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The Rising Tide of Mental Disorders in the Pacific Region: Forecasts of Disease Burden and Service Requirements from 2010 to 2050

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Abstract

Despite progress, poor performance of Pacific Island health systems continues to be highlighted by treatment gaps. Projecting burden of disease and the human resource requirements for mental health services will help appropriately plan for mental health in the region. We drew upon burden of disease and population data to estimate disability-associated burden of disease from 2010 to 2050 for the Pacific region. Packages of care for low and middle income countries provided a method for estimating mental health staffing requirements. Gaps between estimated target and current staffing levels were estimated. Holding prevalence rates constant over time would see a 74 per cent increase in disability-related burden for mental disorders. Projected increases in workforce requirements over the 2010–2050 period are large. Preparation for the increasing burden of mental disorders into the future is essential. A sustained, collaborative approach must be secured to achieve improvements in mental health services and treatment coverage.

Key words: Pacific, policy, mental health, burden of disease

1. Introduction

The recently published Global Burden of Disease Study 2010 (GBD 2010) was a comprehensive re-analysis of burden for 291 causes, 20 age-groups, male and female individuals, and 187 countries for 1990 and 2010 using Disability Adjusted Life Years (DALYs) as the measure for burden (Murray et al. 2013). The aggregation of results into 21 world regions on the basis of epidemiological homogeneity and geographical contiguity provides us with useful information for assessing regions’ individual patterns of burden of disease.

Among many important findings of GBD 2010 was the observation of a continuing shift of global health loss attribution from communicable diseases towards non-communicable diseases (Murray et al. 2013). This health transition is well underway in low- and middle-income countries (LMICs). The region
representing the Pacific Islands in the Global Burden of Disease Study is Oceania and includes American Samoa, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Micronesia (Federated States of), Nauru, New Caledonia, Niue, Northern Mariana Islands, Palau, Papua New Guinea, Pitcairn, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, and Wallis and Futuna Islands (Institute of Health Metrics and Evaluation 2013). In Oceania, non-communicable disease (NCD) accounted for 34% of total DALYs in 1990, increasing to 48% in 2010. As a group, mental and substance use disorders were the leading cause of disability in the Pacific, accounting for 22% of all YLDs in 2010 (IHME 2013). Major depressive disorder (MDD) is now responsible for the largest proportion of disability in the Pacific, increasing its ranking from second to first over the 1990 to 2010 period (Ferrari et al. 2013).

Beyond the disability represented by GBD 2010, mental and substance use disorders have far reaching impacts at all levels of society. It has been shown that people with mental, neurological, and substance use disorders experience significant reductions in life expectancy (Chang & others 2011; Crump et al. 2013; Lawrence et al. 2013). Research from Australia and the United Kingdom shows that men with mental disorders die, on average, 15 years earlier than the general population; women with mental disorders die, on average, 12 years earlier, commonly as a result of suicide or comorbid physical health conditions (Crump et al. 2013; Lawrence et al. 2013). Individuals and their families are subjected to stigma and discrimination constituting substantial human rights abuses in many cultures (Thornicroft 2007). Furthermore, impaired mental health is linked to poor labour productivity resulting in reduced economic output for families and economic growth for nations as a whole (Bloom et al. 2011).

The rapid health transition occurring in the Pacific is being driven by both population growth and ageing. In the Pacific, the total population reached 10 million in 2010. By 2050, the Pacific population will have grown to 18 million (Bedford & Hugo 2012). The youth population of Pacific countries, especially those in Melanesia, is expected to grow rapidly over the next two decades. Given this is the age group where mental and substance use disorders become prevalent, there will be an increasing burden attributable to these disorders over the decades to come. To what extent the disease burden of mental and substance use disorders will increase due to these anticipated demographic changes is fundamental to informed planning of mental health services but is as yet unknown.

The Pacific has seen concerted efforts to improve mental health services by multiple stakeholders in recent years, resulting in noticeable progress in some countries. Pivotal in this progress has been the World Health Organisation’s (WHO) situational analysis of mental health needs and resources in the Pacific conducted in 2005 (Hughes et al. 2005) and the launch of the Pacific Islands Mental Health Network (PIMHnet) in Vanuatu in 2007 (Hughes 2009). Pacific Island countries (PICs) consistently identify the lack of human resources for mental health as the most important contributor where the response to developing and delivering mental health services has been weakest (World Health Organisation 2013). In recognition of this, one of the first milestones for PIMHnet was the development and implementation of human resource plans to improve the number and capacity of health workers to deliver mental health treatment, care and support. An additional and significant milestone for improving human resource capacity had been the establishment in 2012 of the Fiji National University Post-Graduate Diploma in Mental Health (PGDMH) (World Health Organization Western Pacific Region 2013).

Despite progress, the poor performance of PIC health systems continues to be highlighted by treatment gaps. Service data reported in several PICs indicate that more than 90% of people with mental disorders had received no care or treatment in the previous 12 months (World Health Organization Western Pacific Region 2013).
At the 65th session of the WHO Regional Committee for the Western Pacific held in Manila in October 2014, a resolution was passed endorsing both the Regional Strategy for Mental Health and the WHO Mental Health Action Plan 2013–20. These plans signify a commitment to improve mental health in the Pacific and contain agreed measurable indicators, including a 20% increase in service coverage for severe mental disorders (World Health Organization 2013).

The Mental Health Gap Action Programme (mhGAP) provides health planners, policymakers, and donors with a set of clear and coherent activities and programmes for achieving this increase in service coverage (World Health Organization 2008). Importantly, it identifies strengthening of human resources as a core strategy. In addition to mhGAP, recommended packages of care and service requirements in low- and middle-income countries have been developed for priority mental and substance use disorders (Patel & Thornicroft 2009; Bruckner et al. 2011). To-date, there have been no published projections of mental health workforce requirements that would be commensurate with anticipated increases in burden of disease. Without these projections, planning for appropriate scaling-up of mental health services is constrained.

This paper identifies the urgent need for continued scaling up and decentralisation of mental health services within the Pacific by: (i) quantifying the increasing burden of disease of mental and substance use disorders within the Pacific region over the coming decades (to 2050); and (ii) quantifying the human resource requirements (FTE equivalent) for mental health services using established models of treatment.

2. Methods

2.1 GBD 2010

The GBD mental and substance use disorder research group modelled prevalence by age, sex, country, region, and year for each of 20 mental and substance use disorders using DisMod-MR, a Bayesian meta-regression tool (Peterson & Flaxman). Disability weights from representative community surveys and an internet-based survey were used to calculate years lived with a disability (YLD). Years of life lost (YLL) were calculated from age-sex-country-time-specific estimates of mortality by cause, with death by standardised lost life expectancy at each age. YLDs were calculated as prevalence of 1160 disabling sequelae, by age, sex, and cause, and weighted by new disability weights for each health state. The disability adjusted life year (DALY) combines the years of life lost through premature mortality (YLL) and years lived with disability (YLD) into a single metric. Estimates were aggregated to regional and global estimates of disease burden for three points in time—1990, 2005 and 2010. Further details of the GBD 2010 methodology have been published elsewhere (Murray et al. 2013). Adjustments to the data were made via various methods including the application of covariates and severity distributions, and comorbidity adjustments were applied to sequela-specific disability weights in the calculation of YLDs (more detailed information can be found in Murray et al. (Murray et al. 2012), Vos et al. (Vos et al. 2012) and Whiteford et al. (Whiteford et al. 2013).

2.2 Disability (YLD) Projections 2010–50

Methods for creating projected burden of disease and mental health staffing requirements have been published previously (Charlson et al. 2014). Projections of disability-associated burden of disease (YLDs) were estimated for each 10-year period from 2010 to 2050 for the Oceania region. UN population data predictions (see Supporting Information Appendix for UN population data) were applied to age-specific 2010 YLD rates to calculate projected YLDs for the region and each 10-year time period for the categories of mental and substance use disorders, communicable (includes communicable, maternal, neonatal and nutritional diseases) and non-communicable diseases (see appendix for full list of mental and substance use disorders). Applying age-specific 2010 YLD
rates assumes that age-specific prevalence and disability weights of mental and substance use disorders will remain constant over time. For the majority of mental disorders it has been shown that prevalence and disability weights are unlikely to change significantly over time. Prevalence of substance use disorders are likely to change, however, and the implications of this assumption are addressed in the discussion (Whiteford et al. 2013).

2.3 Service Requirements for 2010 and 2050

Published packages of care and service requirements for low- and middle-income countries (World Health Organization 2008, Bruckner et al. 2011; Chisholm 2014) provided a method for estimating full time equivalent (FTE) mental health staffing requirements. Six mental and substance use disorders which were included in GBD 2010 and have been identified as priority disorders for LMICs (Bruckner et al. 2011) were selected for modelling. These disorders were schizophrenia, bipolar disorder, depression, alcohol dependence disorder, conduct disorder and attention deficit hyperactivity disorder (ADHD). Other substance use disorders were excluded due to low prevalence in PICs.

Treatment coverage targets and care packages for each type of service for the selected disorders were taken from Bruckner et al. (Bruckner et al. 2011) (see appendix). Estimated number of bed-days for inpatient or residential services, or estimated number of sessions for outpatient care was equal to the treatment coverage target $\times$ service coverage $\times$ utilisation rate $\times$ adjusted disorder prevalence $\times$ population.

*Treatment coverage target* is the percentage of prevalent cases requiring or presenting for any treatment. *Service coverage* is the percentage of treated cases needing care in this specific service setting in a year. *Utilisation rate* is the average number of bed days used per case per year for cases treated in inpatient services, or the average number of consultations or sessions per case per year for cases treated in outpatient services.

Using the model proposed by Bruckner et al. to estimate FTE staff requirements requires disorder prevalence. We elected to use the more recent pooled prevalence estimates for each disorder over those used by Bruckner and colleagues. Predicted pooled prevalence for 2050 was also calculated using 2010 age-specific prevalence estimates and UN age-specific population data for 2050. Pooled prevalence for each of ADHD and conduct disorder was based only on prevalence from 5–19 years of age. Prevalence estimates for the entire Oceania region were applied to each country.

Comorbidity adjustments were made to prevalence estimates. To account for comorbidity between depression and substance use disorders, the prevalence of MDD, alcohol use, alcohol dependence, drug use and drug dependence, and any depressive or substance use disorder were sourced from a subsample of Pacific people in the New Zealand Mental Health Survey 2006 (Oakley-Browne et al. 2008). Using the formula derived by Lund et al. (Lund & Flisher 2009)—disorder prevalence divided by sum of prevalences of individual depressive and substance use disorders multiplied by (prevalence of any depressive or substance use disorder)—we calculated a prevalence weighting to adjust for comorbidity. The result was GBD prevalence estimates for depression and substance use disorders were adjusted downwards to 74% of the original.

It was assumed that conduct disorder and ADHD held comorbidity with each other but no comorbidity with other disorders. Data from the US National Comorbidity Survey Replication—Adolescent (Merikangas et al. 2010) allowed for an estimation of comorbidity between these childhood disorders (unfortunately no data were available from Pacific populations). As per the method above, the raw prevalence of individual disorders, as well as the prevalence of any behavioural disorders, was used to calculate a comorbidity adjustment of 69.8% of the originals. A table summarising the GBD 2010 and adjusted for comorbidity pooled prevalence of selected mental and substance use
disorders in Oceania from can be found in the appendix.

An assumption was made that there was no significant comorbidity between bipolar disorder and schizophrenia, and any other mental disorders. Although bipolar disorder and schizophrenia demonstrate comorbidity with substance use disorders, it was deemed that the treatment patients would require for their substance use disorder would be in addition to that for their bipolar disorder or schizophrenia and therefore comorbidity adjustments were not made. The implications of this are explored in the discussion.

Recommended staffing ratios allowing for estimation of staffing by profession type categories (psychiatrist, medical officer (other clinicians), nurse, psychologist, other psychosocial worker, and other provider/worker) were taken from the mhGAP costing tool (Chisholm 2014). These staffing ratios account for both specialist and generalist (non-mental health) professionals involved in the care of mental health patients, as a dedicated role or as part of their broader health care work.

FTE estimates were calculated for both 2010 and 2050, for the entire region and a selection of countries (Fiji, Papua New Guinea (PNG), Samoa, Solomon Islands, Tonga and Vanuatu) within the region to highlight the differences that can be observed across countries within the same region. Gaps between the estimated target FTE staff for 2010 and the current mental health service FTE staffing levels in the selected countries, as reported by the WHO Mental Health Atlas (World Health Organisation 2011), were estimated.

The number of FTE staff required to deliver outpatient mental health care was calculated as: number of sessions / number of consultations per day / 240 working days per year (from mhGAP) X staffing ratio (from mhGAP) (Chisholm et al. 2007; Bruckner et al. 2011). Consultations per day were derived from mhGAP as a weighted average across providers in each category of outpatient care: outpatient care—8 consultations per day; primary care—9 consultations per day; psychosocial (ancillary) care—7 consultations per day.

Group day programs were assumed to be delivered to an average of 10 users per day.

The number of FTE staff required to deliver inpatient/residential mental health care was calculated as: number of bed-days / bed occupancy rate / 365 service days per annum / 25 beds in unit x number of staff per unit x staffing ratio.

More explicitly, we converted the number of bed days into a number of beds by dividing the total by 0.85 to account for 85% occupancy rate and then dividing the adjusted bed day total by 365 days per annum. For each 25 beds it was assumed there would be 7.5 staff (as per mhGAP) which were apportioned to professions (nurses, doctors etc.) based on the staffing ratio supplied in mhGAP.

3. Results

According to UN population estimates, the population of the Oceania region is predicted to rise from approximately 7.5 million to 17 million over the period 2010 to 2050, a 58% increase (Figure 1). This growth will not be uniform across all countries within the region. Countries expected to experience the most rapid increases between 2010 and 2050 are Vanuatu (87%), the Solomon Islands (80% increase), and PNG (66%). Those anticipated to see much less dramatic population growth include Fiji (7%), Samoa (12%) and Micronesia (19%). Across the region, the ageing of the population will be dramatic with the most marked increases seen in the over 55’s—ranging from a near doubling of the population aged 55–9 to a four-fold increase in over 75’s.

The impact of population changes on burden of disease distributions in the Pacific region is demonstrated in Figure 2. Holding prevalence rates constant over the time period would see a 74% increase in disability-related burden of disease for mental and substance use disorders, whilst holding the same assumption for communicable disease would see a lesser increase of 53%. An overtaking of communicable disease disability-associated burden by mental and substance use disorders is predicted.

Figure 3 demonstrates several important effects the epidemiological transition is
anticipated to have on mental and substance use disorders. Firstly, the increase in estimated burden is clear. Second, the peak in burden seen in the early 20’s in 2010 will plateau substantially revealing sustained elevated burden across the entire 20–54 age group. The overall increase in the 20–54 age group is estimated to be 79%. The absolute YLD’s in the 50–54 age group are estimated to triple from approximately 10,000 to 30,000 YLD’s from 2010 to 2050.

Estimates of increases in mental health workforce requirements in Oceania over the 2010–50 period are large—a total of more than
1,300 across all provider types and countries (Table 1). The overwhelming majority of these human resource requirements are for populous PNG where an additional 90 psychiatrists, 100 psychologists and 500 nurses will be needed on top of 2010 targets. Across the region increases of approximately 600 mental health workers will be needed in both outpatient and inpatient services. (Note: target FTE rates per 100,000 population by provider type can be found in the Appendix and can be used in combination with population estimates to estimate FTE for any time period not represented in Table 1.)

Table 2 indicates how well staffed mental health services are in selected Pacific Island nations. Tonga is apparently on-track, although figures are likely skewed by its very small population. Overall, all Pacific Island nations have a significant way to go in terms of capacity building and human resource development in the mental health services, to meet even current targets.

4. Discussion

We used UN population data for the Pacific region to forecast the change in disability-associated burden of seven major mental and substance use disorders from 2010 to 2050. Three key findings from this study have important implications for service planning and policy.

Firstly, across the Pacific region significant population growth and ageing are predicted to lead to a 74% increase in the disability-associated burden for mental and substance use disorders by 2050. The increase exceeds that of communicable diseases and downward trends of communicable disease prevalence across the Pacific (not incorporated in our modelling) are likely to render this a conservative estimate with the differences being larger in reality. The rising burden of both mental disorders and the broader category of non-communicable diseases (NCDs) will have a substantial impact on the health, wellbeing and productivity of Pacific countries. Already the leading cause of disability burden (YLDs) in the Pacific in 2010 (IHME 2013), mental and substance use disorders have long lasting impacts on health and quality of life, affecting not just individuals but their families and broader communities (World Health Organization 2001). In addition these disorders have a substantial impact on productivity, with the global cost of mental disorders projected to amount to US$16 trillion in lost economic output over 20 years (Bloom et al. 2011).

The large predicted increases in the burden of both mental disorders and other NCDs may also have interactive effects. Mental disorders have been shown to have a strong and often reciprocal relationship with physical health outcomes, particularly other NCDs. For example, major depressive disorder has been found to be an independent risk factor for ischaemic heart disease (Charlson et al. 2013), and poor mental health is often associated with chronic diseases such as HIV and cancers (Prince et al. 2007). A major gap already exists
Table 1 Mental health workforce requirements for the Pacific region and selected countries, year 2010 and 2050 (Bruckner et al. 2011; Chisholm 2014)

<table>
<thead>
<tr>
<th>Provider type</th>
<th>Oceania</th>
<th>Fiji</th>
<th>PNG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Target FTE 2010</td>
<td>Target FTE 2050</td>
<td>Increase</td>
</tr>
<tr>
<td>Psychiatrist</td>
<td>169</td>
<td>276</td>
<td>106</td>
</tr>
<tr>
<td>Medical officer</td>
<td>220</td>
<td>354</td>
<td>134</td>
</tr>
<tr>
<td>Nurses</td>
<td>957</td>
<td>1,547</td>
<td>590</td>
</tr>
<tr>
<td>Psychologist</td>
<td>187</td>
<td>304</td>
<td>117</td>
</tr>
<tr>
<td>Psychosocial*</td>
<td>317</td>
<td>514</td>
<td>197</td>
</tr>
<tr>
<td>Other primary care</td>
<td>303</td>
<td>488</td>
<td>186</td>
</tr>
<tr>
<td>Total</td>
<td>2,153</td>
<td>3,483</td>
<td>1,330</td>
</tr>
<tr>
<td>Service type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outpatient care</td>
<td>927</td>
<td>1,480</td>
<td>553</td>
</tr>
<tr>
<td>Psychosocial care</td>
<td>221</td>
<td>363</td>
<td>142</td>
</tr>
<tr>
<td>Inpatient care</td>
<td>1,005</td>
<td>1,640</td>
<td>634</td>
</tr>
<tr>
<td>Total</td>
<td>2,153</td>
<td>3,483</td>
<td>1,330</td>
</tr>
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<table>
<thead>
<tr>
<th>Provider type</th>
<th>Samoa</th>
<th>Solomon Islands</th>
<th>Tonga</th>
<th>Vanuatu</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Target FTE 2010</td>
<td>Target FTE 2050</td>
<td>Increase</td>
<td>Target FTE 2010</td>
</tr>
<tr>
<td>Psychiatrist</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Medical officer</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Nurses</td>
<td>20</td>
<td>22</td>
<td>3</td>
<td>54</td>
</tr>
<tr>
<td>Psychologist</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Psychosocial*</td>
<td>6</td>
<td>7</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>Other primary care</td>
<td>6</td>
<td>7</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
<td>50</td>
<td>6</td>
<td>121</td>
</tr>
<tr>
<td>Service type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outpatient care</td>
<td>19</td>
<td>21</td>
<td>2</td>
<td>52</td>
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<tr>
<td>Psychosocial care</td>
<td>4</td>
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<tr>
<td>Inpatient care</td>
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<tr>
<td>Total</td>
<td>44</td>
<td>50</td>
<td>6</td>
<td>121</td>
</tr>
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</table>

* Psychosocial providers include social workers and occupational therapists.
between the number of people with current mental disorders and the proportion who receive treatment (World Health Organization Western Pacific Region 2013). These predictions emphasise the need for Pacific countries to recognise and respond to this increasing burden on the health of their citizens.

Secondly, this demographic shift will precipitate a need for expansion of the mental health workforce to facilitate and continue to improve access to mental health treatment. Our modelling predicts that population changes will increase the target FTE staff required to deliver core mental health packages of care by more than 1,300 staff from 2010 to 2050. The majority of this growth in FTE staff is predicted to be for the provision of outpatient and psychosocial care services, consistent with recommendations for treatment in LMICs (World Health Organization 2008; Patel & Thornicroft 2009; Bruckner et al. 2011). Of the country-level predictions we were able to model, Papua New Guinea, with by far the largest population in the region, will require the greatest absolute increase in mental health workers by 2050. Vanuatu and the Solomon Islands require the largest proportional increases, with an almost doubling of target staffing requirements predicted, reflecting the large population growth expected for these countries over the next 40 years. In contrast, increases in FTE targets for other countries were more modest. Although the region overall will experience a surge in the disability burden of mental disorders from 2010 to 2050, this burden will disproportionately be carried by countries experiencing significant population growth and/or ageing.

Thirdly, compared to current mental health staffing levels obtained from the WHO Mental Health Atlas (World Health Organisation 2011), meeting even the 2010 FTE targets outlined in this paper would require a huge workforce increase for most countries and most types of health professionals. This finding is consistent with the priorities identified by countries in the Pacific region to scale up human resources in order to improve the number and capacity of the health workforce to deliver mental health interventions (World

<table>
<thead>
<tr>
<th>Country</th>
<th>Current Psychiatrist FTE (per 100,000)</th>
<th>Current Psychiatrist FTE (absolute numbers)</th>
<th>Target Psychiatrist FTE 2010 (per 100,000)</th>
<th>Target Psychiatrist FTE 2010 (absolute numbers)</th>
<th>% of target of current FTE</th>
</tr>
</thead>
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<tr>
<td>Fiji</td>
<td>0.2</td>
<td>2</td>
<td>1.8</td>
<td>15</td>
<td>17%</td>
</tr>
<tr>
<td>PNG</td>
<td>0.1</td>
<td>0.7</td>
<td>1.8</td>
<td>120</td>
<td>6%</td>
</tr>
<tr>
<td>Samoa</td>
<td>0.6</td>
<td>7</td>
<td>1.8</td>
<td>10</td>
<td>6%</td>
</tr>
<tr>
<td>Solomon</td>
<td>0.2</td>
<td>1</td>
<td>1.8</td>
<td>2</td>
<td>100%</td>
</tr>
<tr>
<td>Tonga</td>
<td>1.9</td>
<td>2</td>
<td>1.8</td>
<td>4</td>
<td>100%</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>0</td>
<td>0</td>
<td>1.8</td>
<td>17</td>
<td>0%</td>
</tr>
</tbody>
</table>

Note: Psychiatrists and psychologists are exemplified but do not represent the entire mental health workforce. *Current FTE rates are taken from the WHO Atlas 2011 (World Health Organisation 2011) and absolute FTE are estimated using 2010 population estimates.
There are few mental health specialists, such as psychiatrists and psychologists, available to provide mental health care in the Pacific region (World Health Organisation 2011). Increases in the size of the specialist mental health workforce are limited by a lack of local training opportunities, although the availability of post-graduate mental health courses in Fiji and Papua New Guinea is promising. Smaller countries in the Pacific may not have a sufficient population to sustain specialists, while mental health professionals working in isolation find it difficult to obtain support and engage in ongoing professional development activities (Deva & D’Souza 2012). These constraints reinforce the need to integrate mental health into primary care and existing health services.

The decentralization of mental health services, including community-based mental health services in Cook Islands, Fiji, Kiribati, Solomon Islands and Vanuatu, has been initiated with the intention of making mental health services more accessible and reducing stigma-related barriers to accessing mental health care. Yet, despite admirable progress towards improving recognition and service delivery for mental and substance use disorders over the past decade, significant gaps in resourcing and treatment coverage remain (World Health Organization Western Pacific Region 2013). Mental health expenditure remains low and available treatment continues to be concentrated in designated mental health facilities, with a significant lack of training and resources within the primary health care sector. The ongoing work of PIMHnet, the endorsement of mental health as a priority at the 10th Pacific Health Ministers Meeting (World Health Organization Western Pacific Region 2013), and the recent resolution by the WHO Regional Committee for the Western Pacific to endorse the WHO Mental Health Action Plan 2013–20 are important steps and provide opportunities to continue to build momentum for progress in scaling up mental health care.

The development of national mental health policies and plans, including measurable indicators of progress, is an important part of this process. In 2011, Vanuatu and Papua New Guinea already both had an official mental health policy and plan in existence (World Health Organisation 2011). With the support of PIMHnet, most Pacific Island countries are now drafting or have completed a mental health policy and plan (World Health Organization Western Pacific Region 2013). The WHO Mental Health Action Plan 2013–20 is also a key resource for planning of treatment for mental and substance use disorders. One of the indicators in the Action Plan is a 20% increase in service coverage for severe mental disorders by 2020 (World Health Organization 2013). This increase will be an important achievement for low- and middle-income countries. However, the low starting point for treatment coverage in the Pacific, significant population growth, and the human resource requirements outlined in this paper suggest that further improvements will be required beyond this initial target. Increasing the mental health workforce (Bruckner et al. 2011) and integrating mental health into primary health care (Collins et al. 2011; Eaton et al. 2011) are fundamental to this scaling up of services. In the Pacific a key strategy has been, and should continue to be, training of general health workers to provide mental health interventions. These strategies need to be supported by adequate financing to ensure that training and services can be appropriately expanded and sustained.

The WHO’s mhGAP programme provides health policy makers and service planners with clear guidance on scaling up care for mental and substance use disorders, with a focus on providing mental health training to general health professionals working in non-mental health settings. Representatives from a number of countries in the Pacific have participated in mhGAP training workshops, and the continued dissemination of mhGAP across the Pacific is a practical approach to achieve the expansion of evidence-based mental health care and integration into general health services. The mhGAP may play a key role in guiding scale-up of mental health resources and services in Pacific countries.
4.1 Limitations

The method used to project burden estimates relies on several assumptions, including that mental and substance use disorder prevalence rates and disability weights remain constant over time. Although the prevalence of mental disorders has been found not to have changed significantly (Whiteford et al. 2013), the prevalence of substance use disorders may be more variable due to external factors such as availability and legislation. As mental and substance disorders are highly disabling conditions with a relatively small directly-associated mortality, it was judged appropriate to present forecasts for disability burden only (YLDs). The estimation process of mental disorder YLD rates ascertained in GBD 2010 additionally carried some limitations which have been discussed elsewhere (Whiteford H.A. et al. 2013). Most notably, the lack of data from the Oceania region was problematic and estimates were in part derived from estimates of neighbouring countries. More epidemiological research and data is required from these regions.

Full details of the FTE modelling method and its limitations have been published elsewhere (Charlson et al. 2014). Briefly, the care packages used to estimate service requirements were developed globally for both low- and middle-income countries and may require modification to suit the Pacific context. Further, within the Pacific there is significant variation in the size and distribution of populations and the status of current health services, and therefore targets should ideally be tailored to the individual country context. Due to a lack of data, comorbidity adjustments between disorders were based on non-Pacific survey data, and were not made between bipolar disorder and schizophrenia and substance use disorders, although it is known that comorbidity is high. It is estimated that the likely effect of this limitation is small and any possible overestimation of the need for substance use treatment is likely to be offset by use of conservative prevalence estimates for alcohol use disorders.

We based our estimation of current FTE mental health staff on data from the WHO Mental Health Atlas. The Atlas only records mental health staff working in dedicated mental health facilities, which is likely to underestimate the number of health professionals providing mental health treatment. In contrast, the care packages used represent all mental health treatment requirements, including interventions provided by non-mental health specialists working in general health settings such as primary care. For this reason our comparison was limited to psychiatrists and psychologists, which although limited provides informative data. The FTE staff requirements outlined in this paper should not be interpreted as only staff working in specialist mental health settings or with dedicated mental health labels.

5. Conclusion

Pacific Island countries, often with external technical assistance, have made great progress in working towards improving mental health care in the region. However, continued efforts are needed to improve treatment coverage, train health staff, integrate mental health into general health services, and prepare for the increasing burden of mental disorders into the future. A substantial expansion of human resources is required to provide recommended packages of mental health care. To support this, adequate funding of training programs and services is essential. The sustained support of policy makers and an integrated and collaborative approach across the region need to be secured to achieve long term improvements in mental health services, and ultimately to increase the health of Pacific populations.

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References

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the New Zealand mental health survey, World Health Organization.

**Supporting Information**

Additional supporting information may be found in the online version of this article at the publisher’s web site.

**Table A1** List of countries within the GBD Oceania region.
**Table A2** Population data: 2010 and 2050 UN population by region.
**Table A3** Pooled prevalence of selected mental and substance use disorders in Oceania from GBD 2010—adjusted for comorbidity.
**Table A4** Treatment coverage targets and care packages (taken from Bruckner et al.).
**Table A5** Staffing ratios.
**Table A6** List of GBD mental and substance use disorders (Murray et al. 2012).
**Table A7** Estimated increase in mental and substance use disorders YLD, 2010–50.
**Table A8** Mental health workforce requirements for the Pacific region and selected countries (FTE per 100,000 population), year 2010 and 2050.