

THE INFLUENCE OF HUMAN SUPPORT ON THE EFFECTIVENESS OF AN ONLINE MENTAL WELLBEING INTERVENTION

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ABSTRACT

PURPOSE: To compare the influence of three modes of human support on the outcomes of an online, lifestyle-focused mental wellbeing intervention.

BACKGROUND: There is a need for efficacious lifestyle interventions to promote the mental wellbeing of both healthy and clinical cohorts. Evidence regarding the usefulness of adding human support (i.e. guidance) to improve the outcomes of online interventions for clinical populations is mixed [1-3], however little is known about healthy cohorts.

METHODS: A total of 458 participants self-selected to participate in a 10-week online, multimodal lifestyle intervention that addressed mental wellbeing. The participants were randomized into three groups, differentiated by support mode: standard - automated emails only (S); standard plus personalized SMS messages (S+pSMS); standard plus videoconference support (S+VCS). At pre- and post-intervention, the participants completed the following measures: the 'mental health' and 'vitality' sub-scales from the Short Form Health Survey (SF-36); Depression Anxiety and Stress Scales (DASS-21); Satisfaction With Life (SWL) scale; and Flourishing scale.

RESULTS: A total of 320 participants (S, n=103; S+pSMS, n=114; S+VCS, n=103) completed the study. Significant within-group changes were recorded from pre- to post-intervention in all groups for every outcome measure ($P<0.001$). No significant between-group differences were observed for any of the outcome measures: mental health ($P=.77$), vitality ($P=.65$), depression ($P=.93$), anxiety ($P=.25$), stress ($P=.57$), SWL ($P=.65$) or flourishing ($P=.99$). Attendance at the weekly videoconference support sessions was poor, but those who attended seven or more of the ten sessions experienced significantly better outcomes in mental health ($P=.006$, $d=0.71$), vitality ($P=.005$, $d=0.73$), depression ($P=.04$, $d=0.54$), and SWL ($P=.046$, $d=0.50$), than those who attended less than seven.

CONCLUSIONS: The wellbeing intervention enhanced measures of mental wellbeing among a healthy cohort, irrespective of the human support provided. Supplementing a psychological intervention with videoconference support might improve outcomes when attendance is optimized.

INTRODUCTION

Mental distress is burgeoning, globally and nationally. Depression is the leading cause of disability worldwide [4] and antidepressant use continues to escalate [5, 6]. Furthermore, depression and anxiety rank in the top three most common conditions seen in primary care in the developed world [7]. The rising prevalence of common mental health disorders demands increased focus on mental health promotion initiatives that may enhance wellbeing among healthy cohorts, potentially providing a buffer against mental distress.

Lifestyle-based interventions have demonstrated efficacy for improving mental health [8]. In a digital culture, opportunities for disseminating cost-effective, highly accessible and scalable lifestyle-focused initiatives exist. However, Web-based and mobile alternatives also pose unique challenges, with adherence (i.e. engagement) frequently being sub-optimal [9-11]. Human support has been documented as a substantial influencer on adherence and outcomes in digital interventions [1].

A randomized controlled trial in 2017 demonstrated that an online, lifestyle-focused mental health intervention improved the mental health of a non-clinical cohort from Australia [12]. The purpose of this study, using the same intervention, was to evaluate whether adherence and outcomes would be enhanced by human support. The research question asked: What is the influence of different modes of human support on adherence to and outcomes of a Web- and mobile-based mental wellbeing intervention?

EXPERIMENTAL DESIGN & METHODS

STUDY DESIGN: Out of 605 self-selected applicants, 458 participants registered for the multi-arm, randomized comparative study. Participants were randomized into three groups that differed according to mode of human support:

Group 1: Standard - automated emails and helpdesk support (S).

Group 2: Standard, plus personalized SMS support (S + pSMS).

Group 3: Standard, plus a weekly videoconference (S + VCS).

INTERVENTION: The intervention, known as the "Live More Project" or "Lift Project", was a ten-week lifestyle-focused program designed to enhance mental wellbeing. During weekly audio-visual sessions, participants were exposed to a range of evidence-based strategies originating from the fields of Lifestyle Medicine and Positive Psychology (Table 1). Participants were encouraged to implement new learnings through daily and weekly experiential activities, for which they were awarded points. Access to the program was provided through an eLMS and mobile-app.

MEASUREMENT: Mental wellbeing was measured using the 7 Dimensions of Wellness Index (7DWI) questionnaire at baseline and post-intervention (12 weeks). The 7DWI measures emotional, physical, social, spiritual, vocational, intellectual and environmental aspects of wellness, and combines demographic and lifestyle-related questions with various, freely available, validated instruments. Outcome measures for this study were drawn from four of the validated instruments within the 7DWI: Short Form-36 Health Survey (SF-36), Depression Anxiety & Stress Scales (DASS-21), Satisfaction with Life scale (SWL) and the Flourishing scale. Domains measured included mental health, vitality, depression, anxiety, stress, life satisfaction and flourishing.

STATISTICAL ANALYSIS: Within-group changes from baseline to post-intervention were calculated using paired t-tests, and repeated measures General Linear Modelling were used to measure analysis of variance (ANOVA) between groups, taking into account time and group effects. Cohen's d was used to measure effect size, Pearson's chi-squared test were used to assess relationships between categorical variables.

The study was registered with the Australian New Zealand Clinical Trials Registry (ANZCTR: 12619001009101) and was approved by the Avondale Human Research Ethics Committee (Approval No. 2018.09).

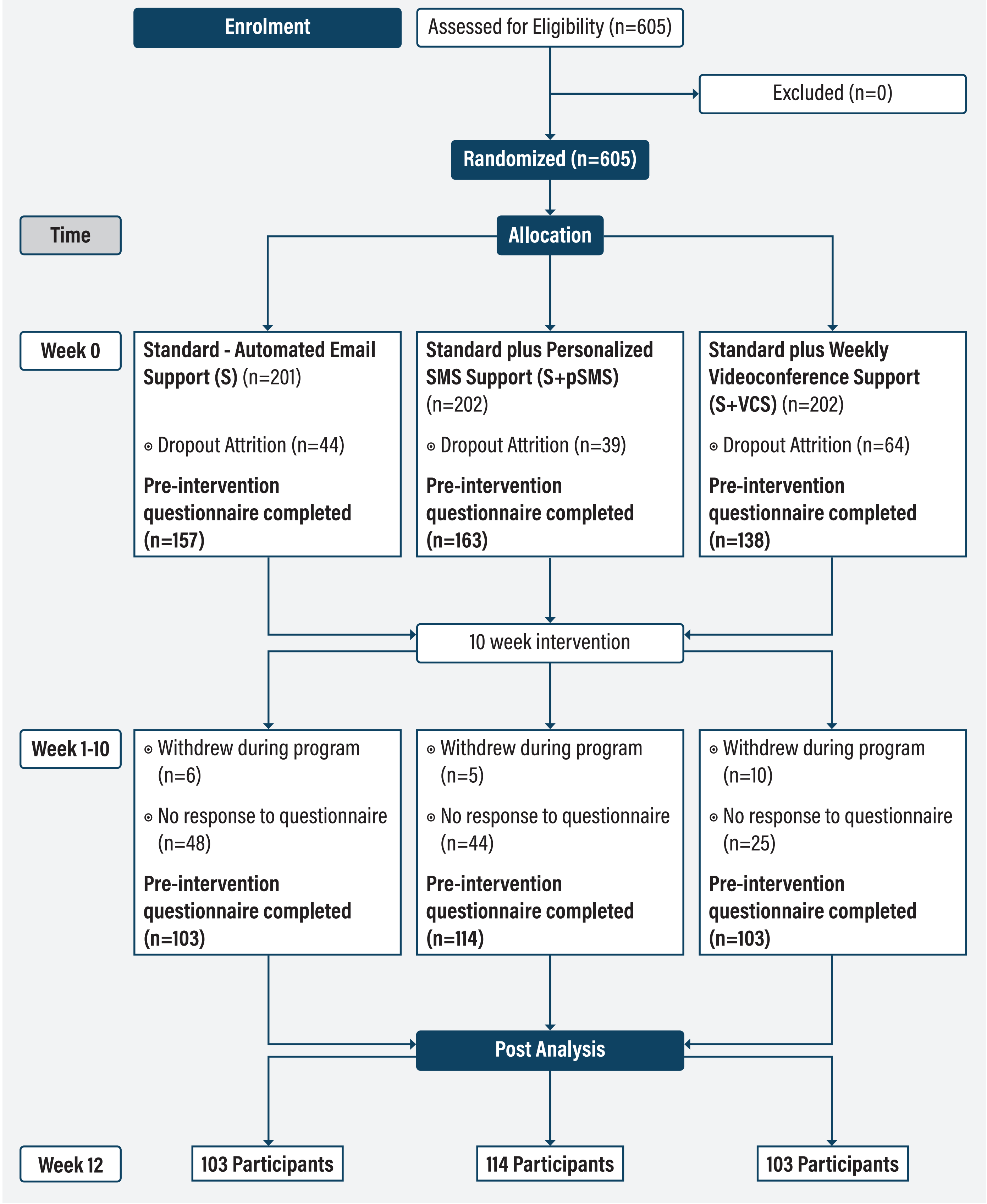
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Table 1. Intervention overview

Week	Topic	Overview
1	Speak positively	Introduction to limbic system, positive language.
2	Move dynamically	Physical activity.
3	Immerse in an uplifting natural environment	Natural landscapes, light.
4	Immerse in a positive social environment	Positive relationships, forgiveness.
5	Look to the positive	Positive focus, upward and downward spirals.
6	Eat nutritiously	Gut health, plant-based foods, fibre.
7	Rest – sleep	Sleep: 7-8 hours optimal, blue light vs. yellow/orange light, factors affecting sleep.
8	Rest – from stress	Strategies to de-stress, rest day, circaseptan rhythms.
9	Serve others	Serving - emotionally uplifting, serve using signature strengths.
10	What does it take to flourish?	Five areas to flourish: PEARM – Positive emotions, engagement, achievement, relationships, meaning.

Figure 1. Participant Flow Chart



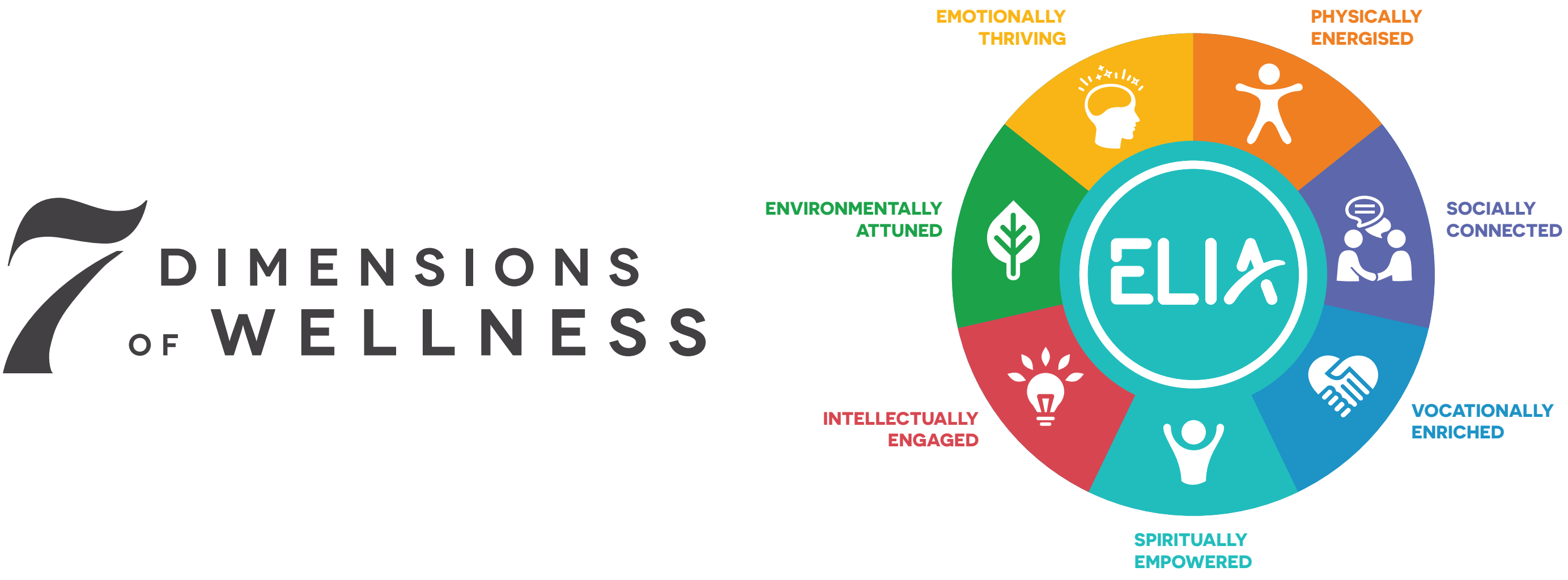
RESULTS

A total of 320 out of 458 participants (70%) completed the study (S, n=103; S+pSMS, n=114; S+VCS, n=103). Significant within-group changes were recorded from pre- to post-intervention in all groups and for every outcome measure (Table 2). However, no significant between-group differences were detected for any of the outcome measures.

No between-group differences were detected for adherence measures which included how many videos were viewed ($P=.42$), and the mean number of points scored for experiential activities ($P=.71$). For the S+VCS group, attendance at weekly videoconference support sessions was low. However, stratified analysis demonstrated that those who attended seven or more sessions scored better improvements in mental health ($P=.006$, $d=0.71$), vitality ($P=.005$, $d=0.73$), depression ($P=.04$, $d=0.54$), and SWL ($P=.046$, $d=0.50$), than those who attended six or less.

Table 2. Pre- to post-changes in outcome measures and between-group differences

Outcome Measure	N	Pre M ± (SD)	Post M ± (SD)	Mean Change	% change	Within Group Change <i>P value</i>	Within Group Change <i>Cohen's D</i>	Between Group Difference <i>P value</i>
Mental Health								.77
Gr 1 Standard – Emails	103	65.2 (16.4)	74.8 (15.2)	9.6	14.7	<.001	0.72	
Gr 2 Standard plus pSMS	114	67.3 (16.7)	76.1 (13.3)	8.8	13.1	<.001	0.69	
Gr 3 Standard plus VCS	103	66.0 (15.3)	74.2 (14.9)	8.2	12.4	<.001	0.61	
Combined	320	66.2 (16.1)	75.1 (14.4)	8.9	13.4	<.001	0.67	
Vitality								.65
Gr 1 Standard – Emails	103	58.7 (16.8)	69.6 (15.8)	10.9	18.6	<.001	0.78	
Gr 2 Standard plus pSMS	114	61.8 (16.5)	71.9 (13.7)	10.1	16.3	<.001	0.81	
Gr 3 Standard plus VCS	103	60.1 (16.1)	69.2 (15.4)	9.1	15.1	<.001	0.63	
Combined	320	60.3 (16.5)	70.3 (15.0)	10.0	16.6	<.001	0.74	
Depression								.93
Gr 1 Standard – Emails	103	3.5 (3.4)	2.2 (2.6)	-1.3	-37.1	<.001	0.44	
Gr 2 Standard plus pSMS	114	3.5 (3.5)	2.1 (2.7)	-1.4	-40.0	<.001	0.51	
Gr 3 Standard plus VCS	103	3.6 (3.3)	2.2 (2.7)	-1.4	-38.9	<.001	0.50	
Combined	320	3.5 (3.4)	2.2 (2.7)	-1.3	-37.1	<.001	0.48	
Anxiety								.25
Gr 1 Standard – Emails	103	2.7 (2.6)	1.5 (1.8)	-1.2	-44.4	<.001	0.52	
Gr 2 Standard plus pSMS	114	2.1 (2.1)	1.4 (1.8)	-0.7	-33.3	<.001	0.35	
Gr 3 Standard plus VCS	103	2.2 (2.5)	1.3 (1.6)	-0.9	-40.9	<.001	0.43	
Combined	320	2.3 (2.4)	1.4 (1.7)	-0.9	-39.1	<.001	0.43	
Stress								.57
Gr 1 Standard – Emails	103	5.8 (3.5)	4.3 (3.1)	-1.5	-25.9	<.001	0.46	
Gr 2 Standard plus pSMS	114	5.5 (3.4)	4.1 (3.0)	-1.4	-25.5	<.001	0.47	
Gr 3 Standard plus VCS	103	6.0 (3.2)	4.2 (3.0)	-1.8	-30.0	<.001	0.60	
Combined	320	5.7 (3.4)	4.2 (3.0)	-1.5	-26.3	<.001	0.51	
Satisfaction With Life								.65
Gr 1 Standard – Emails	103	23.2 (6.8)	25.6 (6.3)	2.4	10.3	<.001	0.50	
Gr 2 Standard plus pSMS	114	23.1 (7.2)	26.0 (6.6)	2.9	12.6	<.001	0.64	
Gr 3 Standard plus VCS	103	22.9 (6.9)	25.5 (6.5)	2.6	11.4	<.001	0.57	
Combined	320	23.1 (6.9)	25.7 (6.5)	2.6	11.3	<.001	0.58	
Flourishing								.99
Gr 1 Standard – Emails	103	45.2 (6.7)	48.1 (5.0)	2.9	6.4	<.001	0.61	
Gr 2 Standard plus pSMS	114	45.1 (7.0)	48.1 (6.1)	3.0	6.7	<.001	0.65	
Gr 3 Standard plus VCS	103	44.8 (6.2)	47.8 (5.9)	3.0	6.7	<.001	0.64	
Combined	320	45.0 (6.6)	48.0 (5.7)	3.0	6.7	<.001	0.64	



SUMMARY & CONCLUSION

This study demonstrated that a lifestyle-focused intervention enhanced the mental wellbeing of a non-clinical cohort, irrespective of added human support. Low attendance at videoconference support sessions hindered the ability to draw meaningful between-group comparisons, other than to reveal that SMS support did not provide any extra benefit to adherence or outcomes, compared to automated email support. Further research is needed to further evaluate factors that influence engagement for a non-clinical cohort.

ACKNOWLEDGEMENTS

FUNDING: The authors would like to thank the volunteer participants, the web development team and the South Pacific Division of the Seventh-day Adventist church who provided free access to the intervention and technical support for the eLMS and mobile-app.

CONFLICTS OF INTEREST: Author and presenter, Dr Darren Morton, manages a 'profit-for-purpose' trust using a version of the program but has received no financial remuneration. Geraldine Przybylko is employed by the South Pacific Division of the Seventh-day Adventist church, which promotes and directs the intervention among members and the wider community. No other authors have a financial interest in the intervention or conflicts of interest to declare.

