

Identifying Physical Health Concerns of People With a Mental Health Condition: An RCT



Caitlin M.C. Fehily, PhD,^{a,b,c} Ama Ampofo, PhD,^{a,b} Jade Ryall, BSc(OT),^d Joanna Latter, MPhil,^{a,b} Belinda Jackson, MPP,^{a,b} Emily Hielscher, PhD,^d Sumathi Govindasamy, MPPG,^e Tara Clinton-McHarg, PhD,^f Julia Dray, PhD,^g Lucy Leigh, PhD,^{b,h} Jenny Bowman, PhD^{a,b}

Introduction: PhysiCards have been co-designed to support an interactive, person-led approach to help people with mental health conditions identify and respond to cardiovascular disease and other physical health concerns. This study aimed to test the effectiveness of PhysiCards in assisting people accessing support from a community-managed mental health organization to identify and take action to address cardiovascular disease and other physical health concerns.

Methods: This study was a parallel-group RCT. Participants (aged ≥ 18 years; $N=154$) were people accessing Flourish Australia services in New South Wales, Australia. Participants were randomly allocated to a control (physical health concerns discussed in line with usual support) or intervention condition (usual care and offered PhysiCards) delivered in a single session. Main outcome measures were assessed through support worker records of allocation delivery and participant self-report telephone surveys at baseline and 1-week and 4-month follow-ups (September 2022 to January 2024). Analysis was conducted in 2025. Primary outcomes were identifying at least 1 concern participants wanted support for that was a physical health concern, cardiovascular disease prevention concern, new (i.e., not previously raised with a health professional) physical health concern, and new cardiovascular disease prevention concern. Secondary outcomes included discussing a concern with a health professional, confidence to raise concerns, and acceptability of PhysiCards.

Results: The intervention group participants were significantly more likely to identify that they wanted support for a physical health concern (OR=16.7; 95% CI=5.14, 54.24, $p<0.001$), cardiovascular disease-related concern (OR=7.89, 95% CI=2.91, 21.39, $p<0.001$), and new health concern (OR=7.40, 95% CI=2.28, 24.05, $p<0.001$). PhysiCards were rated as highly acceptable. There was no significant difference in discussing concerns with a health professional or confidence in raising concerns.

Conclusions: PhysiCards were effective in supporting people to identify cardiovascular disease and other physical health concerns. Future research is needed to consider additional strategies to enhance their impact on care seeking.

Am J Prev Med 2025;69(6):108083. © 2025 The Author(s). Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

INTRODUCTION

In Australia and internationally, the critical need to address the physical health inequity experienced by people living with a mental health condition has been acknowledged.^{1,2} This population group experiences a reduced life expectancy of a median of 10 years,³ largely attributable to higher rates of chronic physical health conditions, particularly cardiovascular disease (CVD).^{4,5} In Australia, people with a mental health

From the ^aSchool of Psychological Sciences, University of Newcastle, Newcastle, Australia; ^bHunter Medical Research Institute, Clinical Research Centre, Newcastle, Australia; ^cHunter New England Population Health, Newcastle, Australia; ^dFlourish Australia, Sydney Olympic Park, Sydney, Australia; ^eMonash University Malaysia, Subang Jaya, Selangor, Malaysia; ^fMelbourne School of Population and Global Health, The University of Melbourne, Melbourne, Australia; ^gGraduate School of Health, University of Technology Sydney, Sydney, Australia; and ^hSchool of Medicine and Public Health, University of Newcastle, Newcastle, Australia

Address correspondence to: Caitlin M.C. Fehily, PhD, Behavioural Sciences Building, University of Newcastle, University Drive, Newcastle 2308, Australia. E-mail: Caitlin.fehily@newcastle.edu.au

0749-3797/\$36.00

<https://doi.org/10.1016/j.amepre.2025.108083>

condition are twice as likely to experience CVD.⁶ The prevalence of cardiometabolic and behavioral risk factors has also consistently been reported to be higher among this group, including tobacco smoking, poor nutrition, harmful alcohol consumption, inadequate physical activity, and overweight or obesity.^{4,7,8} Policy documents^{9,10} and positional statements¹¹ acknowledge that reduced access to appropriate physical health care contributes substantially to this inequity and that there is a critical need to address this issue.

Factors inhibiting access to physical health care for people with a mental health condition occur at multiple levels.^{9,11} System-level barriers include siloing of mental and physical healthcare services^{12–14} as well as negative stereotyping, discrimination, and stigma.^{15,16} Mental health staff report low knowledge of how to provide such care, inadequate time, and low confidence to have physical health conversations with the people that they support.^{17,18} In addition, diagnostic overshadowing can lead to the misattribution of physical health symptoms to mental health or relative lack of attention to physical health.⁹ These factors further compound disempowerment and low levels of health literacy among people accessing support.⁸

Community managed organizations (CMOs) are non-government organizations providing nonclinical psychosocial and rehabilitation support to people living with a mental health condition^{19–22} and offering the potential to address physical well-being concerns. Typically adopting strengths-based, person-directed approaches, the provision of holistic support within a recovery framework^{19,23} may include helping people identify their physical health needs or concerns and facilitating connections with appropriate health care.²⁴ However, previous research suggests that CMO staff may feel uncomfortable asking certain health screening questions and that list-based tools may not meet the needs of people with both lower health literacy levels and lower literacy generally or from culturally and linguistically diverse backgrounds.²⁴

Flourish Australia (Flourish), one of the largest Australian mental health CMOs, has co-designed PhysiCards by drawing on the expertise of people accessing their services, staff, and a range of health professionals (nurses, medical physicians, occupational therapists, and diabetes nurses). PhysiCards represent an interactive person-led tool to assist people to identify physical health concerns that they would like to talk to someone about and to promote taking action to address those concerns (such as scheduling an appointment with a health professional). Each of the 34 cards represents a physical health concern, with an image on one side and reflective prompt questions on the reverse. The

development process identified the content (health topics and reflective questions) and imagery to ensure that the cards aligned with what a person may notice about their health and considered a breadth of topics covering known chronic disease risk factors.^{4,7,8} An internal evaluation of the PhysiCards undertaken by Flourish with people accessing the service (N=31) found that they were viewed positively, with people stating that they were comfortable to use, helped them feel in control, and kept the conversation on track.²⁵ However, it is unknown whether PhysiCards are effective in helping people to identify physical health concerns that otherwise may not have been raised or concerns that relate to the prevention of chronic diseases and CVD particularly (with 7 cards being CVD-related).

This small-scale trial aimed to:

1. Test the preliminary effectiveness of the PhysiCards in (1) assisting people living with a mental health condition to identify CVD-related and other physical health concerns that they would like support for, (2) assisting people to identify new concerns that they had not previously raised with a health professional, and (3) encouraging people to take action to address their physical health concerns and confidence to raise concerns with a health professional.
2. Examine the perceived acceptability of PhysiCards.

METHODS

A small-scale RCT with 2 parallel groups was undertaken in Flourish sites in New South Wales between September 2022 and January 2024. This study was approved by the University of Newcastle ethics committee (H-2022-0042) and registered with the Open Science Framework (www.osf.io/r8m97). Primary outcomes pertaining to identified physical health concerns were collected through support worker records. Secondary outcomes pertaining to the discussion of concerns with a health professional, confidence to do so, and acceptability were collected in baseline and during 1-week and 4-month follow-up telephone surveys with people accessing Flourish support (administered by trained telephone interviewers from the University of Newcastle).

Study Sample

Participants were people living with a mental health condition(s) who were accessing support via one of the participating Flourish sites during the trial period. Flourish provides support to over 10,000 adults and young people per annum, covering a range of mental health conditions.²⁶ This may include people with lived experience of

anxiety disorders, depression, schizophrenia, or bipolar disorder or a combination of these disorders. Commonly provided support include social support, housing initiatives, employment assistance, and connecting or supporting access to clinical services or other support schemes (e.g., National Disability Insurance Scheme).²⁶ A convenience sample of 8 sites were selected by Flourish and the research team to evaluate based on size (the number of people accessing support) and location (ensuring representation of the various programs Flourish offers).

People were eligible if they were aged ≥ 18 years and had capacity to provide consent. Recruitment used multiple methods to promote inclusivity and equity. From September 2022 to May 2023, Flourish introduced the study during individual and group sessions. Between June 2023 and August 2023, a total of 4 project staff systematically contacted individuals by phone. All potential participants received verbal information, followed by an information sheet and consent-to-contact form. The research team then obtained informed consent by phone. Staff received training in recruitment, data collection, and delivery of both intervention and control conditions from a Flourish manager (JR) and the research team. Recruitment ended once the target of 150 participants (75 per group) was met, determined based on an a-priori power calculation of 80% power to detect a 25%–26% difference between the groups in each primary outcome (assuming baseline prevalence of 30%–50% and $\alpha=0.0167$).

Participants were randomly assigned to either usual care or intervention using REDCap, with site-specific randomization sequences (block sizes of 2, 4, and 6) and 1:1 ratio. Interviewers, who were blinded to allocation, conducted baseline assessments before randomization. Support workers were unblinded post-randomization to deliver appropriate support. Although the interviewers were not informed of allocations before follow-up surveys, unintentional unblinding may have occurred if they recalled prior assignments. Interviewers were intentionally unblinded during the final part of follow-up surveys, which included allocation-specific questions.

Intervention

Participants in the control condition were contacted by support workers who offered to book a convenient time to talk about the participants' physical health concerns. During the single-session physical health meeting, participants were asked by the support worker if they had any physical health concerns (open-ended question) and if they wanted support for those concerns. In line with usual care, support workers may then have offered

support, which could include providing information, resources, or a referral to a relevant health professional.

Participants in the intervention condition were also contacted to book a single-session physical health meeting as described above. The meeting commenced with a discussion to identify concerns, identical to that of the control condition. The support worker then introduced the PhysiCards by explaining that they are a tool designed to help people think about their physical health and if they have any concerns that they may want to talk to someone about. Each card has the name of a physical health topic and corresponding image on one side, along with a set of reflective questions on the reverse side (Appendix Figure 1, available online). To explain how to use the cards, the support worker could then choose to play an instructional video or provide a verbal description. Participants were encouraged to review each card, in no particular order, and sort them into 1 of 3 piles: Pile 1 represented "I want to talk to someone about these things"; Pile 2 represented "I'm currently managing these things"; and Pile 3 represented "These things are not a priority for me." Alternatively, they could choose not to sort a card into a pile. Participants were then supported to complete the My Health Needs To Do List, by ticking the health concerns from Pile 1 that they wished to discuss with a health professional, in preparation for an appointment. Participants may have received additional support from their usual support worker, as part of usual care, to make or attend health professional appointments.

Measures

Figure 1 contains a summary of data collection sources and measures. Data were collected via 2 sources: support worker records and surveys with participants (via telephone or online). Support workers recorded their delivery of the allocated condition and participants' health concerns on a paper form (Appendix File 1, available online) during the physical health meetings, which was entered into REDCap by the research team. Briefly, this included a table to list the identified health concerns, whether the person wanted support for that concern, and if they had sought advice from a health professional for that concern in the last 12 months, and if so, at what time point. Surveys were programmed in REDCap and conducted by a trained interviewer from the University of Newcastle at 3 time points: Time 1 was baseline (October 2022 to August 2023); Time 2 was 1-week after the physical health meeting (only participants who attended a meeting; added partway through the data collection phase to maximize participant recall for relevant measures; February 2023 to October 2023); and Time 3 was 4 months after baseline (all participants; January

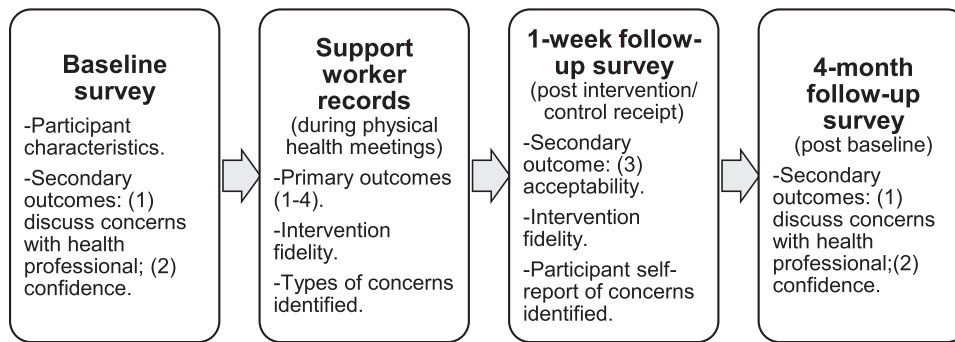


Figure 1. Data collection sources and measures.

2023 to January 2024). Participants received a \$20 voucher for completing the baseline survey and another for completing the 4-month survey.

Four primary outcomes were assessed using support worker records and measured as the difference in the proportions of intervention participants and controls who identified:

1. A physical health concern they wanted support for: the participant identified at least 1 physical health concern when asked if they had any concerns at the moment, and then stated *yes* they would like support for at least 1 (control group) or the person placed at least 1 PhysiCard in Pile 1 (intervention group).
2. A CVD prevention concern they wanted support for: at least 1 concern the participant wanted support for aligned with The Heart Foundation²⁷ and Australian Institute Health and Welfare²⁸ CVD risks (i.e., heart health/chest pain, smoking, diabetes, weight, being active, alcohol, and diet and nutrition).
3. A new physical health concern (defined as a concern not previously raised with a health professional): the participant stated that they had not previously sought support from a health professional in the last 12 months for at least 1 concern they wanted support for (control group) or at least 1 PhysiCard in Pile 1 (intervention group).
4. A new CVD prevention concern (defined as a CVD concern not previously raised with a health professional): at least 1 new concern that the participant wanted support for aligned with the Heart Foundation and Australian Institute Health and Welfare CVD risks.^{27,28}

Secondary outcomes were assessed using participant self-reported surveys. Two outcomes were assessed as the difference between the groups in terms of change over time (baseline to 4-month follow-up) in:

1. The proportion who discussed at least 1 physical health concern with a health professional: Of the participants who said they spoke to any health professional in the past 4 months, the proportion who stated that they had discussed any physical health concerns in those appointments.
 2. The extent to which they felt confident to raise physical health concerns with a health professional: 1–10 scale (1 being *not at all confident* and 10 being *extremely confident*).
- A third secondary outcome was for intervention participants only (1-week survey):
3. Perceived acceptability of the PhysiCards: Acceptability of Intervention Measure (AIM) administered to participants who recalled using the cards.²⁹ The measure has 4 items rating the extent to which the intervention met approval, was appealing, was liked, and was welcomed (a maximum score of 20).

Support workers recorded participants' attendance at physical health meetings and whether they asked participants about physical health concerns using a paper form (see [Appendix File 1](#), available online). For intervention group participants, support workers additionally recorded whether they delivered any component of the PhysiCards, and if so, the elements that they had delivered by ticking from the options, played the instructional video, card sorting, identification of issues that the person would like support with, and recording issues to discuss with general practitioner (GP) (completing the My Health Needs To Do List). If unable to deliver the PhysiCards, support workers recorded the reason (open field).

During the 1-week survey, participants self-reported whether they recalled having a conversation with a Flourish support worker where they were asked about their physical health concerns. Those who said *yes* were asked what physical health concerns they raised (open ended), and for each identified concerned, if they would

like support for this from a health professional (*yes/no*) and if they had previously sought advice from a health professional for this in the last 12 months (*yes/no*). Intervention participants were additionally asked if they used the cards, watched the instruction video, and completed the My Health Needs To Do List.

Participants self-reported at baseline their age, length of time accessing support from Flourish, main mental health issue, gender identity (*Do you identify as...: Female, Male, Nonbinary, or I would prefer to self-describe*), relationship status, identification as Aboriginal or Torres Strait Islander or both, highest level of education completed, living status, employment status, regular GP or GP practice, contact with any GP in past 4 months, and whether baseline survey was completed with Flourish support.

Statistical Analysis

Support worker records about the type of concerns identified were categorized according to the PhysiCards topics. Two coders (Ama Ampofo and Jade Ryall) independently categorized a random sample of 20 participants (57 concerns identified; 60% agreement) using Microsoft Excel. The coders met and developed a codebook. In cases where consensus could not be reached, the project team was consulted to inform the codebook. The remaining concerns were categorized by 1 person (AA), seeking further input from the project team whenever required.

Analysis was performed using Stata, version 16 (Stata-Corp, Texas). Data regarding participant characteristics, intervention fidelity (support worker records and self-report), and types of concerns raised (support worker records) were analyzed descriptively.

The primary analysis was performed using all available data, with participants retained in randomly assigned groups. For primary outcomes, logistic mixed models were initially used, with a random effect for site and participant. However, given the extremely small intraclass correlation (ICC) for site ($ICC < 0.001$), the random effect for site was omitted and it was included as a fixed effect. Adjusted models included fixed effects for allocation, gender, age, living status, and length of time accessing Flourish support. α was set at 0.0167 to account for multiple testing.

Considering that support workers who collected primary outcomes were not blind to participant allocation, a sensitivity analysis was conducted using participant 1-week follow-up survey responses as the data source to determine the robustness of the findings. The self-report data was coded and categorized using the same process and codebook described above. Equivalent measures to

the primary outcomes were calculated using the self-reported responses at 1 weekweek, with equivalent analysis to the performed primary analysis.

For the secondary outcomes pertaining to both groups, the difference in change over time (baseline to 4-month follow-up) was assessed using a logistic mixed model (raised concerns with a health professional) and linear mixed model (confidence to raise concerns), with a random effect for participant. For the secondary outcome acceptability, total AIM score was calculated and summarized descriptively.²⁹

RESULTS

Participant recruitment and progression through the trial are detailed in [Figure 2](#). In total, 154 participants completed the baseline survey, of which 78 were randomized to the intervention group and 76 to the control group. Baseline characteristics are shown in [Table 1](#). Just more than one half of the participants were male (56%) and most were living independently (78%). Descriptively, there were some differences between the 2 groups, such as the intervention group participants were more likely to be male and less likely to be aged 26–35 years and have an education level less than school certificate level.

In terms of intervention fidelity and identified concerns, [Appendix Table 1](#) (available online) shows that support worker records indicated 80% of the participants (control and intervention) were asked about their physical health concerns. In the 1-week survey, 93% participants recalled having a conversation with a support worker, in which they were asked about their physical health concerns. Support worker records indicated 79% participants identified at least 1 physical health concern, with [Appendix Table 2](#) (available online) showing that the most common were “other” ($n=13$), weight ($n=10$), and appetite and digestion ($n=10$). [Appendix Table 1](#) (available online) shows that support worker records indicated that 77% of the intervention participants completed any part of the PhysiCards, with 56 completing the card sorting, 4 shown the PhysiCards video, and 36 completing the My Health Needs To Do List. When asked in the 1-week survey, 97% participants recalled using the cards and 10% recalled watching the video. Of those who recalled using the cards, 71% stated that they completed the My Health Needs To Do List. Support worker records indicated 84% of the participants sorted at least 1 card into Pile 1, with [Appendix Table 3](#) (available online) showing the cards most often placed in Pile 1 were 2 CVD-related factors, “my weight” (43%) and “my diet and nutrition” (36%).

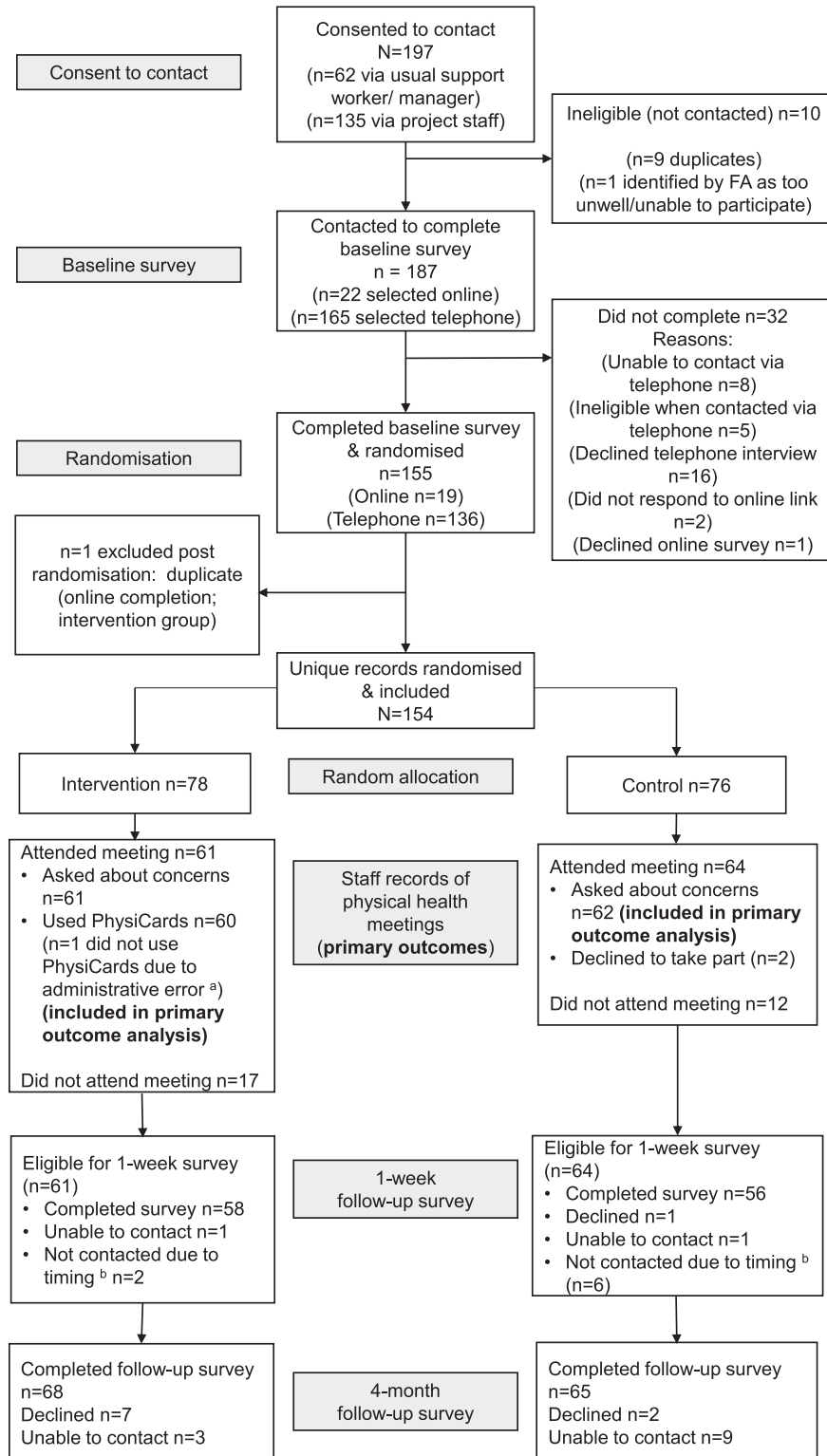


Figure 2. Flowchart of the participant progress through the trial.

^aOne participant randomized to intervention was not offered the PhysiCards because of an administrative error.

^bEight participants were not contacted for the 1-week follow-up because their physical health meeting occurred within 3 weeks of the 4-month follow-up: 2 were recruited before commencing this survey (survey added partway through data collection) and 6 had their physical health meeting within 3 weeks of the 4-month follow-up survey.

FA, Flourish Australia.

Table 1. Baseline Characteristics of the Participants

Measures	Intervention, n (%) (n=78)	Control, n (%) (n=76)	Overall, n (%) (n=154)
Gender identity			
Male	48 (61.5)	38 (50)	86 (55.8)
Female	29 (37.2)	35 (46.1)	64 (41.6)
Other	1 (1.3)	1 (1.3)	2 (1.3)
Unsure/chose not to answer	0	2 (2.6)	2 (1.3)
Age			
18–25 years	4 (5.1)	3 (3.9)	7 (4.5)
26–35 years	2 (2.6)	13 (17.1)	15 (9.7)
36–45 years	13 (16.7)	17 (22.4)	30 (19.5)
46–55 years	22 (28.2)	15 (19.7)	37 (24.0)
55+ years	37 (47.4)	27 (35.5)	64 (41.6)
Unsure/chose not to answer	0	1 (1.3)	1 (0.6)
Main mental health condition			
Psychosis/schizophrenia	29 (37.2)	32 (42.1)	61 (39.6)
Mood disorders	25 (32.1)		48 (31.2)
Anxiety/stress-related	10 (12.8)	11 (14.5)	21 (13.6)
Other	12 (15.4)	10 (13.2)	22 (14.3)
Chose not to answer	2 (2.6)	0	2 (1.3)
Support time with FA			
<1 month	3 (3.8)	0	3 (1.9)
1–6 months	11 (14.1)	15 (19.7)	26 (16.9)
7–12 months	6 (7.7)	5 (6.6)	11 (7.1)
12–24 months	5 (6.4)	10 (13.2)	15 (9.7)
>24 months	53 (67.9)	45 (59.2)	98 (63.6)
Unsure/chose not to answer	0	1 (1.3)	1 (0.6)
Relationship status			
Single	52 (66.7)	55 (72.4)	107 (69.5)
Married/de facto	14 (17.9)	12 (15.8)	26 (16.9)
Separated/divorced/widowed	12 (15.4)	8 (10.5)	20 (13.0)
Unsure/chose not to answer	0	1 (1.3)	1 (0.6)
Employment status			
Full-time employment	0	1 (1.3)	1 (0.6)
Part-time or casual employment	8 (10.3)	9 (11.8)	17 (11.0)
Supported employment	2 (2.6)	0	2 (1.3)
Other unpaid duties (student/home duties/family carer/voluntary)	7 (9.0)	6 (7.9)	13 (8.4)
Unable to work (health reasons)	25 (32.1)	23 (30.3)	48 (31.2)
Retired	14 (17.9)	8 (10.5)	22 (14.3)
Not employed	22 (28.2)	28 (36.8)	50 (32.5)
Unsure/chose not to answer	0	1 (1.3)	1 (0.6)
Highest education achieved			
Less than school certificate	12 (15.40)	19 (25.0)	31 (20.1)
School certificate	27 (34.6)	18 (23.7)	45 (29.2)
Higher school certificate	11 (14.1)	13 (17.1)	24 (15.6)
TAFE or Diploma	20 (25.6)	16 (21.1)	36 (23.4)
Bachelor/post graduate degree	8 (10.3)	8 (10.5)	16 (10.4)
Unsure/chose not to answer	0	2 (2.6)	2 (1.3)

(continued on next page)

Table 1. Baseline Characteristics of the Participants (*continued*)

Measures	Intervention, n (%) (n=78)	Control, n (%) (n=76)	Overall, n (%) (n=154)
Identified as Aboriginal or Torres Strait Islander or both			
Yes	5 (6.4)	5 (6.6)	10 (6.5)
No	71 (91.0)	69 (90.8)	140 (90.9)
Unsure/chose not to answer	2 (2.6)	2 (2.6)	4 (2.6)
Current living situation ^a			
Independently/With family or friends or both	56 (74.7)	54 (80.6)	110 (77.5)
Supported accommodation or group home	16 (21.3)	11 (16.4)	27 (19.0)
Temporary accommodation	2 (2.7)	1 (1.5)	3 (2.1)
Unsure/chose not to answer	1 (1.3)	1 (1.5)	2 (1.4)
Regular GP or GP practice ^a			
Yes	72 (96.0)	64 (95.5)	136 (95.8)
No	3 (4.0)	3 (4.5)	6 (4.2)
Spoken to or had appointment with GP in the past 4 months ^a			
Yes	66 (88.0)	62 (92.5)	128 (90.1)
No	9 (12.0)	5 (7.5)	14 (9.9)
Baseline survey completed with FA support ^a			
No	68 (90.7)	64 (95.5)	132 (93.0)
Yes	7 (9.3)	3 (4.5)	10 (7.0)

^an=12 missing data as additional variables added partway through data collection.

FA, Flourish Australia; GP, general practitioner; TAFE, Technical and Further Education.

There were significant differences between the intervention and control group for 3 of the 4 primary outcomes (Table 2). The intervention group had significantly higher odds of identifying that they wanted support for a physical health concern (OR=16.70, 95% CI=5.14, 54.24), CVD-related concern (OR=7.89, 95% CI=2.91, 21.39), and a new physical health concern (OR=7.40, 95% CI=2.28, 24.05), but not of identifying that they wanted support for a new CVD-related concern (OR=2.51, 95% CI=0.80, 7.92). Using the 1-week self-report as the data source for the primary outcomes, equivalent results to the primary analysis were found using support worker records (Appendix Table 4, available online).

There was no significant difference between the two groups in their change over time in the proportion who discussed physical health concerns with a health professional (OR=1.24, 95% CI=0.32, 4.72) or confidence to do so (OR= -0.34, 95% CI= -0.61, 1.28) (Table 2). Intervention participants who recalled receiving the PhysiCards at 1-week follow-up and completed the AIM measure (n=55) rated acceptability highly, with an average score of 17.4 (maximum score=20; SD=2.9; Appendix Table 5, available online).

DISCUSSION

This small-scale RCT demonstrated the preliminary effectiveness and acceptability of the PhysiCards in assisting people living with a mental health condition to identify CVD and other physical health concerns. The findings support that the PhysiCards are a person-led and interactive alternative to other approaches and are effective in helping people to identify concerns they would like support for. Overall, the findings support the use of the PhysiCards to support people accessing community mental health organizations to communicate their physical health concerns and support needs to support workers and health professionals.

To the authors' knowledge, this study is the first to examine the effectiveness of a cards-based tool to support people living with a mental health condition to identify CVD and other physical health concerns. Cards with pictures or statements or both have been tested in other contexts to support conversations about topics perceived as challenging (e.g., factors influencing obesity in adults,³⁰ lifestyle behavior changes in adolescents,³¹ and wishes and priorities for palliative care).³² Both health professionals and the people that they support reported that card-based tools promoted person-led conversations^{30,32} and that they encouraged supportive

Table 2. Primary and Secondary Outcome Results

Outcome	Group/ time point		Effect estimates, adjusted ^a OR (95% CI)		p-value	
	Intervention, (n=60)	Control, (n=62)				
Primary outcomes						
Want support for at least 1 concern, n (%)	50 (83.3%)	24 (38.7%)	16.70 (5.14, 54.24)		<0.001	
Want support for at least 1 CVD concern, n (%)	40 (66.7%)	15 (24.2%)	7.89 (2.91, 21.39)		0.001	
Want support for at least 1 new concern, n (%)	42 (70.0%)	22 (35.5%)	7.40 (2.28, 24.05)		<0.001	
Want support for at least 1 new CVD concern, n (%)	20 (33.3%)	12 (19.4%)	2.51 (0.80, 7.92)		0.115	
	Intervention		Control			
	Baseline, (n=74)	4-month follow-up, (n=68)	Baseline, (n=74)	4-month follow-up, (n=63)	Adjusted ^a odds ratio / β^b (95% CI)	p-value
Secondary outcomes						
Discussed at least one physical health concern with a health care professional, n (%)	58 (78.4%)	56 (85%)	47 (63.5%)	53 (84%)	1.24 (0.32, 4.72)	0.757
Confidence to raise physical health concerns with a health professional, mean (SD)	7.21 (2.62)	7.66 (2.46)	7.25 (2.71)	7.57 (2.47)	-0.34 (-0.61, 1.28)	0.489

Note: Boldface indicates statistical significance ($\alpha=0.0167$).

^aModels adjusted for age, gender, living situation, and the length of time receiving support from Flourish Australia.

^bEstimates (OR/ β) represents the group X time interaction. CVD, cardiovascular disease.

conversations.³⁰ This finding was consistent with the rationale behind the development of the PhysiCards, aligning with the person-directed model of care employed by Flourish and other CMOs.^{19,23} Future research would aid in understanding why and how the PhysiCards are helpful, in particular, the role of health literacy and health agencies. In the case of the use of similar tools, previous research has found that using pictograms for health communication may increase patient understanding and knowledge of health concerns.³³ For example, a qualitative study of a visual tool to help patients recall and describe chest pain found that it helped facilitate communication for patients regardless of health literacy levels.³⁴ Together with previous research, the findings of this trial support the potential of mental health staff using communication tools (such as card-based tools or visual cues) to aid identification and communication about physical health concerns.

In the intervention group, the most commonly identified concerns were related to CVD, specifically weight management and diet and nutrition. In addition, 3 other CVD-related concerns (being active, heart health, and smoking) were often placed in Pile 1. These findings indicate a significant demand for support in addressing CVD-related concerns among people with mental health

conditions. This underscores the necessity of improving access to physical health interventions to promote health equity for this population.⁹ Both groups identified weight- and nutrition-related concerns as the most common issues. This finding aligns with previous research showing that weight, which was identified by both people with mental health conditions and health professionals, is a major physical health concern for this population group, alongside cardiovascular and metabolic diseases, where nutrition plays a key role.³⁵ Understanding the patterns of card selection (e.g., clustering of concerns) as well as differences by characteristics in the number and type of concerns identified could further add to the literature. For instance, in the general population, previous research of card-based tools to identify factors influencing obesity in adults that “apply to me” found that older age was associated with selecting fewer cards.³⁰

The null findings for raising identified concerns with a health professional and confidence to do so (secondary outcomes) highlights possible areas for strengthening impact. It is important to note that nearly all participants reported having a regular GP, which may have contributed to the high prevalence of these outcomes at baseline. In addition, the intervention did not include any

ongoing support to help the participant take action to address their concerns after using PhysiCards. It is unknown to what extent this support may have been provided by the participant's usual support worker, after the intervention. Co-design of additional strategies and support for people to take action to address concerns is therefore recommended to enhance impact. Future research could also explore the extent to which the PhysiCards may have improved the quality of interactions between participants and health professionals.

Limitations

The study has several limitations. Sites were purposively selected, although they reflected typical Flourish programs. Early recruitment was slow when managed by usual support workers, prompting a shift to a multi-mode approach. Consequently, most physical health meetings were delivered by project-employed support workers, rather than the participants' usual support workers, which may have influenced rapport and ongoing support. This change in who delivered the physical health meetings led to a subsequent deviation from the trial registration, which planned to assess support worker feasibility via quantitative staff surveys. Instead, feasibility has been assessed through qualitative interviews with the project staff and will be reported separately. Intervention fidelity, which was assessed through support worker records and participant self-report, may be biased. Future research should consider independent fidelity checks, such as audio recordings. Having staff deliver both control and intervention conditions may have led to contamination. A cluster-randomized design may be beneficial for future trials. In addition, CVD risk among participants was not measured and should be explored in future research.

CONCLUSIONS

This study provides preliminary evidence supporting the effectiveness of the PhysiCards in helping people to identify physical health concerns. This research highlights opportunities to enhance the impact of the cards, such as the inclusion of additional strategies to support people to take action to address their physical health concerns. Future research to consider real-world effectiveness of the cards is recommended and may provide opportunity for the co-design and testing of such strategies, as well as the further consideration of participant, Flourish staff, and health professional perspectives on and experiences of the PhysiCards. More broadly, the findings add to previous literature supporting that health communication tools (such as card-based tools or visual

aids) can be used by health professionals to support people to identify and communicate health concerns.

ACKNOWLEDGMENTS

The authors would like to thank Flourish Australia staff and the participants supported by Flourish Australia for their time and contribution to this project. The authors also thank Holly Winchester and Carol Hood for assisting with data coding.

Funding: This research was funded by the National Heart Foundation of Australia (Heart Foundation application number: 105787). The study funder did not have any role in the study design; collection, analysis, interpretation of data; writing the manuscript; or decision to submit the manuscript for publication.

Declaration of interest: None.

CREDIT AUTHOR STATEMENT

Caitlin M.C. Fehily: Conceptualization, Methodology, Resources, Writing – original draft, Visualization, Project administration, Funding acquisition. Ama Ampofo: Formal analysis, Writing – review & editing, Visualization. Jade Ryall: Conceptualization, Methodology, Investigation, Resources, Writing – review & editing, Project administration, Funding acquisition. Joanna Latter: Conceptualization, Methodology, Investigation, Resources, Writing – review & editing. Belinda Jackson: Methodology, Investigation, Resources, Writing – review & editing. Emily Hielscher: Methodology, Resources, Writing – review & editing, Project administration. Sumathi Govindasamy: Methodology, Resources, Writing – review & editing, Project administration. Tara Clinton-McHarg: Conceptualization, Methodology, Writing – review & editing, Funding acquisition, Project administration. Julia Dray: Conceptualization, Methodology, Writing – review & editing, Funding acquisition. Lucy Leigh: Formal analysis, Writing – review & editing. Jenny Bowman: Conceptualization, Methodology, Resources, Writing – review & editing, Supervision, Project administration, Funding acquisition.

SUPPLEMENTAL MATERIAL

Supplemental materials associated with this article can be found in the online version at <https://doi.org/10.1016/j.amepre.2025.108083>.

REFERENCES

1. Roberts R, Lockett H, Bagnall C, Maylea C, Hopwood M. Improving the physical health of people living with mental illness in Australia and New Zealand. *Aust J Rural Health*. 2018;26(5):354–362. <https://doi.org/10.1111/ajr.12457>.
2. WHO. Comprehensive mental health action plan 2013–2030. Geneva, Switzerland: WHO; 2021. <https://www.who.int/publications/i/item/9789240031029>. Accessed June 19, 2025.
3. Walker ER, McGee RE, Druss BG. Mortality in mental disorders and global disease burden implications: a systematic review and meta-analysis. *JAMA Psychiatry*. 2015;72(4):334–341. <https://doi.org/10.1001/jamapsychiatry.2014.2502>.
4. Lawrence D, Hancock KJ, Kisely S. The gap in life expectancy from preventable physical illness in psychiatric patients in Western Australia: retrospective analysis of population based registers. *BMJ*. 2013;346:f2539. <https://doi.org/10.1136/bmj.f2539>.

5. Correll CU, Solmi M, Veronese N, et al. Prevalence, incidence and mortality from cardiovascular disease in patients with pooled and specific severe mental illness: a large-scale meta-analysis of 3,211,768 patients and 113,383,368 controls [published correction appears in *World Psychiatry*. 2018;17(1):120. <https://doi.org/10.1002/wps.20503>]. *World Psychiatry*. 2017;16(2):163–180. <https://doi.org/10.1002/wps.20420>.
6. Physical health of people with mental illness. Australian Institute of Health Welfare; May 20, 2025. <https://www.aihw.gov.au/reports/physical-health-of-people-with-mental-illness>. Accessed June 19, 2025.
7. Bartlem KM, Bowman JA, Bailey JM, et al. Chronic disease health risk behaviours amongst people with a mental illness. *Aust N Z J Psychiatry*. 2015;49(8):731–741. <https://doi.org/10.1177/0004867415569798>.
8. Firth J, Siddiqi N, Koyanagi A, et al. The Lancet Psychiatry Commission: a blueprint for protecting physical health in people with mental illness. *Lancet Psychiatry*. 2019;6(8):675–712. [https://doi.org/10.1016/S2215-0366\(19\)30132-4](https://doi.org/10.1016/S2215-0366(19)30132-4).
9. M. Morgan, D. Peters, M. Hopwood, et al., Better physical health care and longer lives for people living with serious mental illness, 2021, Mitchell Institute, Victoria University; Melbourne, Australia <https://www.vu.edu.au/sites/default/files/being-equally-well-policy-roadmap-mitchell-institute.pdf>, Accessed 10 March 2025.
10. WHO. Guidelines for the management of physical health conditions in adults with severe mental disorders. Geneva, Switzerland: WHO; 2018. <https://www.who.int/publications/i/item/978-92-4-155038-3>. Accessed June 5, 2025.
11. National Mental Health Commission. Equally Well Consensus Statement: improving the physical health and wellbeing of people living with mental illness in Australia. *Sydney NMHC*. 2016 <https://equallywell.org.au/resources/the-equally-well-consensus-statement/>. Accessed September 25, 2025.
12. Druss BG, Newcomer JW. Challenges and solutions to integrating mental and physical health care. *J Clin Psychiatry*. 2007;68(4):e09. <https://doi.org/10.4088/jcp.0407e09>.
13. Happell B, Platania-Phung C, Scott D. Are nurses in mental health services providing physical health care for people with serious mental illness? An Australian perspective. *Issues Ment Health Nurs*. 2013;34(3):198–207. <https://doi.org/10.3109/01612840.2012.733907>.
14. Young SJ, Praskova A, Hayward N, Patterson S. Attending to physical health in mental health services in Australia: a qualitative study of service users' experiences and expectations. *Health Soc Care Community*. 2017;25(2):602–611. <https://doi.org/10.1111/hsc.12349>.
15. Knaak S, Mantler E, Szeto A. Mental illness-related stigma in healthcare: barriers to access and care and evidence-based solutions. *Healthc Manag Forum*. 2017;30(2):111–116. <https://doi.org/10.1177/0840470416679413>.
16. Henderson C, Noblett J, Parke H, et al. Mental health-related stigma in health care and mental health-care settings. *Lancet Psychiatry*. 2014;1(6):467–482. [https://doi.org/10.1016/S2215-0366\(14\)00023-6](https://doi.org/10.1016/S2215-0366(14)00023-6).
17. Clinton-McHarg T, Gibson L, Bartlem K, et al. Barriers to the provision of preventive care to people living with mental health conditions: self-report by staff working in an Australian community managed organisation. *Int J Environ Res Public Health*. 2022;19(8):4458. <https://doi.org/10.3390/ijerph19084458>.
18. Fehily C, Jackson B, Hansen V, et al. Increasing chronic disease preventive care in community mental health services: clinician-generated strategies. *BMC Psychiatry*. 2023;23(1):933. <https://doi.org/10.1186/s12888-023-05311-9>.
19. About the sector. Mental Health Coordinating Council. <https://www.mhcc.org.au/about-mhcc/about-the-sector/>. Accessed 25 September 2025.
20. Gibson L, Clinton-McHarg T, Wilczynska M, et al. Preventive care practices to address health behaviours among people living with mental health conditions: a survey of Community Managed Organisations. *Prev Med Rep*. 2021;23:101495. <https://doi.org/10.1016/j.pmedr.2021.101495>.
21. Boyle FM, Donald M, Dean JH, Conrad S, Mutch AJ. Mental health promotion and non-profit health organisations. *Health Soc Care Community*. 2007;15(6):553–560. <https://doi.org/10.1111/j.1365-2524.2007.00712.x>.
22. Lyons M. *Third Sector: The Contribution of Nonprofit and Cooperative Enterprise in Australia*. Abingdon, United Kingdom: Routledge, 2020. <https://doi.org/10.4324/9781003118268>.
23. Mental Health Coordinating Council. Mental health workforce profile: community managed organisations mental health report 2023. Sydney, Australia: Mental Health Coordinating Council; 2023. https://mhcc.org.au/wp-content/uploads/2023/11/Mental-Health-Workforce-Profile_2023_WEB.pdf. Accessed June 5, 2025.
24. Dray J, Gibson L, Clinton-McHarg T, et al. Exploring support provided by community managed organisations to address health risk behaviours associated with chronic disease among people with mental health conditions: a qualitative study with organisational leaders. *Int J Environ Res Public Health*. 2022;19(9):5533. <https://doi.org/10.3390/ijerph19095533>.
25. Lyons A. Cue cards for improving health communication. *NewsGP*. June 27, 2019 <https://www1.racgp.org.au/news/gp/clinical/cue-cards-for-improving-health-communication>. Accessed June 5, 2025.
26. Flourish Australia. Flourish Australia annual report. Sydney, Australia: RichmondPRA Sydney; November 8, 2023. https://www.flipstack.com/flourish_australia/flourishaustralia_annual-report_2023.html. Accessed June 5, 2025.
27. National Heart Foundation of Australia. Australian Guideline for assessing and managing cardiovascular disease risk. Canberra, Australia: Commonwealth of Australia as represented by the Department of Health and Aged Care; 2023. https://d35rj4ptypp2hd.cloudfront.net/pdf/Guideline-for-assessing-and-managing-CVD-risk_20230522.pdf. Accessed June 5, 2025.
28. Heart, stroke and vascular disease: Australian facts. Australian Institute of Health Welfare. <https://www.aihw.gov.au/reports/heart-stroke-vascular-diseases/hsvd-facts>. Updated 12 December 2024. Accessed 25 September 2025.
29. Weiner BJ, Lewis CC, Stanick C, et al. Psychometric assessment of three newly developed implementation outcome measures. *Implement Sci*. 2017;12(1):108. <https://doi.org/10.1186/s13012-017-0635-3>.
30. Matteson CL, Merth TD, Finegood DT. Health communication cards as a tool for behaviour change. *ISRN Obes*. 2014;2014:579083. <https://doi.org/10.1155/2014/579083>.
31. Kebbe M, Perez A, Buchholz A, et al. Conversation cards. *J Commun Healthc*. 2020;13(2):79–88. <https://doi.org/10.1080/17538068.2020.1765126>.
32. Möller UO, Pranter C, Hagelin CL, et al. Using cards to facilitate conversations about wishes and priorities of patients in palliative care. *J Hosp Palliat Nurs*. 2020;22(1):33–39. <https://doi.org/10.1097/NJH.0000000000000607>.
33. Schutte D, Scalia P, Yen RW, et al. Using pictures to convey health information: a systematic review and meta-analysis of the effects on patient and consumer health behaviors and outcomes. *Patient Educ Couns*. 2020;103(10):1935–1960. <https://doi.org/10.1016/j.pec.2020.04.010>.
34. Low T. *Pictogram use during chest pain nurse specialist consultations in regional New Zealand: patient experiences and clinical outcomes*. (Unpublished document submitted in partial fulfilment of the requirements for the degree of Master of Nursing). Napier, New Zealand: Eastern Institute of Technology (EIT); 2019. <https://hdl.handle.net/10652/6041>. Accessed June 5, 2025.
35. Blanner Kristiansen C, Juel A, Vinther Hansen M, Hansen AM, Kilian R, Hjorth P. Promoting physical health in severe mental illness: patient and staff perspective. *Acta Psychiatr Scand*. 2015;132(6):470–478. <https://doi.org/10.1111/acps.12520>.