Charles Sturt University

Evaluation of the Human Nature Program: Final Report August 2025

Rural Health Research Institute

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Acknowledgement of Country

We respectfully acknowledge the traditional owners and custodians of the lands on which we live and work together. Charles Sturt University and its staff pay respect to Elders within First Nations communities and acknowledge the continuity of cultures, languages, leadership and knowledge systems.

We acknowledge First Nations peoples' continuous connection to Country, recognising the unique, diverse identities and cultures of peoples in our communities, regions and nation. As such, we value the collaboration to strongly position First Nations peoples in our university, through languages, leadership, cultures, knowledges, research and ceremonies.

About the Rural Health Research Institute

The Charles Sturt University Rural Health Research Institute (RHRI) is committed to advancing health and wellbeing in regional, rural and remote communities across Australia and internationally. Through high-quality research and strong community partnerships, RHRI aims to address the unique challenges faced by rural populations.

By focusing on practical, evidence-based solutions, RHRI ensures that its research leads to meaningful, lasting improvements in healthcare. Findings are designed to be adaptable and scalable, benefiting rural and remote communities across Australia and beyond.

The RHRI upholds the values of Charles Sturt University.

Yindyamarra Winhanganha - The wisdom of respectfully knowing how to live well in a world worth living in

CONTENTS

INTRODUCTION

Mental distress accounts for nearly half of the global burden of disease in young people under the age of 25 years (1). In Australia, one in five (20%) young people aged 11-17 report high or very high levels of psychological distress (2). Mental distress has serious and wide ranging impacts on participation in usual life activities that can be long-term if unaddressed (3). Effective ways to prevent or treat mental distress that are tailored to both the developmental stage of a person and their specific condition are required to change the trajectory and potential outcomes of mental distress (1). However, existing service provision in Australia predominantly focuses on young people with either initial care needs or severe/complex presentations, leaving a cohort of young people, known as the "missing middle," under-serviced (4, 5). This study used routine data to examine the outcomes from a service designed specifically to address this gap in support. Human Nature, a charity in Northern NSW, Australia, delivers person-centred mental health support services to young people with moderate intensity support needs in non-clinical settings. The effectiveness of the Human Nature program has not been previously examined.

NEEDS OF YOUNG PEOPLE IN MENTAL DISTRESS FOR TAILORED ENVIRONMENTS

Interest in the impact of therapeutic environments on outcomes gained momentum in the 1960s, following Goffman's critical examination of institutional settings. (6). Research on how the environment (including design, space, furnishings, feel, approach of the therapists and understanding of client needs and preferences) supports or interferes with therapeutic outcomes has come and gone over the years since (7-9). However, the concept of a therapeutic environment being important in the outcomes of interventions, treatment and programs has remained (7, 10). Most studies of therapeutic environment factors have examined the physical space (9, 11). This includes the layout of offices, access to them (12) and how the therapist and client interact with each other within the space (13). Few studies have examined the preferences and perceptions of young people for a therapeutic space. One study found a physical environment that addresses privacy, comfort and sensory factors such as temperature, lighting and sound has been identified as critical by young people with trauma experiences (10). A study of service providers reported difficulties engaging young people with complex and chronic problems including for example PTSD, experiences of abuse and violence and homelessness in therapeutic interventions delivered in traditional clinic settings (14). Further, formal and clinical settings have been identified as anxiety provoking and can be intimidating for some people (15). However, frequently the problem is identified as the young person’s inability to engage rather than locating the need for change in the environment or therapeutic approach (16). Delivering programs and services in non-clinical settings including outdoors is one way constraints of built environments can be addressed.

RATIONALE FOR A NATURE FOCUSED APPROACH

There is a growing body of literature supporting nature-focused programs as a non-traditional and effective mental health interventions. Nature based programs can reduce stress, anxiety and depression, improve

memory, cognition, and attention, increase confidence, feelings of safety and sense of empowerment and purpose (17-22). Nature-based programs have been found to improve self-esteem, mood, and social functioning among adolescents (23). Similarly, nature exposure has been associated with improvements in attention deficit and hyperactivity disorder symptoms in young people, and resilience and health-related quality of life (24). A meta-synthesis of talking therapy conducted outdoors found that the environment enriched the therapeutic relationship and positioned engagement with nature as a restorative force with measurable mental health benefits (25). Although the benefits of nature-based and outdoor programs are well-documented, their implementation has often been hindered by organisational concerns. These include perceived risks associated with less controlled environments and limited awareness of the supporting evidence base. As a result, such programs are most commonly found in private practice or user-pays sectors (24, 25).

HUMAN NATURE'S APPROACH TO NATURE AS A THERAPEUTIC ENVIRONMENT

Using trained mental health clinicians Human Nature aims to meet young people where they are—psychologically, emotionally, developmentally, and physically. Support is provided in a variety of non-clinical settings where young people are most likely to feel safe and comfortable. These settings may include the home, school, or local cafes. Wherever possible, the team encourages outdoor activity, recognising that being in nature can help young people open up and connect—with their peers, with themselves, and with the therapeutic support available.

Human Nature Adventure Therapists apply their clinical expertise in relaxed, nature-based environments using a trauma-informed approach. This method helps to overcome many of the barriers that can prevent engagement in traditional clinical settings. Young people are given autonomy over their sessions, choosing what they want to do and where they want to do it, reflecting the deliberate operationalising of person-centred care. Human Nature services are free and long-term.

The eligibility criteria for Human Nature participants is –

- Aged between 14 and 18 years
- living in the Far North Coast region of NSW
- presenting with significant challenges (e.g. trauma, substance use problems, mental health issues, social problems, behavioural difficulties or family conflict/breakdown)
- experiencing barriers to engaging with support in clinical settings.

Through engaging young people in nature-based activities, the Human Nature program aims to improve psychological well-being and overall functioning for young people who have been unable to get support from traditional mental health services.

The aims of this study were to 1. evaluate the effectiveness of the Human nature program in improving wellbeing and self-reported satisfaction with various life domains including social relationships, educational engagement, and personal development and 2. identify any patterns or correlations between participant characteristics (e.g., age, gender, socioeconomic status) and treatment outcomes.

METHODS

DATA SOURCES, STUDY DESIGN, ANALYTIC SAMPLE

This is a retrospective cohort study that relies on routinely collected administrative data from the Human Nature program. Given the real-world, pragmatic nature of the program, implementing a control group was not feasible without compromising program delivery. Therefore, only pre- and post-program data were compared to estimate the program's effect on the outcome variables.

The study participants include young people aged 14–18 years who have received at least one occasion of service from Human Nature over the two-year period (January 2023 to December 2024). Only existing data were analysed, without manipulation of the study environment or variables. Baseline data collected at the first session were considered baseline data, while all follow-up session data after the first session were considered follow-up data. The latest available follow-up data were regarded as the endline survey of this study. A total of 106 young people were included in the analysis with at least one baseline and endline data points.

MEASUREMENTS

OUTCOMES*:* The Outcome Rating Scale (ORS) typically measures the impact of the therapeutic relationship, and the My Mind Star (MMS) assesses different domains of mental health and wellbeing, which were the two key outcomes of interest in this study.

A) ORS: Measured symptom distress, interpersonal well-being, social role functioning, and overall well-being. The ORS is a brief, session-by-session tool used to assess changes in life functioning resulting from therapeutic intervention. It uses four visual analogue scales (10 cm lines) measuring: Personal distress (individual well-being), Interpersonal well-being (relationships), Social role (work/school and external relationships) and Overall well-being. Each scale is scored from 0 to 10; the total score ranges from 0 to 40. The cut-off score for Ages 13–17 is 28, and for Ages 18+is 25. The ORS is designed for individuals aged 13 and older; it is accessible at a 13-year-old reading level.

B) MMS: is a strengths-based, trauma-informed tool to support young people in identifying and tracking progress across key areas of mental health and wellbeing. It is used collaboratively between practitioners and individuals to guide conversations, assess progress, and inform support planning. MMS tracks changes in satisfaction with seven outcome areas including Feelings and emotions (Managing difficult emotions and mental health) Healthy lifestyle (Food, sleep, physical activity, and health management),

Where you live (Stability, safety, and home environment), Friends and relationships (Support networks, trust, and bullying), School, training and work (Engagement and support in education or employment), How you use your time (Enjoyable and safe activities, avoiding risky behaviours) Self-esteem (Confidence, sense of belonging, and self-wort). Each domain (outcome areas) was rated collaboratively using a visual star chart, based on the following stages: 1=stuck or unsafe, 2=talking about it, 3=believing and taking action, 4=learning what works, and 5=managing well.

OTHER VARIABLES: This study included a range of variables associated with socio-demographic factors, including age, gender, indigenous status, Culturally and Linguistically Diverse (CALD) status, and living arrangements, as well as neighbourhood socio-economic status. It also included psychosocial and functional vulnerabilities, such as participants having mental health concerns, varying abilities (e.g. neurodiversity), family and domestic violence, sexual violence, and school disengagement.

STATISTICAL ANALYSIS

A descriptive analysis was conducted to understand the baseline characteristics of the Human Nature study. Depending on the type of variable, we used either chi-square tests or t-tests (with non-parametric alternatives where applicable) to compare the outcome variable across groups.

The primary outcomes of interest in this study were improvements in life functioning measured by the ORS score, as well as seven mental health and well-being outcomes measured by the MMS scale. Higher scores on these scales were indicative of a higher level of life satisfaction, whereas an MMS scale >3 (4 or 5) for a specific domain represents that things are mostly positive for that domain.

Average scores were compared between baseline and endline to evaluate changes, and considering the outcome measure of ORS score, a linear regression model was used to calculate effect sizes, adjusting for potential confounding factors. Furthermore, proportion of MMS scale >3 across different mental and wellbeing domain including 'feeling and emotions', 'healthy lifestyle', 'where you live', 'friends and relationships', 'school, training and work', 'how you use your time' and 'self-esteem', were compared between baseline and endline to understand the changes in those mental and wellbeing outcomes. Considering the binary nature of the mental and well-being outcomes measures in MMS (>3=1 vs else=0), we used logistic regression models to calculate effect sizes, adjusting for potential confounding factors. Due to repeated measures data, panel liner and logistic regression models were used to adjust for the within-subject correlation. Initially, simple models were fitted considering only outcome and time (baseline vs endline) variables. Subsequently, adjusted models were fitted by incorporating some potential covariates, including age, sex, indigenous status, CALD, LGBTQIA+ living arrangement, and SEIFA into the model. The significance of effect size is derived from the beta coefficients of the time variable for ORS score, whereas it was the odds ratio (OR) for MMS scale (>3) for both the unadjusted and adjusted models, considered at a 95% confidence interval. All the data were analysed using STAT 18.5.

ETHICS

The Human Research Ethics Committee from Charles Sturt University approved the study (H25114). A waiver of consent was used for access to the data, as Human Nature clients had not consented to their data being used specifically for this research. However, in line with organisational processes, staff at Human Nature had obtained consent from young people and/or their caregivers to use treatment data for evaluation and research purposes.

RESULTS

PROGRAM PARTICIPANTS CHARACTERISTICS

About 70% of participants were early adolescents (<15 years), and 52% were male. Just over one-quarter (27.36%) identified as Aboriginal and Torres Strait Islander, while 11.32% and 6.6% were identified as LGBTQIA+ and CALD, respectively. A significant number of adolescents reported living in unstable conditions or in a single-parent household (46.22%) and residing in a lower socioeconomically disadvantaged community (42.45%) (Table 1).

TABLE 1: PARTICIPANT PROFILE

Total sample: N = 106	**% (n)**
Age	
– <15	70.75(75)
– 15-19	29.25(31)
Gender	
– Male	51.89(55)
– Female	44.34(47)
– Other	3.77(4)
Indigenous status	
– No	72.64(77)
– Yes	27.36(29)
CALD	
– No	93.4(99)
– Yes	6.6(7)
LGBTQIA+	
– No	88.68(94)
– yes	11.32(12)
Living with	
– Family/extended family	30.19(32)
– Single parent	31.13(33)
– Unstable living	15.09(16)
– Unknown	23.58(25)
Neighbourhood socio-economic status	
– Lowest two quintile (Q1&2)	42.45(45)
– Other (Q3-Q5)	57.55(61)

Looking at the participants ' psychosocial and functional vulnerabilities, we found that more than half of the study participants (52.83%) reported multiple vulnerabilities, meaning they experienced more than one vulnerability (Table 2). The highest proportion of vulnerability was exposed to family and domestic violence (63.21%), followed by mental health concern (42.45%), sexual violence (27.36%), disability (17.92%), and school disengagement (10.38%) (Table 2).

TABLE 2: PSYCHOSOCIAL AND FUNCTIONAL VULNERABILITIES AMONG PARTICIPANTS

N=106	**% (n)**
Mental health concern	
– No	57.55(61)
– Yes	42.45(45)
Disability (e.g. neurodiversity)	
– No	82.08(87)
– Yes	17.92(19)
Disclosed family and domestic violence (FDV)	
– No	36.79(39)
– Yes	**63.21(67)**
Disclosed sexual violence	
– No	72.64(77)
– Yes	27.36(29)
School disengagement reported	
– No	89.62(95)
– Yes	10.38(11)
Multiple vulnerabilities	
– None	9.43 (10)
– Only one	37.74 (40)
– Multiple (2 to 4)	**52.83 (56)**

PROGRAM ENGAGEMENT

Among the program participants, the majority (about 63%) of them were referred to the program by either parents or carer (30.19%) or school staff (33.02%). On average, participants attended 26 sessions, with one-third of them having shorter engagements (i.e., attending fewer than 18 sessions) (Table 3.1). Most participants remained engaged with the program, whereas approximately 35% of participants left the program, mainly due to achieving their goals (24.32%), or exiting to Elev8 (18.92%), or referred elsewhere (21.62%). However, approximately 30% of participants left the program, either of their own decision or because they migrated to other regions (Table 3.1).

TABLE 3.1: PROGRAM ENGAGEMENT

N=106	% (n)
Participant referred to the program by:	
– Parents or carers	30.19(32)
– School staff	33.02(35)
– Govt. agency	7.55(8)
– NGO and others	16.98(18)
– Unknown	12.26(13)
Mean number of sessions attended	26 (SD = 14.72)
Session attendance level	
– Shorter (5-17 sessions)	33.96(36)
– Medium (18-28 sessions)	33.02(35)
– Long (29-79 sessions)	33.02(35)
Still engaged with Human Nature.	
– No	34.91(37)
– Yes	65.09(69)
Reason for disengagement: N=37	
– Achieved goal	24.32(9)
– Client exited	18.92(7)
– Exited to Elev8	18.92(7)
– Client migrated	10.81(4)
– Referred elsewhere	21.62(8)
– Unknown	5.41(2)

The proportion of participants with shorter-term engagements varied across different participant groups. For example, the proportion of shorter-term engagement was 58.33% among those who identified as LGBTQA+, whereas it was 30.85% among those who didn't. Similarly, the proportion of shorter-term attendance was 52.62% for those who reported disability, whereas it was 29.89% for those who did not report disability (Table 3.2). However, statistically significant differences were observed in the proportion of shorter-term engagement only among the different groups based on living status. Adolescents living with their family or extended family had a higher proportion of shorter-term engagement (59.38%) compared to other living condition groups (P = 0.003) (Table 3.2).

TABLE 3.2: PROPORTION OF PARTICIPANTS WHO HAD SHORTER-TERM ENGAGEMENT (<18 SESSIONS) BY DEMOGRAPHIC AND OTHER CHARACTERISTICS

Characteristics	shorter-term engagement (<18 sessions)	
	% (n)	p-value
Age		0.507
– <15	32(24)	
– 15-19	38.71(12)	
Gender		0.206
– Male	30.91(17)	
– Female	40.43(19)	

Characteristics	shorter-term engagement (<18 sessions)	
	% (n)	p-value
– Other	0(0)	
Indigenous status		0.395
– No	36.36(28)	
– Yes	27.59(8)	
CALD		0.180
– No	32.32(32)	
– Yes	57.14(4)	
LGBTQIA+		**0.058**
– No	30.85(29)	
– Yes	58.33(7)	
Living with		**0.003**
– Family/extended family	59.38(19)	
– Single parent	27.27(9)	
– Unstable living	12.5(2)	
– Unknown	24(6)	
Neighbourhood socio-economic status		0.476
– Lowest two quintiles (Q1&2)	37.78(17)	
– Other (Q3-Q5)	31.15(19)	
Mental health concern		0.476
– No	31.15(19)	
– Yes	37.78(17)	
Disability (e.g. neurodiversity)		**0.058**
– No	29.89(26)	
– Yes	52.63(10)	
Disclosed FDV		0.748
– No	35.9(14)	
– Yes	32.84(22)	
Disclosed sexual violence		0.596
– No	32.47(25)	
– Yes	37.93(11)	
School disengagement reported		0.859
– No	33.68(32)	
– Yes	36.36(4)	

PROGRAM EFFECT

The Participants' Outcome Rating Scale (ORS) score was significantly improved at the endline compared to its baseline condition. The mean (SD) ORS score increased from 22.01 (8.1) at baseline to 29.52 (8.1) at endline ($p < 0.001$) (Figure 1). The program effect remained statistically significant after adjusting for potential confounders, including age, sex, indigenous status, CALD, LGBTQIA+ living arrangement, and SEIFA. Our adjusted regression model showed that the ORS score had a 7.5-unit higher score at the endline compared to its baseline score ($\beta = 7.48$, 95% CI, 5.67-9.28) (Figure 1 and Table 4.1).

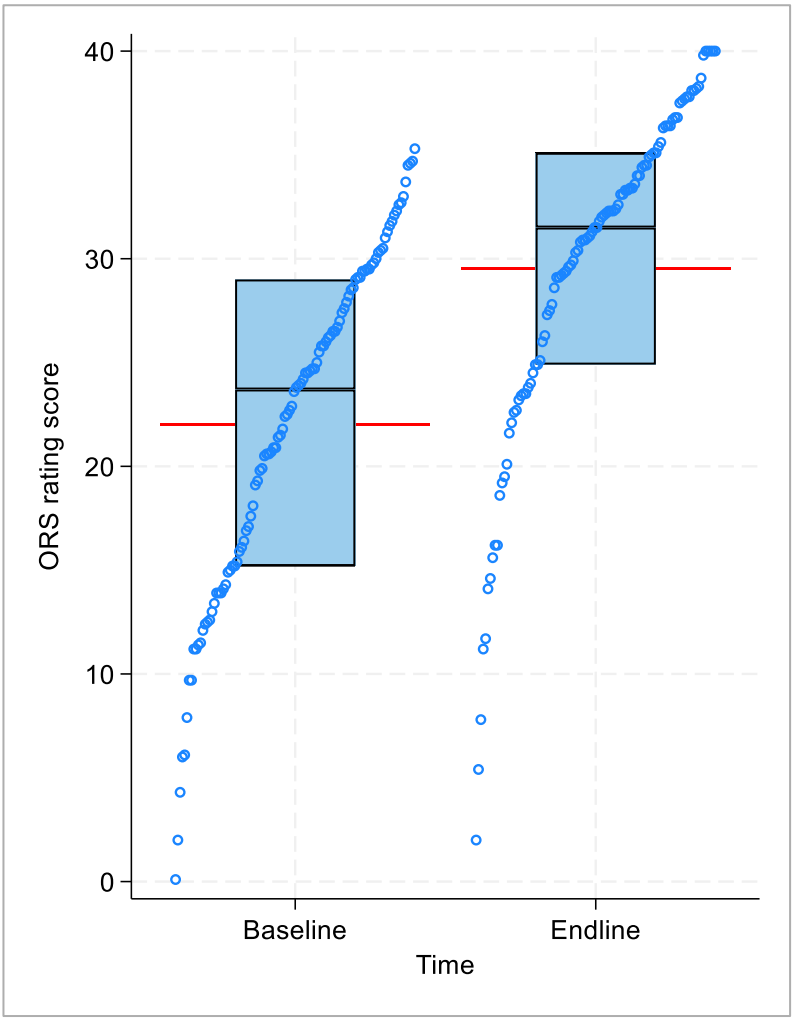

FIGURE 1: DISTRIBUTION OF ORS RATING SCORES AT BASELINE AND ENDLINE

TABLE 4.1: THE EFFECT OF HUMAN NATURE INTERVENTION ON ORS RATING SCORE; N=106

	ORS Rating score	Effect: β (95% CI) [p-value]	
Time	**Mean (SD)**	**Unadjusted**	**Adjusted***
Baseline	22.01 (8.1)	--	--
Endline	29.52 (8.1)	7.5 (6.0, 9.3) **[<0.001]**	7.48 (5.67, 9.28) **[<0.001]**

*Adjusted by socio-demographic characteristics such as age, sex, indigenous status, CALD, LGBTQIA+, Socio-Economic Indexes for Areas (SEIFA) and living arrangement

β: rate of change (effect size)

CI: Confidence interval

Examining the effect of the My Mind Star (MMS) scale across various mental health and well-being domains, we found that the proportion of participants with a MMS scale >3 out of five (meaning things are mostly good or OK) has significantly improved for all domains at the endline compared to the baseline data,

indicating a substantial improvement in the mental health and well-being of the study participants (Figure 2). For example, the proportion of MMS scale>3 for 'feeling and emotions' domain was 23.58% at baseline, which increased to 56.60% at endline (P = <0.001). Similarly, the increased proportion of MMS scale>3 was observed for other domains of 'healthy lifestyle' (30.19% vs 50.0%), 'where you live' (50.0% vs 70.75%), 'friends and relationships' (47.17% vs 62.26%), 'school, training and work'(18.87% vs51.89%), 'how you use your time' (26.42% vs 53.77%) and 'self-esteem'(31.13% vs 59.43%) at endline compared to its baseline estimate (Figure 2 and Table 4.2).

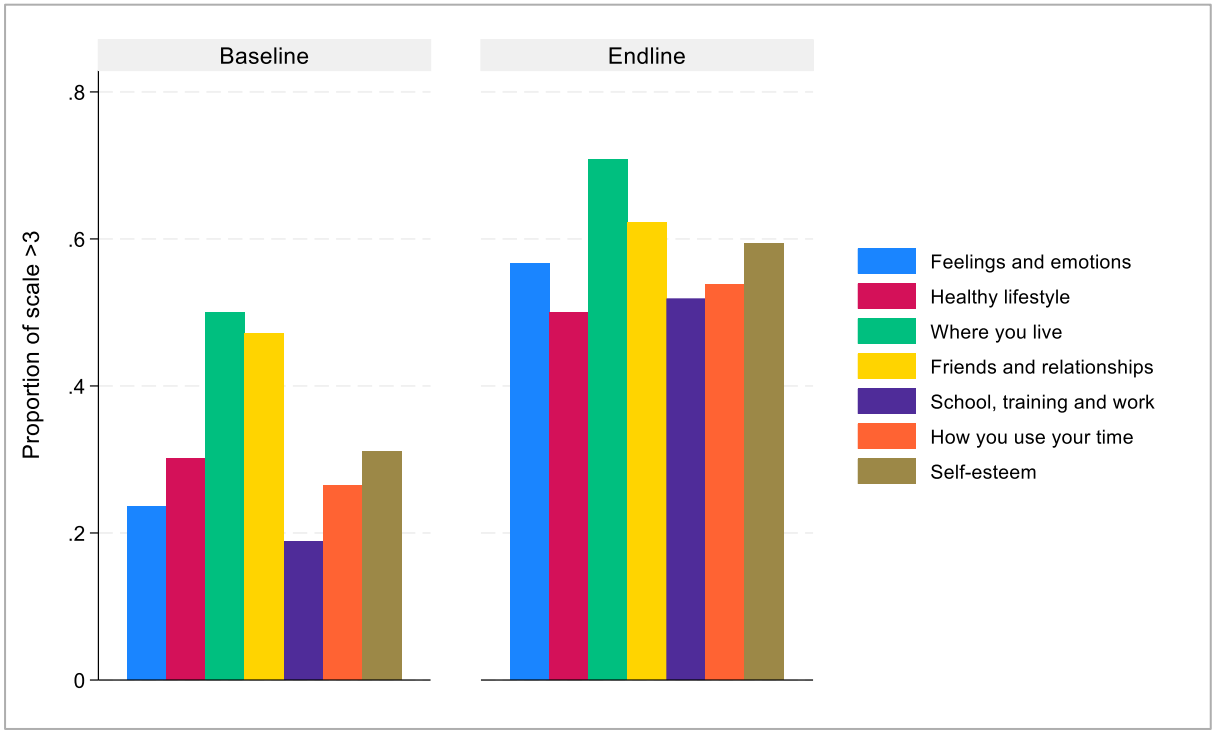

FIGURE 2: PROPORTION OF MIND STAR SCALES >3 AT BASELINE AND ENDLINE ACROSS DIFFERENT DOMAINS.

The program effect remained statistically significant on all mental health and well-being domains after adjusting for potential confounders. Our adjusted regression model showed that 'self-esteem' domain had the largest estimated odd ratio (AOR=6.99, 95% CI, 2.74, 17.83) among other domains, suggesting a stronger association with the program engagement, followed by other domain of 'how you use your time' (AOR=6.72, 95% CI, 2.63, 17.15), 'school, training and work'(AOR=5.50, 95% CI, 2.82, 10.7), and 'feelings and emotions' (AOR=5.34, 95% CI, 2.52, 11.3) (Table 4.2).

TABLE 4.2: THE EFFECT OF HUMAN NATURE INTERVENTION ON THE MIND STAR SCALE ACROSS DIFFERENT DOMAINS; N=106

	Mind Star scales >3	Effect (95% CI) [p-value]	
Time	**% (n)**	**Unadjusted (OR)**	**Adjusted (AOR)***
Feelings and emotions			
– Baseline	23.58 (25)	Ref	Ref
– Endline	56.60 (60)	5.38(2.53, 11.43) [<0.001]	**5.34(2.52, 11.3) [<0.001]**
Healthy lifestyle			
– Baseline	30.19 (32)	Ref	**Ref**
– Endline	50.0(53)	5.34(2.52, 11.3) [<0.001]	**3.09(1.52, 6.28) [0.002]**
Where you live			
– Baseline	50.0 (53)	Ref	**Ref**
– Endline	70.75 (75)	3.44(1.64, 7.23) [0.001]	**3.43(1.63, 7.19) [0.001]**
Friends and relationships			
– Baseline	47.17 (50)	Ref	Ref
– Endline	62.26 (66)	2.00(1.1, 3.64) [0.024]	**2.00(1.1, 3.65) [0.023]**
School, training and work			
– Baseline	18.87 (20)	Ref	Ref
– Endline	51.89(55)	5.38(2.53, 11.43) [<0.001]	**5.50(2.82, 10.7) [<0.001]**
How you use your time			
– Baseline	26.42 (28)	Ref	Ref
– Endline	53.77 (57)	6.80(2.66, 17.38) [<0.001]	**6.72(2.63, 17.15) [<0.001]**
Self-esteem			
– Baseline	31.13 (33)	Ref	Ref
– Endline	59.43 (63)	7.00(2.74, 17.86) [<0.001]	**6.99(2.74, 17.83) [<0.001]**

*Adjusted by socio-demographic characteristics such as age, sex, indigenous status, CALD, LGBTQIA, SEIFA and living arrangement

OR: Odds ratio

CI: Confidence interval

DISCUSSION

The results of this study provide compelling evidence for the effectiveness of the Human Nature program in improving mental health and wellbeing among adolescents with moderate intensity support needs. The program's nature-based, person-centred, and trauma-informed approach appears to offer a viable alternative to traditional clinical settings, particularly for young people who face barriers to engaging with conventional mental health services.

PROGRAM REACH AND PARTICIPANT PROFILE

The demographic profile of participants highlights the program's success in reaching vulnerable and underserved populations. A significant proportion of participants were early adolescents, male, and from socioeconomically disadvantaged backgrounds. Notably, 27% identified as Aboriginal and Torres Strait Islander, and over half reported multiple psychosocial vulnerabilities, including exposure to family and

domestic violence (63%) and mental health concerns (42%). ***These figures underscore the importance of tailored interventions that address the complex needs of young people who are often excluded from mainstream services.***

ENGAGEMENT PATTERNS AND INFLUENCING FACTORS

Engagement levels varied across demographic groups, with shorter-term participation more common among LGBTQIA+ youth and those with disabilities. Interestingly, adolescents living with family or extended family were more likely to have shorter engagements, suggesting that living arrangements may influence the duration and intensity of service use. While these differences were statistically significant in some cases, they warrant further exploration to understand the underlying mechanisms and to inform strategies for sustained engagement.

THERAPEUTIC IMPACT AND OUTCOME IMPROVEMENTS

The most striking finding is the ***significant improvement in participants' wellbeing as measured by both the Outcome Rating Scale (ORS) and the My Mind Star (MMS) tool.*** The ORS scores increased from a mean of 22.01 at baseline to 29.52 at endline, surpassing the clinical cut-off and indicating meaningful therapeutic gains. These improvements remained robust after adjusting for confounding variables, suggesting that the program's impact is consistent across diverse demographic groups.

Similarly, the MMS results showed substantial gains across all seven wellbeing domains. The most pronounced improvements were observed in self-esteem (AOR = 6.99), use of time (AOR = 6.72), and educational engagement (AOR = 5.50). These findings align with previous literature on the benefits of nature-based interventions, which have been shown to enhance emotional regulation, social functioning, and cognitive engagement.

NATURE AS A THERAPEUTIC ENVIRONMENT

The success of Human Nature reinforces the value of non-clinical, nature-based settings in fostering therapeutic relationships and promoting mental health recovery. The program's emphasis on autonomy, flexibility, and outdoor engagement appears to mitigate the anxiety and stigma often associated with traditional clinical environments. This aligns with broader evidence suggesting that nature exposure can reduce stress, improve mood, and enhance resilience.

LIMITATIONS AND FUTURE DIRECTIONS

While the study's observational design and lack of a control group limit causal inference, the use of repeated measures and adjusted analyses strengthens the validity of the findings. Future research could benefit from incorporating a matched comparison group or longitudinal follow-up to assess the sustainability of outcomes. Additionally, qualitative data on participant experiences could provide deeper insights into the mechanisms driving change.

IMPLICATIONS FOR PRACTICE AND POLICY

The findings have important implications for mental health service delivery, particularly in rural and regional contexts. Human Nature's model demonstrates that effective, inclusive, and culturally responsive care can be delivered outside traditional clinical frameworks. Scaling such programs could help address the "missing middle" in youth mental health services and reduce the burden of untreated distress among adolescents.

CONCLUSION

This study demonstrates that the Human Nature program offers a promising and effective model for supporting young people with moderate intensity mental health needs, particularly those who fall into the "missing middle" of service provision. By delivering trauma-informed, person-centred care in nature-based and non-clinical settings, Human Nature successfully engages adolescents who may otherwise struggle to access traditional mental health services.

The program achieved statistically significant improvements in symptom distress, interpersonal wellbeing, social role functioning, and overall life satisfaction. Gains were observed across all domains of the My Mind Star wellbeing scale, with particularly strong effects in self-esteem, time use, and educational engagement. These outcomes were consistent across diverse demographic groups, including Aboriginal and Torres Strait Islander youth, LGBTQIA+ participants, and those living in socioeconomically disadvantaged communities.

Importantly, the program's flexible and relational approach appears to foster sustained engagement and therapeutic alliance, even among young people with complex psychosocial vulnerabilities. While further research is needed to explore long-term outcomes and comparative effectiveness, the findings support broader implementation of nature-based mental health interventions as a viable strategy to address service gaps and promote youth wellbeing.

Human Nature's model contributes to a growing evidence base advocating for innovative, inclusive, and contextually responsive mental health care. Its success underscores the need for continued investment in alternative service models that prioritise accessibility, cultural safety, and the lived experiences of young people.

CONTRIBUTIONS

In-Kind Contributions from Charles Sturt University – Rural Health Research Institute staff time provided (Snowdon – Project lead, Huda – data analysis and reporting. Allan & Dalton – project support, data analysis interpretation and reporting).

APPENDIX 1: POLICY BRIEF: ENHANCING YOUTH MENTAL HEALTH THROUGH NATURE-BASED INTERVENTIONS

Title: Bridging the "Missing Middle" in Youth Mental Health: Evidence from the Human Nature Program

Executive Summary

Young people with moderate mental health support needs—often referred to as the "missing middle"—face significant barriers to accessing appropriate care in Australia. The Human Nature program, a nature-based, trauma-informed mental health service operating in Northern NSW, demonstrates strong outcomes in improving wellbeing among adolescents aged 14–18. This brief outlines key findings from a recent evaluation and provides policy recommendations to support the expansion of innovative, non-clinical mental health services.

Key Findings

- **Improved Wellbeing:** Participants showed significant improvements in symptom distress, interpersonal relationships, social role functioning, and overall wellbeing (ORS score increased from 22.01 to 29.52; $p < 0.001$).
- **Enhanced Life Satisfaction:** Across seven domains of the My Mind Star scale, participants reported substantial gains, particularly in self-esteem (AOR = 6.99), time use (AOR = 6.72), and educational engagement (AOR = 5.50).
- **Inclusive Reach:** The program effectively engaged vulnerable populations, including Aboriginal and Torres Strait Islander youth (27%), LGBTQIA+ (11%), and those from socioeconomically disadvantaged communities (42%).
- **Sustained Engagement:** Most participants attended an average of 26 sessions, with 65% remaining engaged throughout the program.

Policy Implications

1. **Expand Nature-Based Mental Health Services:**
    - Support the integration of nature-focused interventions into mainstream youth mental health services.
    - Fund pilot programs in other regions to replicate Human Nature's model.
2. **Address the "Missing Middle":**
    - Allocate targeted funding for services that cater to young people with moderate support needs.
    - Develop flexible service models that operate outside traditional clinical settings.

3. **Support Trauma-Informed, Person-Centred Care:**
    - Promote training for mental health professionals in trauma-informed and youth-centred approaches.
    - Encourage service designs that prioritise autonomy, safety, and cultural responsiveness.
4. **Invest in Long-Term, Free Access Programs:**
    - Ensure programs are free at the point of access to reduce financial barriers.
    - Provide sustained funding to support long-term engagement and continuity of care.

Recommendations

- **Federal and State Governments** should include nature-based interventions in youth mental health strategies.
- **Primary Health Networks (PHNs)** should commission services that reflect Human Nature's approach.
- **Educational Institutions** should partner with community-based programs to support students with moderate mental health needs.
- **Research Bodies** should fund longitudinal studies to assess the long-term impact and scalability of nature-based models.

Conclusion

The Human Nature program offers a scalable, evidence-based solution to a critical gap in youth mental health care. Its success underscores the need for policy innovation that embraces non-traditional, inclusive, and therapeutic environments. Investing in such models can transform outcomes for young people who are currently underserved by existing systems.

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