



Comorbidity in mental and physical illness

Dheeraj Rai | Stephen Stansfeld | Scott Weich | Robert Stewart | Orla McBride |
Terry Brugha | Angela Hassiotis | Paul Bebbington | Sally McManus | Marton Papp

Summary

- Comorbidity refers to the presence of two or more conditions at the same time. In the 2007 report in this series, comorbidity between mental disorders was examined. In this chapter comorbidity across mental disorders, chronic physical conditions, psychological wellbeing and intellectual impairment is profiled.
- Physical health conditions were measured by showing participants a list of health conditions and asking whether a health professional had diagnosed them. Five chronic conditions were considered. Mental wellbeing was assessed using the Warwick Edinburgh Mental Wellbeing Scale (WEMWBS), where a higher score indicates greater psychological wellbeing. Intellectual impairment was also included, assessed using the National Adult Reading Test (NART).
- Overall, just over a quarter of adults (27.7%) reported having at least one of the five chronic physical conditions considered in this chapter diagnosed, and present in the last 12 months. High blood pressure was the most common, followed by asthma, diabetes, and cancer. A relatively small number of participants (52; 0.7% of adults) reported epilepsy; analysis by this group should therefore be treated with caution.
- There was an association between common mental disorder (CMD) and chronic physical conditions. In people with severe CMD symptoms (revised Clinical Interview Schedule (CIS-R) score 18 or more) over a third (37.6%) reported a chronic physical condition, compared with a quarter (25.3%) of those with no or few symptoms of CMD (CIS-R score 0 to 5).
- This pattern held for each of the chronic conditions examined. For example, people with severe symptoms of CMD (CIS-R score 18+) were twice as likely to have asthma as people with no or few symptoms (CIS-R score 0–5): 14.5% compared with 7.2%.
- Having a chronic physical condition was associated with lower levels of mental wellbeing. Overall, the mean WEMWBS score was 51.0 in people with at least one of the five chronic conditions considered, compared with 53.2 in people without a chronic physical condition.

- Both the presence of self-reported diagnosed asthma and high blood pressure were associated with a wide range of different mental disorders, including depression, anxiety disorders (such as generalised anxiety disorder (GAD) and phobias), CMD Not Otherwise Specified (NOS), and posttraumatic stress disorder (PTSD). Asthma and high blood pressure were the most common chronic physical conditions examined; the larger sample of people with these conditions meant that statistically significant differences were more likely to be detectable.
- Cancer and diabetes were also strongly associated with CMD-NOS, but higher rates of most other mental disorders were not statistically significant for these chronic physical conditions.
- Adults with low wellbeing (with the lowest 15% of WEMWBS scores) experienced extremely high levels of psychiatric morbidity, including 21.0% screening positive for PTSD, 25.9% for attention-deficit/hyperactivity disorder (ADHD) and 6.0% for drug dependence. 20.6% of this group had made a suicide attempt. These rates were between 8 and 30 times higher than those for people with the highest mental wellbeing scores.
- People with lower intellectual ability were more likely to have poorer mental health than those with average or above average intellectual functioning.
- The results indicate that people with one condition tend to be more likely to have another, and that even subthreshold symptoms of common mental disorder are associated with having a chronic physical condition. These findings provide evidence to support the bringing of physical and mental health care provision closer together.

13.1 Introduction

Comorbidity relates to the simultaneous presence of more than one disorder. In the 2007 Adult Psychiatric Morbidity Survey (APMS) report, psychiatric comorbidity was examined, looking at the links between different mental disorders. The focus of this chapter is on the links between mental and physical conditions.

The government's mental health outcomes strategy *No Health without Mental Health* places great emphasis on the links between mental and physical health (DH 2011). The strategy gave new responsibility to Improving Access to Psychological Therapy (IAPT) services for supporting the psychological needs of people with long-term conditions or medically unexplained physical symptoms (Naylor et al. 2012). There has been a particular emphasis on achieving 'parity of esteem' (Social Care, Local Government and Care Partnership Directorate 2014), which involves valuing mental health equally with physical health.¹

The complex and dynamic relationship between physical and mental illness was highlighted in the Chief Medical Officer's 2013 annual report, which focused on public mental health priorities (Davies 2014). It highlighted that people with mental illness tend to experience worse physical health than those without mental illness. They also have higher than expected mortality, beyond what is explained by suicide (Chang et al. 2011). Much of this excess mortality is potentially avoidable (Hoang et al. 2013). People with chronic physical conditions also have a higher prevalence of depression, anxiety and other mental disorders than people without, and comorbidity between physical and mental illness is associated with a range of particularly adverse outcomes and increased costs (Egede 2007). By interacting with and exacerbating physical illness, comorbid mental health problems raise total health care costs by at least 45% for each person with a long-term condition and comorbid mental health problem (Naylor et al. 2012). People with long-term conditions and comorbid mental health problems disproportionately live in deprived areas and have access to fewer resources of all kinds. The Kings Fund has argued that the interaction between comorbidities and deprivation makes a large contribution to generating and maintaining inequalities (Hoang et al. 2013).

About 15 million people in England have a long-term condition (DH 2012). Chronic conditions are generally those which are managed long-term with drugs or other treatment. The chronic physical conditions focused on in this chapter – asthma, cancer, epilepsy, high blood pressure, and cardiovascular disease (CVD) – were identified by the Department of Health as priorities for this study.

¹ www.england.nhs.uk/mentalhealth/parity/

As highlighted in Chapter 2, about one person in six has a common mental disorder (CMD) such as anxiety or depression. Psychiatric comorbidity – or meeting the criteria for two or more mental disorders – is associated with increased severity of symptoms, longer duration, greater functional disability and increased use of health services (ESEMEd 2004; Andrews et al. 2002; Kessler et al. 2005). This was examined in the APMS 2007 report and is not the focus of this chapter.² Substance misuse, addressed in Chapters 10 and 11, affects many and the dual diagnosis of substance misuse and various mental disorders is well documented (World Health Organisation 2001; Abdulrahim 2001). When disorders are classified as either present or absent, many people are identified with two or more conditions (Kessler et al. 1996; Kessler et al. 2005), and the likelihood of two or more conditions co-existing is greater than can be attributed to chance (Slade and Watson 2006; Krueger and Markon 2006). For the purposes of the present analysis, we have included the most common mental disorders (namely anxiety and depressive disorders) as well as: psychotic disorder; antisocial, borderline and any personality disorders; posttraumatic stress disorder (PTSD); attention-deficit/hyperactivity disorder (ADHD); bipolar disorder; alcohol and drug dependence; and problem behaviours such as suicide attempts and self-harm. These are defined according to different classification criteria and refer to a variety of different reference periods (see Section 13.2).

There has been a cross-government focus on wellbeing, including on mental wellbeing.³ It is known that people with chronic physical conditions or poor mental health have lower average mental wellbeing (Chanfreau et al. 2012). The nature of this relationship however remains contested, with some arguing that mental wellbeing is at the other end of a spectrum from mental illness, and others that there is a dual continuum, with mental illness and wellbeing being strongly correlated but independent (Doll 2008; Weich et al. 2011). The research in this area has tended to look at mental wellbeing among people with general measures of psychological distress. This chapter presents fresh analysis of the level of mental wellbeing among people identified with specific mental disorders.

² The analysis of comorbidity reported on in the APMS 2007 report attempted to interpret the complicated relationships between mental disorders through the application of more advanced statistical methods – particularly latent class analysis (Davies 2014). Latent class analysis was applied to the APMS 2007 data in an attempt to identify underlying patterns of association between people according to the patterns of diagnostic criteria they met.

³ www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/bulletins/measuringnationalwellbeing/2015-09-23

Making sense of comorbidity is made difficult by the sheer number of possible combinations (Grant et al. 2005; Lenzenweger et al. 2006; Compton et al. 2007). An understanding of the prevalence of comorbid conditions, factoring in a range of different physical conditions, mental disorders, and wellbeing in the English general population is, therefore, not well developed.

13.2 Definition and assessment

The APMS 2014 interview covered a range of different aspects of physical health and mental health and wellbeing, allowing for the relationships between these to be explored.

Measuring mental disorders

Detail on the methods used to identify people with mental disorders can be found in the relevant chapters of this report. In summary, the mental health conditions assessed in APMS 2014 were all included in the analyses of comorbidity between mental and physical health. Many of these took the form of psychiatric disorders as defined by the tenth revision of the International Classification of Diseases (ICD-10) chapter on Mental and Behavioural Disorders Diagnostic Criteria for Research: either to individual diagnostic categories (such as obsessive and compulsive disorder (OCD)) or as groups of ICD-10 diagnoses (such as psychotic disorders) (World Health Organisation 1992). Some conditions were defined according to the fourth Diagnostic Statistical Manual (DSM-IV) criteria (for example, personality disorder) (American Psychiatric Association 1994).⁴ In particular, it should be noted that other conditions (specifically; ADHD, PTSD and bipolar disorder) were assessed using a screening tool that did not apply specific diagnostic criteria. In the relevant condition-specific chapters these are not described as present or not, but as screen positive or negative. Other categories of mental health problem used in the comorbidity analysis represent behaviours (self-harm and attempted suicide) that are considered problematic and indicative of major mental distress. Because of these differences in how categories of mental illness are covered, they are not

⁴ While DSM-5 has since been issued, DSM-IV was current when the survey was in development.

combined into a single group. The reference period also varied between conditions: for example CMDs, such as generalised anxiety disorder, referred to symptoms in the past week, while psychotic disorder referred to an episode in the past year. The methods of assessment for each of the conditions are described in detail in the disorder specific chapters of this report, and are summarised in the table below.

Screening and assessment of mental disorders on APMS 2014

Condition	Diagnostic status	Classification system	Assessment tool	Reference period
Generalised anxiety disorder (GAD)	Present to diagnostic criteria	ICD-10	CIS-R (Lewis et al. 1992)	Past week
CMD Not Otherwise Specified (NOS)	Present to diagnostic criteria	ICD-10	CIS-R	Past week
Obsessive and compulsive disorder (OCD)	Present to diagnostic criteria	ICD-10	CIS-R	Past week
Depressive episode	Present to diagnostic criteria	ICD-10	CIS-R	Past week
Panic disorder	Present to diagnostic criteria	ICD-10	CIS-R	Past week
Phobias	Present to diagnostic criteria	ICD-10	CIS-R	Past week
Bipolar disorder	Screen positive	DSM-IV	Mood Disorder Questionnaire (Hirschfield et al. 2000)	Lifetime
Problem drinking	Screen positive	—	AUDIT (Saunders et al. 1993)	Past six months
Drug dependence	Screen positive	DSM-IV	Based on the Diagnostic Interview Schedule (Malgady et al. 1992)	Past year

Continued

Condition	Diagnostic status	Classification system	Assessment tool	Reference period
Psychotic disorder	Present to diagnostic criteria	ICD-10	SCAN (World Health Organisation 1999)	Past year
Borderline personality disorder (BPD)	Present to diagnostic criteria	DSM-IV	Self-report SCID-II (First et al. 1997)	Past year
Antisocial personality disorder (ASPD)	Present to diagnostic criteria	DSM-IV	Self-report SCID-II	Past year
Any personality disorder	Screen positive	DSM-IV	Standardised Assessment of Personality (Hesse and Moran 2010)	Lifetime
Post-traumatic stress disorder (PTSD)	Screen positive: endorsed six out of ten items.	DSM-IV	PTSD Checklist – civilian version (Blanchard et al. 1996)	Past week
Attention deficit hyperactivity disorder (ADHD)	Screen positive: endorsed all six items	DSM-IV	Adult Self-Report Scale-v1.1 (WHO 2003)	Past six months
Attempted suicide	Occurrence of behaviour	—	Self-completion	Past year

Measuring chronic physical conditions

Participants were presented with a list of 22 physical conditions (or categories of physical illness) and were asked which they had ever had; which they had had in the past year; whether the condition had been diagnosed by a health professional; and if they received any medication or other treatment for it. The chronic conditions reported on in this chapter were self-reported by participants as having been diagnosed by a health professional and present in the past 12 months, irrespective of whether or not they were currently treated.

The key chronic physical health conditions focussed on here included:

- Asthma
- Cancer
- Diabetes
- Epilepsy
- High blood pressure.

It should be noted that self-report data on diagnosed conditions are subject to participants being unaware of or not recalling a diagnosis that has been made, which could lead to under-identification. On the other hand, it is possible some participants may have reported having these conditions without having received a diagnosis. Some conditions were more prevalent than others, for those with a larger sample size (such as asthma and high blood pressure) it may have been easier for a difference to be statistically significant.

Measuring mental wellbeing

Mental wellbeing was assessed using the Warwick Edinburgh Mental Well-Being Scale (WEMWBS). The scale was developed to enable the monitoring of mental wellbeing in the general population, as well as for the evaluation of projects, programmes and policies which aim to improve mental wellbeing (Stewart-Brown et al. 2011). WEMWBS is a 14-item scale with five response categories, summed to provide a single score ranging from 14–70. The items are all worded positively and cover both feeling and functioning aspects of mental wellbeing. A higher score indicates a higher level of mental wellbeing. In this chapter a mean WEMWBS score is presented. In addition, predictors for being in the top 15% and bottom 15% in the WEMWBS score distribution are examined.⁵

⁵ These thresholds have been applied in previous analyses of WEMWBS (Chanfreau et al. 2012).

Measuring predicted verbal IQ

A predicted verbal IQ (V-IQ) was derived using participants' scores on the National Adult Reading Test (NART), conducted at phase one. This score was converted to a prediction of verbal IQ by applying an algorithm. Participants with a V-IQ score of below 80 were grouped together for this analysis and could be considered to be of 'borderline intelligence' with a level of cognitive functioning associated with functional impairments and difficulties living independently without the assistance of support services.

13.3 Results

Chronic physical conditions

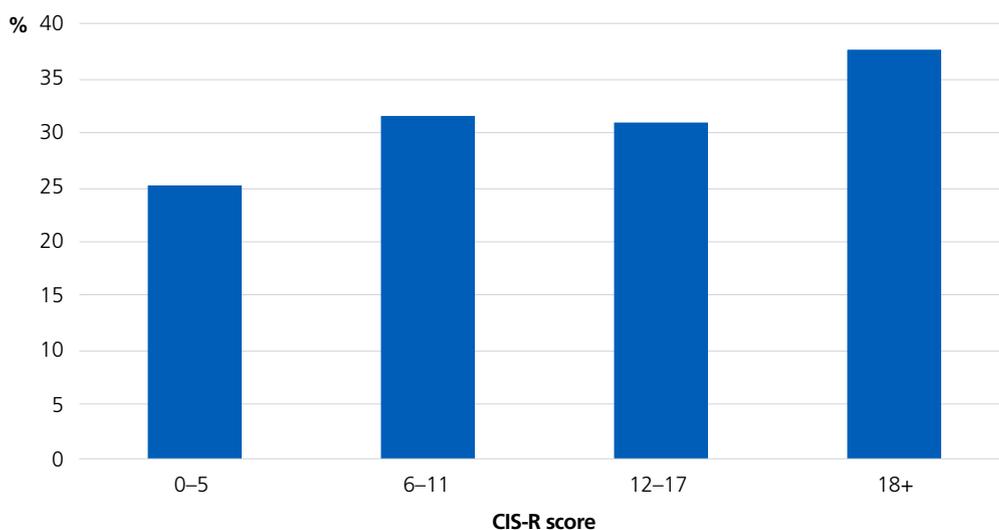
Overall, around a quarter of participants (27.7%) reported having a diagnosis of at least one of the five chronic physical conditions considered in this chapter present in the last 12 months. High blood pressure (16.9%) was the most commonly cited, followed by asthma (8.7%), diabetes (6.0%), and cancer (1.6%). 52 participants (0.7%) reported epilepsy; due to the small numbers, analysis by this group should therefore be treated with caution. A similar distribution in chronic conditions was found for men and women. [Table 13.1](#)

Chronic physical conditions among people with mental illness

There was an association between presence of at least one chronic physical condition in the past 12 months and having symptoms of CMD in the past week. While a quarter (25.3%) of people with no or few symptoms of CMD (CIS-R score 0 to 5) had a chronic physical condition, in people with severe CMD symptoms (CIS-R 18 or more) over a third (37.6%) had a chronic physical condition as well. This pattern was similar for men and women. [Table 13.1](#)

Figure 13A: Prevalence of any of five chronic physical conditions, by CMD symptom severity (CIS-R score)

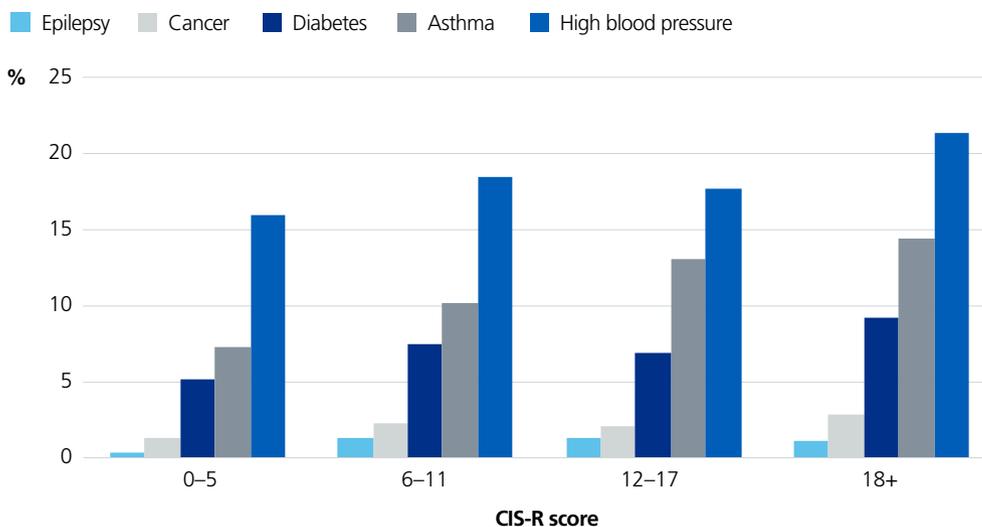
Base: all adults



This broad pattern was also evident for each of the chronic conditions when looked at individually. For example, people with severe symptoms of CMD (CIS-R score 18+) were twice as likely to have asthma as people with no or few symptoms (CIS-R score 0-5); 14.5% compared with 7.2%.

Figure 13B: Prevalence of chronic physical conditions, by CMD symptom severity (CIS-R score)

Base: all adults



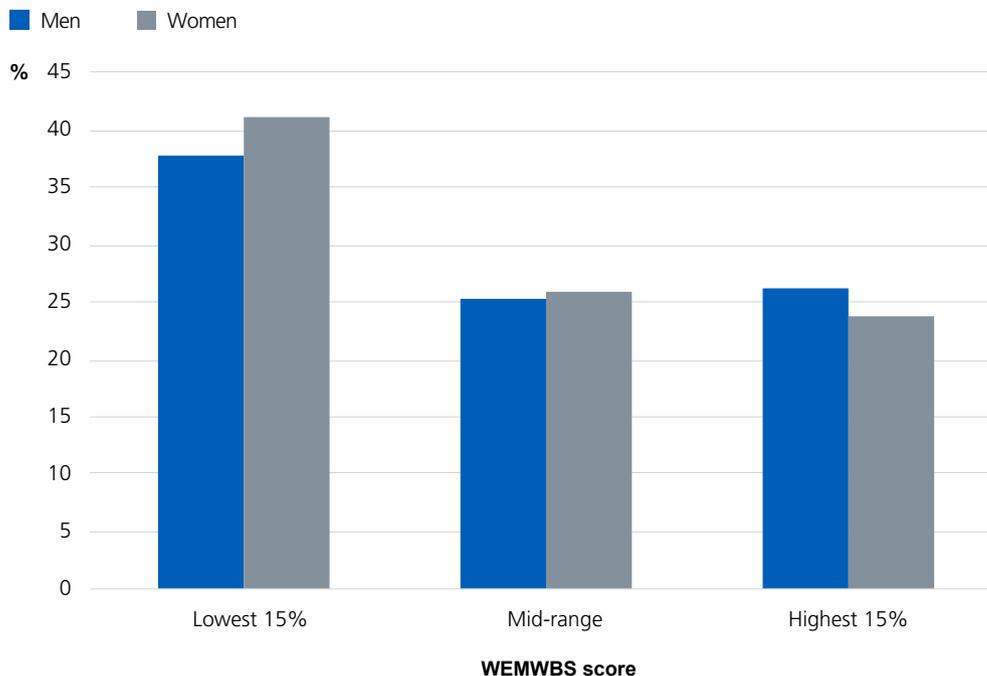
Chronic physical conditions among people with low mental wellbeing

Having a chronic physical condition was also associated with having a lower level of mental wellbeing. Overall, the mean WEMWBS score was 51.03 in people with at least one of the five chronic conditions considered, compared with 53.15 in people without a chronic physical condition. This pattern of association was evident among both men (51.80 compared with 53.29) and women (50.32 compared with 53.02).⁶

Over a third (39.7%) of adults with the lowest WEMWBS scores had at least one of the five chronic physical conditions, compared with around a quarter of people with a higher WEMWBS score. No variation in rate was evident between those with a mid-range WEMWBS score and those with a score in the highest 15% of the score distribution. This was true both for men and women. [Table 13.2](#)

Figure 13C: Prevalence of any of five chronic physical conditions, by level of mental wellbeing (WEMWBS score) and sex

Base: all adults



⁶ For asthma only, a reduced wellbeing score was not evident among men with the condition and there was a statistically significant interaction with sex for this condition.

A low level of wellbeing (defined as being in the lowest 15% of the WEMWBS score distribution) was associated with each of the individual chronic physical conditions. For example, 11.0% of people with low wellbeing had diabetes, compared with 5.1% of people with moderate mental wellbeing and 4.9% of people with high mental wellbeing.

Mental disorders among people with chronic physical conditions

Generally, people with a chronic physical condition were more likely than those without to have at least one type of CMD. [Table 13.3](#)

Cancer

Among people with cancer, rates of several mental disorders appeared to be higher than in those without cancer. However, the only disorder that this was statistically significant for was CMD Not Otherwise Specified (CMD-NOS). CMD-NOS is a category for those with a CIS-R score of at least 12 but who do not meet the specific criteria for the other disorders assessed. On average, people classified with CMD-NOS have a lower mean CIS-R score than people classified with the other specific CMDs (see Chapter 3: Treatment). This suggests that the presence of diagnosed cancer in the past year may be associated with increased levels of general psychiatric distress, but there was less evidence for an association with specific diagnostic categories of mental disorder.

Diabetes

As for cancer, rates of CMD-NOS were higher in people who reported a diabetes diagnosis than in those who did not. People with diabetes were also more likely to have depression than people without diabetes.

Asthma and high blood pressure

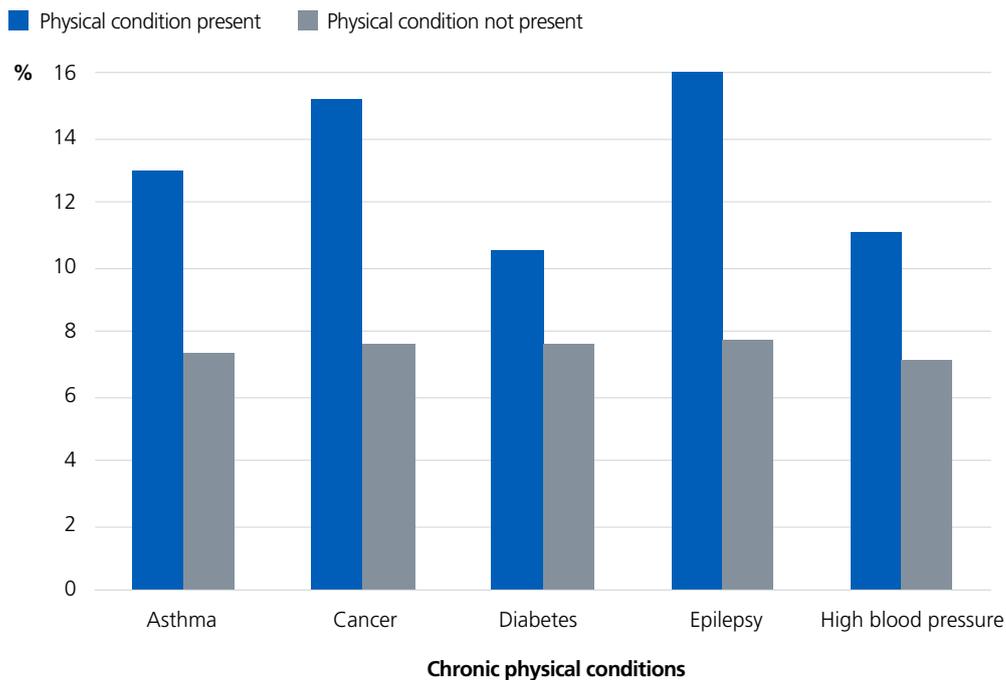
Both asthma and high blood pressure were associated with a wide range of different mental disorders, including CMD-NOS, depression, anxiety disorders (such as GAD and phobias) and PTSD. Because asthma and high blood pressure were the most common chronic physical conditions examined, their larger sample size means that the sample was also better powered to pick up on statistically significant differences. Due to particularly strong associations with age, the high blood pressure analyses were age-standardised.

Epilepsy

The small base size for the epilepsy group (52 participants) means that findings should be treated with caution.⁷ The strength of association with mental disorder appeared to be greater for epilepsy than for the other chronic physical conditions; however the rates were only statistically significantly higher for GAD and PTSD.

Figure 13D: Prevalence of CMD-NOS, among people with and without each chronic physical health condition

Base: all adults

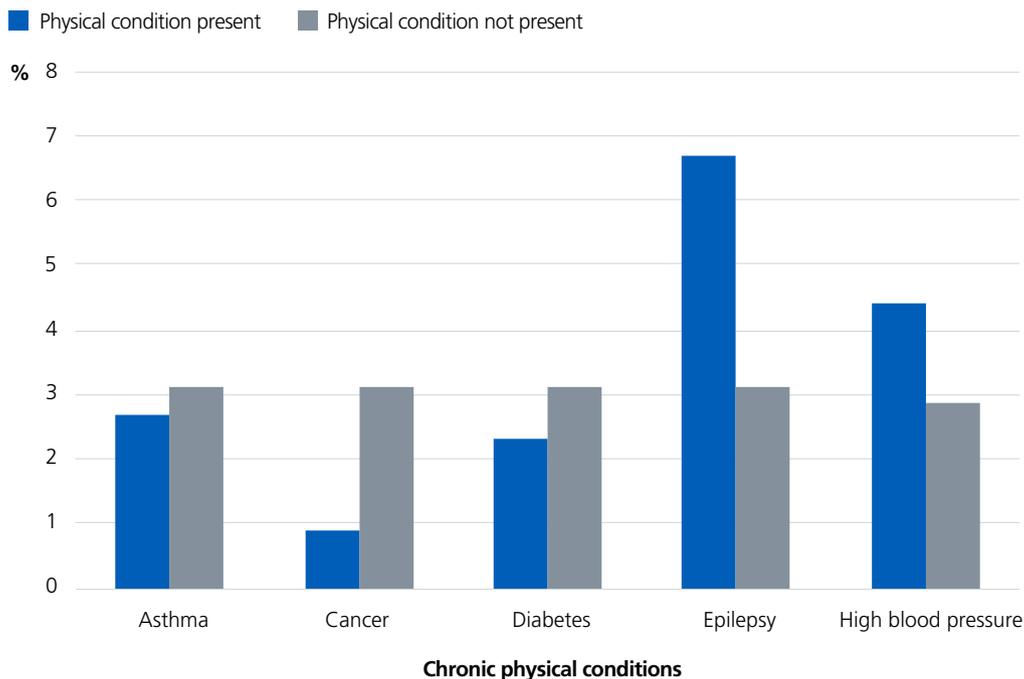


Harmful use of alcohol in the past year (as indicated by an AUDIT score of 16 or more) and signs of drug dependence were not associated with presence of any of the chronic physical conditions examined. While rates of harmful alcohol use appeared to be low in those with cancer and high in those with epilepsy, these were not statistically significant.

⁷ This pattern has been found in analyses of APMS 2007 data previously (see Rai et al. 2012).

Figure 13E: Prevalence of harmful alcohol use (AUDIT score 16 or more), among people with and without each chronic physical condition

Base: all adults



Mental disorders among people with low mental wellbeing

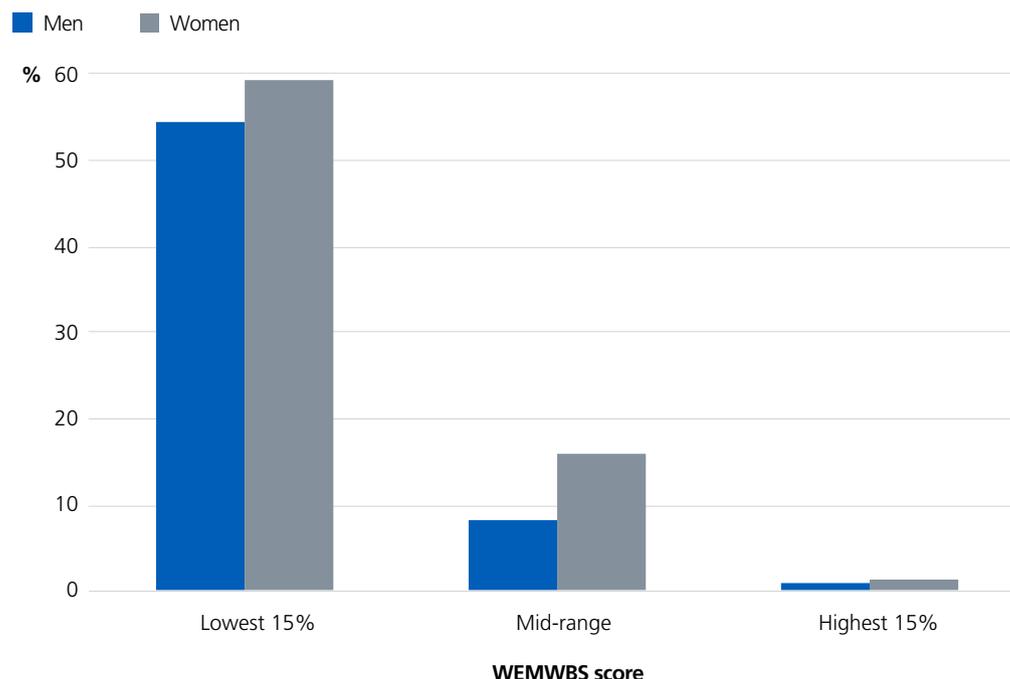
The association between mental disorder and low wellbeing was very strong, and statistically significant for every type of mental disorder examined. Adults with low wellbeing were defined as those in the bottom 15% of the WEMWBS score distribution.

CMD

Among people with low mental wellbeing (lowest 15% in the population distribution) more than one in two met the criteria for at least one CMD (57.3%), compared with one in a hundred (1.1%) among people in the highest 15% of the wellbeing distribution. Men (42.3) and women (43.5) with CMD had a lower level of mental wellbeing, as indicated by mean WEMWBS score, than the population as a whole (52.6, data not shown). [Table 13.4](#)

Figure 13F: Prevalence of any CMD, by level of mental wellbeing (WEMWBS score) and sex

Base: all adults

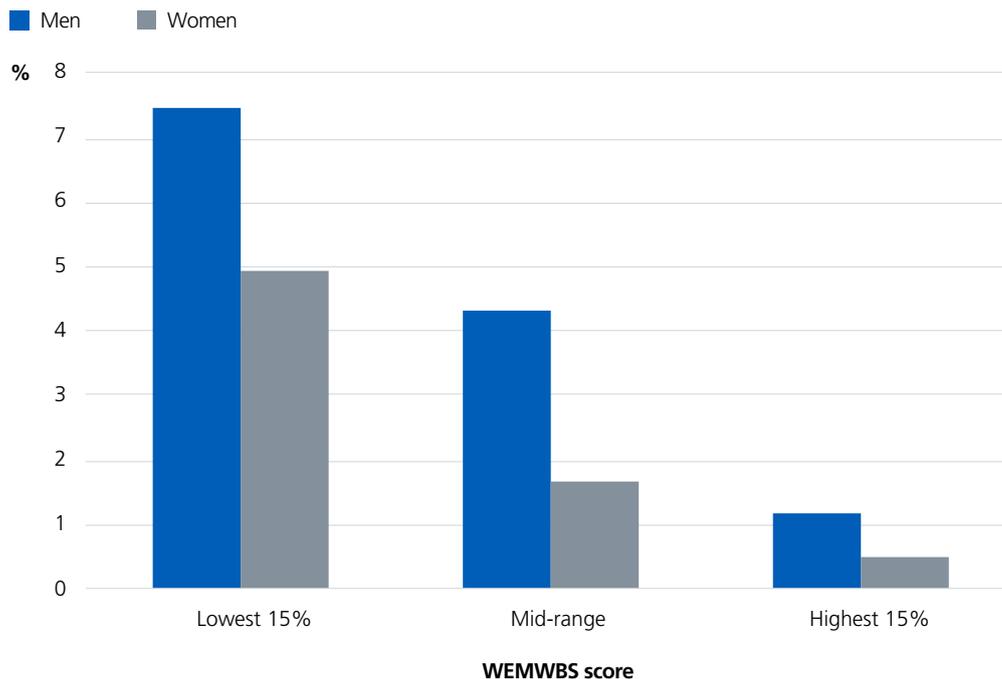


Other mental health conditions and behaviours

Adults with low mental wellbeing had very high levels of psychiatric morbidity across all the disorders assessed, with rates between four and 50 times higher than those for people with the highest mental wellbeing scores. Over a third (37.6%) screened positive for personality disorder (compared with 3.6% of people with wellbeing in the top 15% of the distribution). A quarter screened positive for ADHD (25.9% compared with 2.0% with high wellbeing), a fifth screened positive for PTSD (21.0% compared with 0.8%); and 4.8% were identified with probable psychotic disorder (compared with 0.1%). The variation was also evident for signs of drug dependence and alcohol dependence. A fifth of people with low wellbeing (20.6%) reported having made a suicide attempt at some point. [Table 13.4](#)

Figure 13G: Prevalence of signs of drug dependence, by level of mental wellbeing (WEMWBS score) and sex

Base: all adults

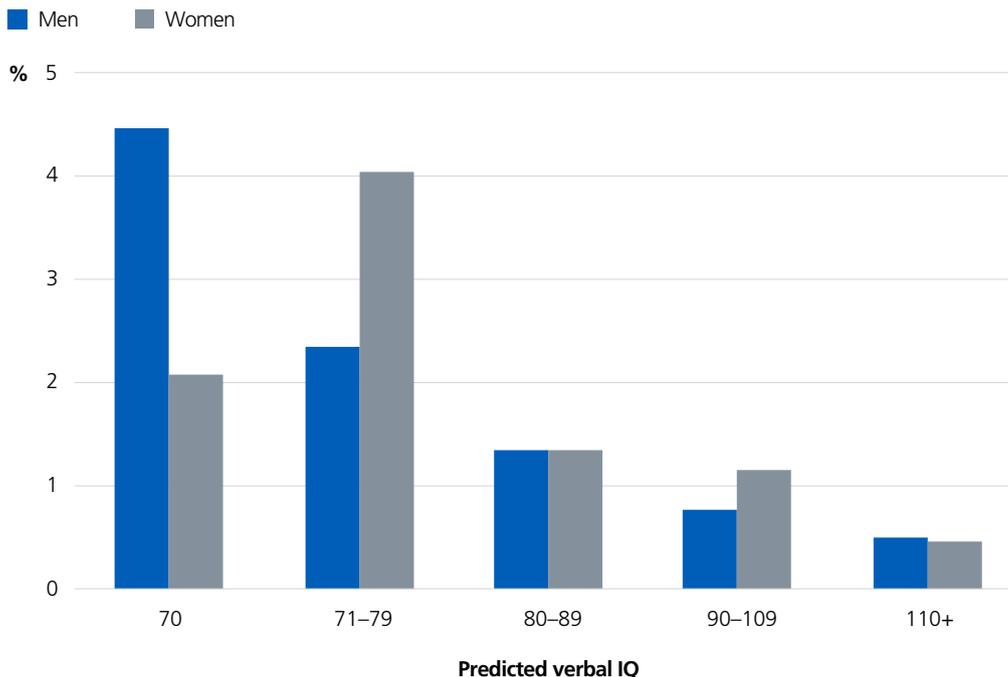


Mental disorders by predicted verbal IQ score

People with a predicted verbal IQ score of less than 80 (in this analysis used to indicate intellectual impairment) had a greater level of psychiatric morbidity than those with higher verbal IQ scores. For example, while a quarter (25.0%) of people scoring at the lowest end of the verbal IQ range had at least one CMD, this was the case for 17.2% of those scoring between 90 and 109 and 13.4% of those scoring over 110. The variation by predicted verbal IQ score was particularly pronounced for rates of probable psychotic disorder. [Table 13.5](#)

Figure 13H: Prevalence of probable psychotic disorder, by predicted verbal IQ score (based on the NART) and sex

Base: all adults



13.4 Discussion

While the strong associations between general physical and mental health are well established, this chapter presents data on the links between different types of mental disorders by different types of chronic physical conditions. This is key for understanding how pervasive the links between physical and mental illnesses are, and for which specific mental and physical conditions the associations are strongest. Previous analyses have tended to examine comorbidity between physical conditions and a measure of general ‘psychological distress’ (using, for example, the General Health Questionnaire), or have focused on psychiatric comorbidity with just one type of physical condition, for example, diabetes (Das-Munshi et al. 2007; Balhara 2011) or epilepsy (Rai et al. 2012).

Having a chronic physical condition is common. Over a quarter of participants reported the diagnosed presence of at least one of the five chronic conditions examined, in the last 12 months. As reported in Chapter 2, around one person in six has a depressive or an anxiety disorder, with a wide range of other less common disorders present to varying degrees. People with CMD were much more likely than those who did not to have a chronic physical condition. For example, those with severe symptoms of CMD (as represented by a CIS-R score of 18 or more) were twice as likely to have asthma as those with no or few symptoms (CIS-R score 0–5); 14.5% compared with 7.2%. This pattern was true for each of the chronic physical conditions considered, and was evident both for women and men.

Both asthma and high blood pressure were associated with a wide range of different mental disorders, including depression, anxiety disorders (such as GAD and phobias), CMD Not Otherwise Specified (NOS), and PTSD. Asthma and high blood pressure were the most common chronic physical conditions examined; the larger sample size for these conditions meant that statistically significant differences were more likely to be detectable. Cancer and diabetes were also strongly associated with CMD-NOS, but the higher rates of most other mental disorders tended not to be statistically significant for these physical conditions. On average, people classified with CMD-NOS have a lower mean CIS-R score than people classified with the other specific CMDs (see Chapter 3: Treatment).

It may feel counterintuitive that problematic use of alcohol in the past year and signs of drug dependence were not associated with presence of a chronic physical condition, given that, for example, sustained misuse of alcohol is a known physiological risk factor for the onset of chronic conditions such as certain cancers (Danaei et al. 2005) and type 2 diabetes (Baliunas et al. 2009). However, it has been noted that onset of poor physical health can prompt subsequent reductions in alcohol intake (Fillmore et al. 2007). APMS tends to collect data on current or recent health, rather than collecting data on health across the life-course. While a strength of the APMS series is its coverage of a range of types of physical and mental conditions, limitations include its relatively small sample for the examination of comorbidity between low prevalence conditions, as well as the fact that the data are not longitudinal. Cross-sectional data is not suitable for examining causal relationships.

The survey data confirm the established relationship between lower IQ and common and severe mental illness. This is an important finding that points towards the need for further diagnostic and treatment support for this population group, who more often than not do not fit within rigid service eligibility criteria.

APMS 2014 was the first time in the survey series that a validated measure of mental wellbeing, the WEMWBS, was included. The findings presented in this chapter show the very strong associations there are between low mental wellbeing and having a chronic physical condition, as well as between low mental wellbeing and every different type of mental disorder examined. The data in this chapter lend strong support for calls for greater integration of treatment and services for mental and physical conditions, given the increased likelihood that patients for one type of condition may also be likely to benefit from treatment for another.

13.5 Tables

- Table 13.1 Chronic physical health conditions, by CIS-R score and sex
- Table 13.2 Chronic physical health conditions, by mental wellbeing and sex
- Table 13.3 Common and severe mental disorders, by chronic physical health conditions
- Table 13.4 Common and severe mental disorders, by mental wellbeing and sex
- Table 13.5 Common and severe mental disorders, by predicted verbal IQ and sex

13.6 References

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