5.6%) exceeds the proportion of suicide attempters among those with one disorder (0.3%) 18-fold.

Table 5.5: Suicidal behaviour, by number of 12-month mental disorders

Number of mental disorders ^{1,2}	Suicidal behaviour % (95% CI)		
	Suicidal ideation	Suicidal plan	Suicidal attempt
No disorder	0.9 (0.7, 1.3)	0.2 (0.1, 0.3)	0.1 (0.1, 0.2)
One disorder	6.1 (4.7, 7.8)	1.1 (0.7, 1.7)	0.3 (0.1, 0.7)
Two disorders	15.4 (12.2, 19.5)	5.9 (3.9, 8.7)	2.6 (1.4, 5.0)
Three or more disorders	29.8 (24.5, 35.7)	13.2 (9.4, 18.4)	5.6 (3.1, 10.0)

1 DSM-IV CIDI 3.0 disorders with hierarchy, see 12.4.1.

2 Assessed in the subsample who did the long form of the interview, see 12.4.2.

5.2.5 Relationship between mental disorder comorbidity and health sector service use

Comorbidity has considerable implications for service use, as would be expected from the relationships already discussed with severity and suicidal behaviour. Table 5.6 illustrates that people with more disorders are more likely to access health services of all kinds. However, it is also clear that the greatest impact of mental disorder comorbidity is on the use of mental health services, psychiatric services in particular. Some 16.8% of people with three or more disorders visited a psychiatrist in the past 12 months, which is more than five times the percentage (3.1%) of people with one disorder who visited a psychiatrist. By contrast, the proportion of people with three or more disorders who accessed general medical care for a mental health visit (45.1%) was a little over twice the proportion of people with one disorder (21.8%) who accessed general medical care for a mental health visit.

Table 5.6: Percentage using health services for a mental health visit in past 12 months, by number of 12-month disorders

Number of mental disorders ^{1,2}	Healthcare % (95% CI)				Non-healthcare % (95% CI)			Any care
	Psychiatrist	Any mental healthcare	General medical care	Any healthcare	Human services	Complementary or alternative medicine	Any non-healthcare	
One disorder	3.1 (2.0, 4.8)	11.2 (9.1, 13.6)	21.8 (19.3, 24.5)	27.8 (25.0, 30.8)	3.4 (2.4, 4.75)	4.9 (3.5, 6.6)	7.3 (5.8, 9.3)	30.4 (27.5, 33.4)
Two disorders	7.4 (5.1, 10.5)	21.0 (17.1, 25.4)	35.2 (30.5, 40.2)	44.1 (39.1, 49.2)	5.8 (3.7, 8.8)	7.9 (5.6, 11.1)	12.1 (9.0, 16.0)	48.2 (43.2, 53.3)
Three or more disorders	16.8 (12.7, 21.9)	31.2 (26.1, 36.9)	45.1 (39.3, 51.0)	55.8 (49.8, 61.6)	9.2 (6.5, 13.0)	13.8 (9.9, 18.8)	19.6 (15.3, 24.8)	60.3 (54.4, 66.0)
Any disorder	6.2 (5.0, 7.6)	16.4 (14.7, 18.4)	28.3 (26.2, 30.6)	35.7 (33.4, 38.1)	4.8 (3.9, 6.0)	6.9 (5.7, 8.4)	10.3 (8.8, 12.0)	38.9 (36.5, 41.3)
No disorder	0.7 (0.5, 1.0)	2.2 (1.8, 2.8)	4.1 (3.5, 4.8)	5.7 (5.0, 6.6)	0.7 (0.5, 1.1)	1.5 (1.1, 2.1)	2.1 (1.6, 2.7)	7.2 (6.3, 8.2)

1 DSM-IV CIDI 3.0 disorders with hierarchy, see 12.4.1.

2 Assessed in the subsample who did the long form of the interview, see 12.4.2.

5.2.6 Conclusions

This study is the first to report on the extent and distribution of mental disorder comorbidity in the New Zealand population. It has found that comorbidity of 12-month disorders is common, with 37% of 12-month cases being comorbid. The overlap between mood and anxiety disorders was the most common comorbidity (that is, among those with mood disorder the most frequent comorbid disorder is anxiety and vice versa). Co-occurring alcohol use disorders among those with drug use disorders was also very common. Comorbidity was strongly associated with case severity, with suicidal behaviour (especially suicide attempts) and with health sector use (especially mental health sector use). Data presented in chapter 6 show the relationship between comorbidity and disability.

In general terms, these findings replicate those found elsewhere. There are small differences in degree, but not kind, in the results we have obtained. For example, where New Zealand found 37% of those with 12-month disorders had more than one disorder, the corresponding percentage from the Australian Survey of Mental Health and Well-being was a little under 40% (Andrews et al 2001). The patterns of comorbidity found here are also very similar to those observed in other countries. For example, where this survey found that 49.6% of people with 12-month mood disorder had a comorbid anxiety disorder, the US National Comorbidity Survey found 51.2% (Kessler et al 1996). The association of comorbidity with suicidal behaviours observed in this survey gives cross-sectional support for the findings of Vollrath and Angst (1989) of an increased prevalence of completed suicides among those with comorbid panic and

depression. The association of comorbidity and service utilisation is well established (Andrews et al 2002).

Mental disorder comorbidity is clearly a robust phenomenon, with similar distributions and patterns in different countries, and is associated with serious consequences for the individual and for treatment services.

5.3 Mental–physical comorbidity

5.3.1 Introduction

Research has documented significant comorbidity between chronic physical conditions and mental disorders. Several studies have testified to the poorer physical health status and higher prevalence of chronic physical conditions, disease and chronic disease risk factors among people with mental disorders (Davidson et al 2001; Kendrick 1996; Wallace and Tennant 1998; Wells et al 1989c). This is an important public health issue. It not only results in greater suffering and disability in the affected individuals, but it has been shown to lead to considerably higher risk of premature mortality for people with most mental disorders, even after adjusting for suicide (Brown et al 2000; Harris and Barraclough 1998).

The other perspective on the overlap of mental disorders and physical disease is from the point of view of people with chronic physical conditions and the extent to which they experience comorbid mental disorders. Research has frequently found that the prevalence of mental disorder is higher in people with chronic physical disorders than in people without physical disorders (Buist-Bouwman et al 2005; Kessler et al 1994; Ormel et al 1994; Wells et al 1988). Among people with physical disorders, comorbid mental disorders lead to greater role impairment (Kessler et al 2003b; Steffens et al 1999; Sullivan et al 1997) and higher treatment costs (Ciechanowski et al 2000). Some mental disorders also make an independent contribution to excess mortality among people with certain chronic physical diseases (Carney et al 2002; Zhang et al 2005).

The results presented below represent the first New Zealand data on the extent of physical disorder and mental disorder comorbidity in the general population. The tables show the prevalence of selected chronic physical conditions, and key risk factors for those conditions, in people with and without mental disorders. Conversely, results are presented for the prevalence of mental disorders in people with and without selected chronic physical conditions. The results presented below are adjusted for age and sex (see 12.10.2). The adjustment provides the scores that would occur if the age and sex distribution of those with the disorder in question (eg, chronic pain) matched the age and sex distribution of those without that disorder. This adjustment is necessary because the prevalence of mental disorders is higher in younger people, while the prevalence of chronic physical conditions is higher in older people.

The assessment of the chronic physical conditions in this survey was carried out by presenting participants with a checklist of physical conditions and asking them whether they had ever had the problem (for some of the conditions) or whether they had ever been told by a doctor they had the problem (for the remainder of the conditions). Participants were also asked if they still had the condition, or were still receiving treatment for it, in the past 12 months. It is this 12-month prevalence of chronic conditions that is reported in this chapter. Self-report of physical conditions is a common method of obtaining information on chronic physical disorders as research has demonstrated a reasonable correspondence between self-reported physical disease and more objective measures such as medical records (Kessler et al 2003b).

5.3.2 Physical disease status of people with mental disorders

The key theme that emerges from Table 5.7 is that people with mental disorders had higher prevalences of several chronic physical conditions. People with (any) mental disorder, relative to those no mental disorder, had higher prevalences of chronic pain (51.9% compared with 35.1%) ($p < 0.0001$), cardiovascular disease (10.2% compared with 7.5%) ($p < 0.005$), high blood pressure (15.0% compared with 12.5%) ($p < 0.02$) and respiratory conditions (23.0% compared with 16.7%) ($p < 0.0001$). Cancer was equally prevalent in those with and without mental disorders (5.8% compared with 5.8%).

Sex differences in the prevalence of chronic physical conditions were generally consistent across the populations with and without mental disorders. There were, however, two significant interactions involving sex. Females with mood disorder had nearly twice the prevalence of cardiovascular disease as corresponding males, but there was no such sex difference in cardiovascular disease prevalence among those without mood disorder ($p < 0.02$). The same pattern occurred for diabetes ($p < 0.03$).

Table 5.7: Prevalence of chronic physical conditions (experienced in the past 12 months) among people with 12-month mental disorder, adjusted for age^{1,2,3}

	Chronic physical condition % (95% CI)					
	Chronic pain ⁴	Cardiovascular disease ⁵	High blood pressure	Respiratory conditions ⁶	Diabetes	Cancer
Any anxiety disorder						
Males	51.7 (46.5, 56.9)	12.7 (9.1, 16.3)	16.2 (12.2, 20.2)	23.4 (18.0, 28.8)	7.2 (4.2, 10.2)	6.5 (3.9, 9.0)
Females	55.6 (52.3, 59.0)	9.8 (7.8, 11.8)	15.6 (13.1, 18.1)	23.5 (20.7, 26.3)	4.0 (2.8, 5.3)	7.1 (5.4, 8.8)
Total	53.0 (50.0, 55.9)	10.8 (8.8, 12.7)	15.7 (13.5, 17.9)	22.9 (20.1, 25.6)	5.3 (3.9, 6.8)	6.6 (5.2, 8.0)
Any mood disorder						
Males	47.5 (41.3, 53.8)	6.3 (3.2, 9.5)	12.2 (7.4, 17.1)	22.1 (16.3, 27.9)	3.4 (1.1, 5.7)	6.7 (3.1, 10.3)
Females	57.5 (53.4, 61.7)	11.8 (8.5, 15.0)	15.7 (12.1, 19.3)	27.7 (23.6, 31.9)	6.1 (3.4, 8.8)	6.5 (4.3, 8.8)
Total	52.7 (49.0, 56.4)	10.1 (7.5, 12.6)	14.4 (11.5, 17.3)	25.1 (21.6, 28.6)	5.4 (3.3, 7.4)	6.3 (4.4, 8.3)
Any substance use disorder						
Males	49.4 (40.5, 58.2)	5.5 (0.8, 10.2)	13.5 (5.8, 21.1)	22.1 (15.4, 28.8)	1.8 (0.0, 4.5)	4.9 (0.0, 10.0)
Females	63.5 (54.4, 72.6)	10.0 (1.8, 18.1)	21.3 (12.2, 30.3)	33.8 (24.7, 43.0)	6.6 (0.4, 12.9)	6.3 (0.0, 12.9)
Total	56.2 (49.5, 62.9)	6.6 (2.4, 10.8)	15.8 (9.5, 22.2)	27.0 (21.0, 33.0)	2.8 (0.4, 5.2)	5.8 (1.4, 10.1)
Any mental disorder						
Males	49.1 (44.7, 53.5)	10.7 (7.8, 13.6)	14.3 (11.2, 17.4)	20.6 (16.6, 24.7)	5.9 (3.6, 8.2)	5.1 (3.2, 7.0)
Females	55.1 (52.2, 58.0)	9.9 (7.9, 11.8)	15.5 (13.2, 17.7)	25.2 (22.6, 27.9)	4.4 (3.1, 5.7)	6.5 (5.0, 8.0)
Total	51.9 (49.3, 54.5)	10.2 (8.5, 12.0)	15.0 (13.1, 16.9)	23.0 (20.7, 25.4)	5.1 (3.9, 6.4)	5.8 (4.6, 7.0)
No mental disorder						
Males	30.0 (27.3, 32.6)	7.8 (6.4, 9.2)	12.3 (10.4, 14.1)	14.8 (12.7, 17.0)	4.7 (3.5, 5.9)	4.8 (3.6, 6.1)
Females	39.8 (37.1, 42.5)	7.3 (5.9, 8.8)	12.6 (10.9, 14.4)	18.3 (16.1, 20.6)	3.3 (2.3, 4.3)	6.6 (5.3, 8.0)
Total	35.1 (33.0, 37.1)	7.5 (6.5, 8.6)	12.5 (11.1, 13.8)	16.7 (15.1, 18.2)	4.0 (3.2, 4.7)	5.8 (4.9, 6.7)
Total						
Males	33.1 (30.6, 35.5)	8.1 (6.7, 9.4)	12.5 (10.8, 14.2)	15.8 (13.9, 17.8)	4.8 (3.7, 5.9)	4.9 (3.7, 6.0)
Females	43.5 (41.2, 45.7)	7.7 (6.5, 9.0)	13.2 (11.6, 14.7)	20.0 (18.2, 21.8)	3.5 (2.7, 4.4)	6.6 (5.5, 7.8)
Total	38.5 (36.7, 40.3)	7.9 (7.0, 8.9)	12.8 (11.7, 14.1)	18.0 (16.7, 19.4)	4.1 (3.5, 4.9)	5.8 (5.0, 6.7)

1 DSM-IV CIDI 3.0 disorders with hierarchy, see 12.4.1.

2 Assessed in the subsample who did the long form of the interview, see 12.4.2.

3 Sex-stratified estimates are adjusted for age; 'total' estimates are adjusted for age and sex.

4 Chronic pain: arthritis or rheumatism; chronic back or neck problem; frequent or severe headaches; any other chronic pain.

5 Cardiovascular disease: stroke; heart attack; heart disease.

6 Respiratory conditions: asthma; chronic obstructive pulmonary disease; emphysema; other chronic lung disease.

Table 5.8 shows a significantly higher prevalence of all of the chronic disease risk factors included in the table in people with mental disorder compared with people without mental disorder. Among people with (any) mental disorder compared with people without mental disorder, there were higher prevalences of current smoking (32.3% compared with 20.7%) ($p < 0.0001$), overweight/obesity (55.2% compared with 50.9%) ($p = 0.01$), high blood pressure (15.0% compared with 12.5%) ($p < 0.02$), and hazardous alcohol use (32.5% compared with 16.5%) ($p < 0.0001$). The finding for alcohol use is inflated by the ‘any mental disorder’ category including people with diagnosed substance use disorders, most of whom have alcohol use disorders. However, the prevalence of hazardous alcohol use was still significantly higher among people with mood disorders ($p < 0.0001$) and anxiety disorders ($p < 0.0001$) compared with people without.

The picture for overweight and obesity also shows a relationship with sex in that the prevalence of being overweight or obese among females was higher among females with mental disorder (51.2%) compared with females without mental disorder (43.4%), but the same relationship did not occur for males (58.4% among those with mental disorder compared with 59.1% among those without mental disorder). The table also shows a sex difference in the prevalence of being overweight or obese in general, with an overweight/obesity prevalence in the general population of 45.3% among females and 59.0% among males. This differs from more objective estimates from the 1997 National Nutrition Survey, which found 49% of females and 55% of males to be overweight/obese (Russell et al 1999). This suggests a small degree of underestimation of weight by women and overestimation of weight (or height) by men in this survey. But such biased estimates are unlikely to explain the relationship between being overweight or obese and mental disorder for females noted above.

The only other sex pattern that was pronounced – although not unexpected – was the higher prevalence of hazardous alcohol use among males, both with and without mental disorders. However, that sex difference was no more pronounced for people with mental disorders than for people without.

Table 5.8: Prevalence of selected chronic physical condition risk factors (experienced in the past 12 months), by 12-month mental disorder group, age adjusted^{1,2,3}

	Risk factors for chronic physical conditions % (95% CI)			
	Smoking ⁴	Overweight ⁵	High blood pressure	Alcohol ⁶
Any anxiety disorder				
Males	28.7 (24.4, 33.1)	58.9 (53.8, 64.1)	16.2 (12.2, 20.2)	37.0 (30.0, 44.0)
Females	30.6 (27.6, 33.6)	52.4 (48.9, 55.9)	15.6 (13.1, 18.1)	17.7 (14.3, 21.0)
Total	30.4 (27.7, 33.0)	56.5 (53.5, 59.5)	15.7 (13.5, 17.9)	27.4 (23.7, 31.0)
Any mood disorder				
Males	34.9 (28.3, 41.5)	54.6 (47.7, 61.4)	12.2 (7.4, 17.1)	39.5 (32.1, 46.8)
Females	32.9 (28.6, 37.3)	47.8 (43.1, 52.4)	15.7 (12.1, 19.3)	21.5 (16.0, 27.1)
Total	34.0 (30.2, 37.8)	51.7 (47.7, 55.7)	14.4 (11.5, 17.3)	30.7 (25.8, 35.5)
Any substance use disorder				
Males	50.9 (41.8, 59.9)	51.5 (41.9, 61.0)	13.5 (5.8, 21.1)	90.5 (83.4, 97.6)
Females	69.9 (60.4, 79.3)	53.0 (42.6, 63.4)	21.3 (12.2, 30.3)	74.1 (60.2, 88.0)
Total	56.2 (49.1, 63.2)	49.0 (41.1, 56.8)	15.8 (9.5, 22.2)	82.7 (74.4, 91.0)
Any mental disorder				
Males	32.8 (28.3, 37.3)	58.4 (53.7, 63.2)	14.3 (11.2, 17.4)	46.6 (40.7, 52.5)
Females	31.4 (28.7, 34.2)	51.2 (48.2, 54.3)	15.5 (13.2, 17.7)	19.5 (16.3, 22.7)
Total	32.3 (29.7, 34.8)	55.2 (52.5, 58.0)	15.0 (13.1, 16.9)	32.5 (28.9, 36.0)
No mental disorder				
Males	22.4 (19.8, 25.0)	59.1 (56.1, 62.1)	12.3 (10.4, 14.1)	24.0 (20.2, 27.8)
Females	19.1 (16.9, 21.3)	43.4 (40.6, 46.2)	12.6 (10.9, 14.4)	9.3 (6.9, 11.8)
Total	20.7 (19.0, 22.4)	50.9 (48.9, 53.0)	12.5 (11.1, 13.8)	16.5 (14.2, 18.8)
Total				
Males	24.3 (21.9, 26.7)	59.0 (56.3, 61.6)	12.5 (10.8, 14.2)	28.2 (24.9, 31.6)
Females	22.2 (20.4, 24.1)	45.3 (43.0, 47.5)	13.2 (11.6, 14.7)	12.0 (10.0, 14.0)
Total	23.2 (21.7, 24.8)	51.8 (50.0, 53.6)	12.8 (11.7, 14.1)	19.9 (17.9, 22.1)

1 DSM-IV CIDI 3.0 disorder groups.

2 Assessed in the subsample who did the long form of the interview, see 12.4.2.

3 Sex-stratified estimates are adjusted for age; 'total' estimates are adjusted for age and sex.

4 Smoking: current smoker.

5 Overweight and obesity: body mass index of 25 or over.

6 Alcohol: Alcohol Use Disorders Identification Test score of 8 or more, described as 'potentially hazardous drinkers'.

5.3.3 Mental health status of people with chronic physical conditions

Table 5.9 shows that people with chronic physical conditions generally experienced higher prevalences of mental disorders compared with people without physical conditions. For example, the prevalence of any mental disorder among people with no physical conditions was 15.1%, compared with prevalences of any mental disorder among people with physical conditions mostly falling within a range of 25%–29%. As that example also illustrates, the prevalences of any mental disorder were fairly similar across the chronic conditions specified. However, the total prevalence figure for any mental disorder among those with the specified chronic conditions obscures a general pattern of significantly higher prevalence of any mental disorder among females with chronic conditions compared with males with chronic conditions.

Table 5.9: Prevalence of 12-month mental disorders among people with selected chronic physical conditions (experienced in the past 12 months)^{1,2,3}

	Mental disorder group % (95% CI)			
	Any anxiety disorder	Any mood disorder	Any substance use disorder	Any mental disorder
Chronic pain⁴				
Males	17.0 (14.3, 19.7)	9.3 (7.5, 11.2)	8.4 (6.3, 10.5)	25.5 (22.3, 28.6)
Females	25.2 (22.9, 27.6)	13.5 (11.7, 15.3)	3.4 (2.3, 4.4)	32.2 (29.5, 34.8)
Total	21.2 (19.4, 23.0)	11.5 (10.1, 12.8)	5.8 (4.6, 7.0)	28.9 (26.8, 31.0)
Cardiovascular disease⁵				
Males	15.8 (10.2, 21.4)	4.3 (1.8, 6.8)	3.6 (0.1, 7.1)	20.0 (13.7, 26.2)
Females	26.3 (19.9, 32.7)	16.6 (10.8, 22.5)	2.2 (0.0, 4.5)	34.2 (27.0, 41.4)
Total	21.2 (16.7, 25.8)	10.7 (7.3, 14.1)	2.9 (0.7, 5.0)	27.4 (22.3, 32.5)
High blood pressure				
Males	13.1 (9.1, 17.0)	5.7 (3.1, 8.3)	5.6 (1.7, 9.5)	17.7 (13.0, 22.4)
Females	23.9 (19.4, 28.5)	12.3 (8.8, 15.9)	3.2 (1.2, 5.2)	30.7 (25.7, 35.7)
Total	18.7 (15.5, 21.9)	9.1 (6.9, 11.4)	4.4 (2.1, 6.6)	24.6 (21.0, 28.1)
Respiratory conditions⁶				
Males	15.7 (11.6, 19.9)	8.5 (6.1, 10.9)	6.6 (4.6, 8.5)	22.0 (17.5, 26.5)
Females	21.8 (18.6, 25.0)	13.3 (10.9, 15.8)	3.5 (2.3, 4.8)	30.2 (26.3, 34.1)
Total	18.7 (16.2, 21.2)	11.0 (9.3, 12.7)	5.1 (3.8, 6.3)	26.2 (23.2, 29.2)

	Mental disorder group % (95% CI)			
	Any anxiety disorder	Any mood disorder	Any substance use disorder	Any mental disorder
Diabetes				
Males	14.7 (8.0, 21.4)	4.1 (1.1, 7.1)	2.0 (0.0, 5.1)	18.7 (11.3, 26.2)
Females	22.5 (15.3, 29.7)	17.4 (9.7, 25.1)	3.2 (0.0, 6.3)	31.5 (22.7, 40.3)
Total	18.9 (13.6, 24.1)	10.3 (6.3, 14.4)	2.4 (0.3, 4.5)	25.0 (19.1, 31.0)
Cancer				
Males	14.2 (8.0, 20.5)	9.1 (4.0, 14.2)	6.6 (0.2, 13.1)	17.7 (10.8, 24.6)
Females	19.8 (14.6, 24.9)	9.2 (5.7, 12.7)	1.5 (0.0, 3.3)	23.8 (17.9, 29.6)
Total	16.7 (12.8, 20.6)	8.6 (5.7, 11.5)	3.7 (0.8, 6.5)	20.7 (16.1, 25.3)
No chronic physical condition⁷				
Males	6.8 (5.5, 8.1)	4.4 (3.3, 5.5)	3.5 (2.3, 4.7)	12.3 (10.3, 14.4)
Females	13.9 (12.0, 15.7)	6.7 (5.6, 7.9)	1.3 (0.8, 1.8)	17.8 (15.7, 19.9)
Total	10.4 (9.2, 11.5)	5.6 (4.8, 6.5)	2.4 (1.7, 3.0)	15.1 (13.6, 16.7)
Total				
Males	10.6 (9.4, 11.8)	6.2 (5.3, 7.0)	4.9 (4.0, 5.8)	17.0 (15.3, 18.6)
Females	18.7 (17.3, 20.0)	9.6 (8.6, 10.6)	2.1 (1.7, 2.5)	24.1 (22.5, 25.7)
Total	14.8 (13.9, 15.7)	7.9 (7.3, 8.7)	3.5 (3.0, 4.0)	20.7 (19.5, 21.9)

1 DSM-IV CIDI 3.0 disorder groups.

2 Assessed in the subsample who did the long form of the interview, see 12.4.2.

3 Sex-stratified estimates are adjusted for age; 'total' estimates are adjusted for age and sex.

4 Chronic pain: arthritis or rheumatism; chronic back or neck problem; frequent or severe headaches; any other chronic pain.

5 Cardiovascular disease: stroke; heart attack; heart disease.

6 Respiratory conditions: asthma; chronic obstructive pulmonary disease; emphysema; other chronic lung disease.

7 None of the chronic physical conditions included in this table.

This study has found a sex difference in the prevalence of mental disorder (higher in females) in the general population too, of course, not just among people with chronic conditions. But this table shows a wider sex difference (females higher) in the prevalence of mood disorder among those with either cardiovascular disease or diabetes relative to those without those chronic physical conditions. Thus, while 4.3% of males with cardiovascular disease also experienced mood disorders, 16.6% of females with cardiovascular disease experienced mood disorders. A similar pattern was apparent in people with diabetes (4.1% with mood disorder among males with diabetes compared with 17.4% with a mood disorder among females with diabetes).

5.3.4 Conclusions

These New Zealand findings confirm the findings from other research that people with mental disorders have higher prevalences of several chronic physical conditions (Wells et al 1989c) and chronic physical condition risk factors (Davidson et al 2001; Wallace and Tennant 1998) compared with those without mental disorders. The survey results also confirm research that has found that people with chronic physical conditions have a higher prevalence of mental disorder (Buist-Bouwman et al 2005; Wells et al 1988; Wells et al 1989b).

The specific associations observed here between mental and physical disorders cannot easily be compared with earlier studies because the latter vary so much in the conditions studied, methodology used and period prevalences reported. However, we can say that the majority of the relationships observed here have been observed previously in the research literature, in some form. The current findings therefore substantiate the widespread nature of mental–physical comorbidity. It should be noted that the relationships reported here are cross-sectional, so do not provide information on whether mental disorders lead to or follow on from physical disorders. Both processes may occur. The results underscore the challenge of providing for the concurrent mental and physical health needs of service users within the context of a health system where specialist medical and mental health services function largely independently of each other.