



Harnessing Digital Technologies to Enhance Youth Mental Health Service Capacity and Accessibility in Western Sydney

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INTRODUCTION

Western Sydney (WS) is a region experiencing rapid population growth, with nearly 1.1 million residents and an anticipated annual growth rate of 1.75% in the coming years. It is notably diverse socio-demographically, with over half (52.6%) of its residents born outside Australia and approximately 60% (58.2%) speaking a language other than English at home—the highest proportion across all Primary Health Network (PHN) catchments in Australia. WS encompasses communities with a wide range of IRSD index scores, from the most disadvantaged to the least disadvantaged. The region also has a high concentration of young people, with over one-third (33.5%) of its population under the age of 25, a proportion exceeding the state average for NSW.

There is a concerning upward trend in psychological distress and mental health disorders among young people. This increasing demand for specialised mental health (MH) services is compounded by resource constraints and workforce shortages. For example, in NSW, 20% of psychiatrists are over 50 years old, foreshadowing a significant wave of retirements within the specialised mental health workforce.

PROBLEM STATEMENT

Previous research has demonstrated that timely access to high-quality MH services has a significant impact on individual MH outcomes, including improved recovery rates, enhanced treatment engagement, and reduced emergency department (ED) presentations. Traditional service delivery models, such as specialised MH services, community-based programs, and primary care interventions, have been shown to contribute to a range of positive outcomes for young people.

Moreover, the emergence of online MH services and technology-enabled care coordination has provided growing evidence of the effectiveness of digital interventions, including MH literacy initiatives and internet-based cognitive behavioural therapy. However, there remains a limited understanding of how these digital solutions can work in synergy with traditional MH services to achieve sustainable, long-term improvements in youth MH outcomes, particularly under differing regional trajectories of service capacity growth. Additionally, the integration of digital interventions with conventional services has not been comprehensively explored within the context of structural and socioeconomic uncertainties impacting youth MH.

This study aims to address these gaps by investigating the potential of digital interventions to sustain and enhance youth MH outcomes across various service capacity growth scenarios.

APPROACH

As part of the *Right care, first time, where you live* research program, the University of Sydney, in partnership with WSPHN, developed a System Dynamics (SD) model for the WSPHN catchment area. This model, created using a participatory approach, aims to support regional youth MH service planning. It serves as a digital decision-support tool, enabling the assessment of various strategies to improve population-level youth MH outcomes in the region.

Focusing on individuals aged 15–24, the model provides projections for the period 2025–2035. It incorporates key subsystems, including social determinants (such as education, labour force participation, homelessness, and family and domestic violence), psychological distress, suicidal behaviours, and youth MH services.

RESULTS

Simulation results indicate that while increasing referrals to online MH services and implementing technology-enabled integrated care are insufficient on their own without adequate specialised MH service capacity, these interventions can effectively amplify the impact of increased specialised MH services. Additionally, they can serve as interim solutions while investments are made to expand the workforce for long-term sustainability.

The results suggest that doubling the growth rate of specialised MH services, headspace, and online services together could lead to significant improvements in youth MH outcomes within the WSPHN catchment. Compared to a baseline scenario that follows recent trends in service capacity growth, this approach is projected to substantially reduce cumulative indicators over 2025 to 2035, including years of being in moderate to very high psychological distress with disorders, MH-related ED presentations, and self-harm hospitalisations. Furthermore, integrating digital interventions with increased growth in specialised services enhances these outcomes compared to the baseline scenario.

DISCUSSION

The findings of this study underscore the potential of digital technologies to complement traditional youth MH services, providing an effective response—both interim and long-term—to the slow and unpredictable growth of the specialised MH workforce. By improving accessibility, scalability, and efficiency, digital interventions play a vital role in addressing service shortages and rising MH demands. However, the study also emphasises the importance of a balanced approach: while digital solutions offer significant support, their full potential is realised when integrated with expanded specialised services.

KEYWORDS

youth mental health, public health policy, mental health services, system dynamics, Western Sydney.