

Community Based Mental Wellbeing and Suicide Intervention. Long Term Improvements in Mood, Workplace and Suicide Intervention with the TUFMINDS Program.

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Abstract

Background: Suicide rates and mental illness remain high globally despite increasing expenditure and efforts in this field. Historically individuals in mental health crises have delays in accessing treatment so universally accessible, community based, online or smartphone programs that provide active mental health and suicide intervention have the potential to provide major benefits.

Aims: To evaluate the long-term benefits of the TUFMINDS program to deliver mental wellbeing and suicide intervention education in communities and workplaces. This program teaches individuals to recognise and eliminate their negative thoughts and replace them with positive alternatives. This results in improved mental wellbeing, resilience and mood and coping skills. It also provides suicide knowledge and practical steps for active intervention and support of users and others around them.

Method: 34 participants from a single business attended 6 hours of training on site watching the TUFMINDS video program with a pre and post questionnaire. Eight months later a follow up questionnaire was filled out with 30 of the participants. The evaluations measured the short and long term impact of the TUFMINDS program on mood, resilience, workplace, mental illness and suicide knowledge, self-efficacy and measured the suicide assistance actions provided as a direct result of the TUFMINDS training within this group.

Participants' outcomes were also compared between those that did and did not use the TUFMINDS program subsequent to the initial training. This is available on a free smartphone app and use of this TUFMINDS app was voluntary so the two groups could be compared

Results: Participants showed significant improvement in optimism, resilience, depression, anxiety and stress scores as well as noticeable improvements workplace measures. Suicide knowledge, skills, confidence and willingness to assist others increased immediately after the training and after 8 months the improvements were sustained and further magnified. The research also found a dramatic increase in the number of times participants recognised suicidal risk in others and even greater increase in numbers of times action was taken to assist that person. There was no evidence of any iatrogenic effects from the training.

It was also found that use of the TUFMINDS app to reinforce the training after the initial 6 hours of training provided extra benefits. So non-users improved their scores post training, the users of the app showed 10 -30% higher scores in the same time period.

This research provides further evidence of the effectiveness of the TUFMINDS training as a stand-alone program to provide mental wellbeing and suicide understanding and assistance with ongoing improvement occurring after the training, unlike other training programs where fall off in skills occurs over time. The research also shows that use of the TUFMINDS processes (smartphone app / online) for reinforcement after the training provides significant further benefit for those users.

Limitations: The lack of a control group, use of some non-validated questionnaires and the small sample size are limitations of this study.

Conclusions: Direct mental health training in the workplace and in the community is effective to increase mental resilience, wellbeing and mood. The research confirms several earlier studies showing that online or smartphone programs are effective to increase knowledge and mental wellbeing. This study also shows that the benefits are sustained long term and enhanced dramatically with ongoing use of the TUFMINDS program.

The other important aspect is that this study demonstrates improved suicide knowledge and willingness to actively assist others in the suicidal crises which is confirmed by the dramatically increased numbers of recognitions and active interventions by participants to assist these individuals.

This study supports the proposal that mental health interventions can be provided in video, online or digital formats across workplaces and communities safely, practically and at low cost with TUFMINDS providing progressive benefits to the individuals and workplaces over time.

Introduction

Suicide is the leading cause of death in 15 – 44 year old Australians and 25% of deaths in the 15-24 year olds (¹ Australian Bureau of Statistics, 2016). The presence of suicidal thoughts and suicide attempts are also very high in young people with 7.5% reporting the thinking in the past 12 months and 2.4% have made an attempt [2]. Despite the significant efforts and national expenditure to reduce these rates, no significant improvement has been seen and there is limited evidence of effectiveness of suicide prevention interventions [3, 4]

There are programs that focus on awareness about suicide, like safeTALK Program [5], while others focussed on warning signs and help seeking strategies and gatekeeper training.

Universal education was found to be more effective than gatekeeper training in reducing suicide attempts and severe suicidal ideation [6]. So the logic is that the national focus needs to be in this direction.

Concerns have been raised that suicide prevention programs may create iatrogenic effects of increasing suicide risk in participant's especially vulnerable younger people [7, 8]. However, several studies have shown this not to be the case [5, 9, 10]. And these studies reflect the importance of monitoring any suicide intervention program to track and measure this risk.

The apparent deficiency across all of these suicide programs appears to be the absence of active mental illness interventions for the individuals at risk. The programs tend to focus on awareness, support and referral and this follows the historical approach of programs avoiding direct mental health treatment and intervention for the affected person. These treatments have been left to professionals and only provided in face to face consultations but the delay in accessing this professional help and not being available after hours is well reported [11]. This lack of active mental health intervention in the community may be one of the reasons that these national programs and high-level national spending has not improved the suicide rates over the decades.

Another important aspect of addressing suicide risk is to have strategies in place to address impulsivity. Research also shows very clearly that the timeframe between suicidal ideation and suicidal action is very short [12]. The findings were that 75% of suicide attempts occurred within one hour of the initial suicidal thought. This very short timeframe from initial thoughts to action proves the importance for immediate access to suicide support and mental health intervention. The person at risk therefore needs to have access to the information, education and support at any time of day or night and not be dependent on obtaining a professional consultation or their geographical situation.

The question being addressed in this research is whether digital or online solutions could be a potential delivery method to provide effective mental health intervention and suicide support with TUFMINDS and evaluate the outcomes.

The TUFMINDS program is available as a smartphone program (as a free

app) and can be accessed online or provided as video to view in businesses, classes or social groups.

The Tufminds Program is a Series of Videos, Audios and Workbooks That Aims to:

- Increase mental resilience by using “Positive Mindfulness Cognition” – a practical positive mindset process
- Stress and insomnia management strategies
- Reduce depression, anxiety and stress
- “Suicide Crisis Module” – direct counselling for imminent suicide risk
- Recognise the signs and symptoms of suicide risk
- Know the action steps to take to help individuals at risk of suicide
- Mental Health Stigma reduction
- The practical steps to boost mental wellbeing
- Positive communication strategies
- Personal development strategies including 100% responsibility, Class Act and Goal Setting
- How to deal with negativity from others
- Active steps to recognise and eliminate negative thoughts in the mind

This program was created based on evidence-based processes and accepted medical guidelines. The modules have been formulated using strong lived experience input, accepted medical and psychological standards as well as using established Eastern philosophies of mindfulness, meditation and thought control. The new “Positive Mindfulness Cognition” are the active steps created to control and eliminate negative thoughts and the ability to control one's own thoughts was fully proven [13] and shared in other publications [14, 15].

Further research into these processes occurred when the processes were made available as a free smartphone program and online to allow universal access through a Not for Profit entity as the TUFMINDS program and these research documents now extend to involving 551 people in 3 studies [16, 17, 18]. These studies all show consistent improvements in the mental health and suicide prevention parameters studied. This study is to consolidate that research and measure the impact over time with and without reinforcement of the TUFMINDS techniques.

In this study, the TUFMINDS program was run in three 2 hour sessions in the business over 3 weeks, with a total of 6 hours training. During this time the participants were exposed to video modules from the TUFMINDS program, each of which is around 10-15 minutes. The participants watched each video once in the group setting with 15 videos being seen (out of the total of 30 videos in the full TUFMINDS program). The program was approved by the managers and it was their choice to make participation compulsory.

The aim of this research was to assess if universal suicide prevention strategies in the workplace and community along with active mental health intervention strategies can actively improve mental health scores, skills and willingness to assist a person in suicidal or emotional distress and actively moves individuals away from the point of suicidal action. The late follow up of participants allowed the number of suicidal risk recognitions and active interventions to be measured as well as seeing if the initial benefit seen after the initial training is sustained over time.

The Following Hypotheses Were Tested:

1. TUFMINDS program is associated with increased knowledge, skill, confidence and willingness to recognise, ask and actively assist a person with suicidal thoughts;
2. TUFMINDS improves the mental health scores of participants directly;



3. TUFMINDS improves the mental resilience and optimism levels;
4. TUFMINDS program is not associated with increased psychological distress or reduced mood;
5. TUFMINDS benefits are sustained over time and improved further with active use of the free smartphone app;
6. TUFMINDS is an acceptable and useful program for community use.

Method

Study Design

The impact was assessed with a pre-test and post-test questionnaire with the initial TUFMINDS training and a follow up with a single retrospective post- and pre-questionnaire being used 8 months later. The questionnaires at the time of the initial training and the retrospective questionnaires were both stand alone and assessed independently of each other.

After the initial training the participants were also given the option of reviewing the TUFMINDS techniques again online using a free smartphone app called TUFMINDS where those modules already seen could be revisited and other modules could also be seen for more information about mental wellbeing, mental illness and personal development. This participation was voluntary so created two groups to be assessed separately to measure the impact of using the TUFMINDS program after the initial training.

Participants

Participation in the initial training was compulsory and all staff attended the training. The business involved was a heavy industrial metal construction plant, so the workers were generally unskilled heavy labourers with a few managers and administration staff.

After the initial training the participants were offered access to the ongoing TUFMINDS program online through the free smartphone application and use of this was voluntary.

All participants signed an informed consent and only those that completed the questionnaires were included in the evaluation.

Intervention

Participants underwent the training by watching the 15 video modules of the TUFMINDS program over the 6 hours and the time was split up evenly between “Positive Mindfulness Cognition” / mindset (2 hours), suicide awareness training (2 hours) and mental wellbeing and mental illness sessions (2 hours).

Each group presented 15-20 people and there was discussion within the group and was facilitated by TUFMINDS trainers. As all the content was in the video format, the content was standard in each training so no variation in content or presenter skill would impact the outcome. For safety, the TUFMINDS trainer’s onsite also were trained and psychologically skilled with to address any emotional issues arising.

There was no structured reinforcement of the TUFMINDS techniques although the participants did have the ability to access the program using the TUFMINDS program using the free TUFMINDS smartphone app and this was voluntary. The follow up study tracked which participants did get this reinforcement of the program and this allowed comparison of the individuals in each group to be compared with each other. This is a very useful aspect to see how individuals do over the months with and without any ongoing TUFMINDS training.

Measures

Participants completed the questionnaires immediately prior to starting the program and immediately on completing the 6 hour of training sessions. They then also completed the single retrospective post- and pre-questionnaire 8 months later. The questionnaires measured optimism, resilience, mental health stigma (initial only), mood levels (depression, anxiety and stress), workplace parameters and perceived stress at home and work (initial only).

In relation to suicide, the measures were suicide knowledge (warning signs, how to ask, refer and assist the person), confidence, skill, and willingness to help a suicidal person and understanding levels about mental illnesses. Additionally, in the follow up questionnaire the individuals were asked if they recognised anyone with suicidal risk, how often they intervened to assist and if they watched the TUFMINDS program after the training.

In the retrospective (later) questionnaire, the participants filled in the same questions for “NOW” and “BEFORE TUFMINDS” with each of the questions asked. This allowed the retrospective questionnaire to stand alone and to compare with the initial results.

Demographics

The participants name, age, gender and indigenous status were collected. A code was then created for confidentiality of data.

Mental Health

Optimism was measured with the Life Orientation Test – Revised (LOT-R). Resilience was measured using the Brief Resilience Scale (BRS), mental health stigma using the Internalized Stigma of Mental Illness Inventory and the mood scores were measured using the Depression Anxiety Stress Score (DASS21).

The mental health stigma questions were dropped from the follow up questionnaire due to their length and complexity in order to keep the questionnaire manageable as the follow up questionnaire required two answers for each question for “Now” and “Before TUFMINDS”.

Suicide and Mental Illness Knowledge

A 10 point Likert scale ranging from 1 (Very Low) to 10 (Very High) was used and these 7 items. “Please rate your knowledge of” and the items included: “Facts about suicide prevention”; “Suicide warning signs”; “How to ask someone who may be suicidal”; “How to persuade someone to get help”; “How to get help for someone who may be suicidal”; “General information about mental illness” and “How willing are you help someone who is suicidal”.

Suicide Risk Recognition and Assistance Given

To assess suicidal recognition and action taken before and after the training, the participants were asked to score themselves “After the TUFMINDS training” and “In the 6 months before TUFMINDS” with the following three question - “How many times have you thought another person’s behaviour may indicates/he was considering suicide?”; “How many times have you asked another person whether s/he was considering suicide?” and “If yes, how would you rate the person’s risk of suicide?” on a 0-5 Likert scale.

Participants Evaluation of Program

Using a 5 point Likert scale, participants were asked to rate the TUFMINDS program with 3 items: “Usefulness of the TUFMINDS Program”; “Do you believe the training will help you in helping someone

who is suicidal?"; "Would you recommend this training to others?"

There was also an open comment section at the end to allow for any other feedback.

Case Detection

During each training session, the trainers observed the participants for any signs of emotional upset or distress and offered assistance immediately. The questionnaires were assessed to check for any significant mood disorders or individuals that may be at risk from the DASS21 scores and would speak confidentially to those individuals to ensure safety and follow up care was in place.

Data Analysis

Data was analysed directly from the pre and post questionnaires and change in levels assessed. This was performed using mean values for each outcome, standard deviation, 95% confidence levels, significance levels with p values and percentage change in actual numbers using linear regression.

The significance levels and percentage changes were measured separately after the initial training and at the late follow up. The two groups within the participants using or not using the TUFMINDS program were compared directly to assess any impacts in the 8 months until the retrospective questionnaire.

Results

There were around 34 participants in the initial training sessions and 30 participants completing the follow up questionnaires. Participants were 90% male (27) and 10% female (3) due to the fact that this is a heavy industrial factory and the females were from the administration side of the business. There were five (17%) individuals identifying as Aboriginal and Torres Strait Islanders.

The compulsory attendance of the workers at the initial training was meant with resistance from a section of the workforce, some of whom improved their attitude over the training period and some did not. The improvements in attitude and mood seen across the board and even in those individuals who were resistant during the training and those that evaluated the program as little use.

	Initial TUFMINDS Program (6 hr)		Long Term – Post TUFMINDS		Long Term – Pre TUFMINDS		Results	
	% change	P Value	Mean	95% CI	Mean	95% CI	%Change	P Value
Suicide Knowledge	45%	p<0.001	7.77	7.45-8.08	4.77	4.29-5.25	63%	p<0.001
SelfEfficacy (Skill/conf)	30%	p<0.001	11.77	11.3-12.3	7.1	6.32-7.88	66%	p<0.001
Willingness to Assist a Suicidal Person	NT	p<0.001	8.6	8.1-9.1	6.2	5.59-6.81	39%	p<0.001
Mental Illness Knowledge	NT	p<0.001	7.87	7.37-8.36	5.07	4.54-5.59	55%	p<0.001
Optimism (LOT-R)	12%	p<0.001	14.9	13.5-16.2	10.8	9.8-11.9	37%	p<0.001
Resilience (BRS)	9%	p<0.001	20.1	18.4-21.8	16.4	14.9-17.9	22%	p<0.001
Depression (DASS21)	34%	p<0.001	3.97	2.87-5.06	7.2	5.71-8.69	45%	p<0.001
Anxiety (DASS21)	27%	0.98	3.97	2.85-5.08	6.27	4.91-7.73	37%	p<0.001
Stress (DASS21)	12%	1	5.27	4.13-6.41	8.7	7.3-10.1	39%	p<0.001
Stigma	13%	0.99					NT	
Work Atmosphere	NT	0.99	76.7	72.7-86.7	61.3	55.5-67.2	25%	p<0.001
Work Communication	NT		80	76.5-83.5	61.3	55.5-67.2	30%	p<0.001
Workplace Trust	NT		80	76.9-83.1	65.3	60.1-70.6	22%	p<0.001
Work Engagement	NT		57.3	49.4-65.3	46.7	38.8-54.5	23%	p<0.001
Program Evaluation	86%						86%	
Recommend to others	90%						89%	

Table 1 – Mean scores and variables using linear regression with initial training and retrospective long-term assessment
P Value = Tests the hypothesis that Pre-training scores differ from Post-training scores
NT = not tested

Mental Health

After the initial training, optimism scores as reflected by the LOT-R test increased by 12% with mental resilience measured by the BRS increasing by 9%. Mental health stigma was reduced by 13%. The DASS21 showed improvement in depression 34%, anxiety 27% and stress 12%. These all reached statistical significance except the resilience score (BRS).

At the follow up, optimism had increased by 37%, resilience by 22%, depression by 45%, anxiety by 37% and stress 39% compared to before TUFMINDS training. This reflects improvements of 25%, 13%, 10%, and 27% respectively between the initial training and the follow up assessment. These parameters all reached statistical significance.

It is unusual to find scores improving in the months after training and normally scores will fall over time. The implication and the apparent reason for this is that the TUFMINDS techniques require practice and repetition and as the individual uses the techniques, their skills improve and so does their perception, mood, coping and life skills. It also shows that while the initial benefit is good, the progressive benefits will be seen in the individuals' life in different ways, so their understanding and appreciation of the true benefits only become clear over time.

Suicide Knowledge, Skill, Confidence and Willingness to Assist

At the initial training, knowledge levels were increased by 45% due to the training. All three aspects of skill, confidence and willingness to assist the

emotionally distressed person improved by 30% on average. At the follow up assessment, the scores increased to 63% (knowledge) and 66% (self-efficacy) respectively so again shows dramatic further improvements over time.

These all reached statistical significance.

Suicide Risk Recognition and Assistance Given

All suicide awareness and training programs aim to improve skills, reduce fear and stigma and expect that this improved knowledge results in actions taken to support the suicidal or emotionally distressed individuals. The measurement of this change is therefore important to ensure that any training does actually result in actions being taken.

Suicidal Risk Action	6 months Before TUFMINDS	After TUFMINDS
Recognition of Risk	18	41
Action Taken	7	29
% Higher Risk (3-5)	Nil	41%

Table 2. Comparison of Recognition and Actions Taken before and after TUFMINDS training

Participants showed increase in both recognition of suicidal risk (18 - 41 cases) and action taken to assist someone at risk (7 – 29 cases) in the 6

months before and after the training. The other interesting fact was the

awareness and skill of the individuals to more accurately recognise those individuals at high risk with the high-risk assessment increasing from zero (no-one had been aware) to 41% of cases.

This shows both an increase in the recognition of individuals at suicide risk as well as having more insight to recognise the more severe risk individuals. The dramatic increase in the numbers of individuals taking action to actively assist the person at risk is also endorsement of the benefit of the TUFMINDS program.

Impact of Ongoing Use of TUFMINDS Program after Initial Training

Thirty participants completed the follow up questionnaire and of those 19 did access the TUFMINDS program and 11 did not. Intensity of use was:

Never	19
Occasionally	16
Often	2
Very Often	1

It was interesting that participants in both groups (with and without ongoing use of the TUFMINDS) improved in their scores in the months following the initial training both. The changes in the non-users of the program were not as great as the users of the program and this is expected because the reinforcement of the program would reinforce and increase understanding to higher levels

	Without TUFMINDS Use			With TUFMINDS Use			Total
	After/Before	Std Dev*	%Change	After/Before	Std Dev*	%Change	
Suicide Knowledge	7.55/4.36	0.67/0.71	73%	7.9/5.0	0.3/0.5	58%	-15%
Self Efficacy (Skill / confidence)	12.0/7.0	0.53/1.27	71%	11.6/7.2	0.6/0.8	63%	-8%
Willingness to Assist Suicidal person	8.55/7.09	0.93/1.1	21%	8.6/5.7	0.50/0.68	52%	31%
Mental Illness Knowledge	7.45/5.09	1.1/0.81	46%	8.1/5.1	0.4/0.6	60%	14%
Optimism (LOT-R)	14.1/11.0	2.9/3.2	28%	15.3/10.7	1.2/0.9	43%	15%
Resilience (BRS)	18.6/16.2	4.0/3.6	15%	20.9/16.6	1.3/1.1	26%	11%
Depression (DASS21)	4.4/5.6	2.7/2.35	23%	3.7/8.1	0.8/1.5	54%	21%
Anxiety (DASS21)	4.3/5.3	2.6/2.2	19%	3.8/6.8	0.9/1.4	45%	26%
Stress (DASS21)	4.9/7.0	2.9/2.7	30%	5.5/9.7	0.7/1.3	43%	13%
Work Atmosphere	73/64	9.6/11.6	14%	78 / 60	2.7/5.5	32%	18%
Work Communication	82/64	6.4/11.8	29%	79 / 60	3.5/4.5	32%	3%
Workplace Trust	78/71	6.4/8.1	10%	81 /62	2.7 /5.4	31%	21%
Work Engagement	56/52	14.5/13.9	9%	58 /44	7.9 /7.8	33%	24%

Table 3. Comparison of Parameters between TUFMINDS users and non-users after the initial training

Standard Deviation for 95% Confidence Interval

There are some very interesting issues arising from this in that use of the program was reported as only “Occasional” by 16 of the 19 users but the improvements were 10-30% greater than the non-users showing a dramatic improvement with minimal use. The other interesting issue is to understand the reason why non-users experienced continued improvement in all the parameters.

The higher rate of self reported suicide knowledge and self efficacy in the non-users of the app has one of two explanations. Firstly, it may reflect that those individuals did already know the information so did not need to watch the app or secondly, it may have been because of unconscious ignorance. The latter is supported by their lower score in all the other measures.

Statistical significance was achieved in both groups in most parameters except in 3 areas and this was caused but the low numbers in the groups. Statistical significance to lower than 0.001 was achieved in all parameters with the group as a whole.

Workplace Parameters

Improvements in all four of the workplace parameters were seen (atmosphere, communication, trust and engagement) with changes from 22-30%. This again reinforces previous studies that showed improvements of 15-25% in workplaces with the TUFMINDS program but this is the first long term study to show that the benefits continue long term and also seem to progressively improve.

Feedback from the workers in the business was also very positive with the groups working much more cooperatively and supportively so they feel

safer and are also looking out for each much more.

In the time between the initial training and the follow up, one worker was recognised as being at risk of suicide directly because of TUFMINDS. He was approached and assisted to seek urgent medical help for significant suicidal ideation, treatment was commenced, and the individual has stabilised.

The comments received on the questionnaires were:

“Excellent program! As a manager I have seen many positives in our workplace as a direct result of the introduction of the TUFMINDS program.”

“Some of the changes are very small but positive, and you hardly notice them on a daily basis, but on reflection overall wellbeing has increased. Also, it gave me more confidence to ask people if they are OK”.

Program Evaluation

Participants rated the training at 86% for usefulness after the initial training and 90% at the follow up assessment. Participants also maintained their high level of recommendation of the TUFMINDS to others with the 90% level initially being maintained at 89% at the follow up.

Given the involuntary attendance process in the business and the resistance to the program from a significant number of participants, this is a good outcome. The 63% voluntary uptake of the online TUFMINDS program also reflects positive perceptions of workers for the program.

Case Detection

There were no significant issues during the sessions or from the DASS-21 questionnaires and there also there were no participants who had any significant deterioration of the mood scores at any of the assessments indicating no iatrogenic effects from the training.

Discussion

Key Findings

This study reinforces previous TUFMINDS research where optimism, mental resilience and mood scores improved and the longer term improvement is tracked here showing ongoing and increasing benefit. This improvement occurs without any reinforcement of the TUFMINDS program and the reason for this is probably because the participants practice the Positive Mindfulness Cognition techniques over time and as they improve their technique, their mindset, mood and resilience improve further.

The other very significant impact is that use of the TUFMINDS program (available as a free smartphone app or online) magnifies the benefits significantly, resulting in 10-30% further improvement compared to non-users of TUFMINDS.

The improvement of 37% in optimism (LOT-R) scores and mental resilience (BRS) scores of 22% have enormous proven benefits to physical health, mental health and coping.

The health benefits from an improved LOT-R scores are well researched showing reduced heart attacks (¹⁹ Giltay et al 2006), strokes (²⁰ Kim et al 2011), 9 years longer life (²¹ Danner et al 2001) and improved mental health (²² Conversano et al 2010).

The improvements in depression, anxiety and stress scores (45%, 37%, 39% respectively) using these techniques are also dramatic considering the low cost and relatively fast timeframes to learn them.

The magnitude of these changes is also significant because the minimal time required to learn the techniques, the ease of access 24/7 to the content and lack of need for face to face training with professionals. It also means that the program is accessible to anyone with a smartphone or internet access especially important to underserved rural and remote individuals.

Suicide knowledge was increased by 45% and self-efficacy to help others at 30% after the initial training and these increased to 63% and 66% respectively. The greater number of active recognition (18-41) and interventions (7-29) of individuals at risk of suicidal confirms that the self-reported improvements in self-efficacy do increase action being taken to support individuals at risk of suicide. Additionally, the higher risk individuals are recognised as a result of the TUFMINDS training. This is an important factor to understand so the appropriate level of attention can be provided to the individuals in distress and prevent suicide.

This research also very clearly shows extra benefit from use of the TUFMINDS program on an ongoing basis, even if it is occasional use only. The benefits improve with ongoing reinforcement of the techniques and it is logical that the more someone practices and reinforces any technique, the better they will get at it. This demonstrates how powerful the TUFMINDS program is because all previous research has been performed with only 2 – 6 hours of training. With reinforcement available now anywhere and anytime, the benefits can be dramatically greater if used.

The results provide further powerful supportive evidence that the TUFMINDS program is effective at changing mindsets and significantly improving mental health scores, wellbeing, suicide and mental illness understanding. The improvements seen in workplace are also dramatic, statistically significant and sustained over time.

These improvements in mood and workplace parameters are possible without professional counselling or presentations and this research confirms the hypothesis that active mental health interventions are effective using digital media with the TUFMINDS program in workplaces and in community settings. Therefore TUFMINDS appears to be ideal for “universal” mental wellbeing education.

Limitations

The limitations of this study need to be considered when interpreting the results. Firstly, the study was performed without a control group although a control group has been used in previous TUFMINDS research [17]. Secondly, the instruments for some measures like suicide skill, willingness and knowledge and workplace parameters were designed for this study and have not been evaluated. Thirdly, the numbers of participants in the study are low and from only one workforce and while the results did show statistical significance across the board, further studies to increase the numbers overall is recommended.

Further workplace and community studies are therefore recommended to increase the overall numbers seen and ensure that the results are effective across industry types and different social groups.

Implications

TUFMINDS presents a possible universal mental wellbeing and suicide prevention program for use in the community and workplaces. Despite the limitations listed above, this evaluation shows very strong support for the positive effects of the TUFMINDS program to improve mental wellbeing and reduces mental illness scores of depression, anxiety and stress. There is also significant improvement in optimism, mental resilience, suicide knowledge and self-efficacy. The evidence is that these individuals are willing, skilled and confident to recognise and do assist individuals at risk of suicide. It would therefore be important to promote TUFMINDS across the broad populations to help prevent suicide and self-harm.

The implications of a passively delivered mental wellness and suicide intervention program are enormous. There are both health cost savings and better health outcomes because this is a passive program and can be available 24 hours a day, seven days a week. The cost savings to the health budget would be made by reduced payments for professionals or speakers, facility costs and trainer training and additionally the training could be done at the person's convenience at any time.

This information can also be accessed anywhere with internet access and it does not require the individual to talk or communicate with anyone in any way. It is known from Lifeline that many individuals are not willing to speak to a person (face to face or online) and some prefer to use SMS messaging so that service is now offered. There are still others who will not reach out for help at all and are unwilling to communicate in any way.

This process provides solutions to this group who are not willing to reach out or accept that there may be a problem because it allows them to passively gather information and understanding relevant to them without any need to accept that they have a problem, including to themselves. Once they start to watch the modules, they are likely to start to recognise their mental health patterns as unhealthy, understand that the treatment processes can be effective and change their perspective to having hope and solution focussed knowledge.

Another implication with significant impact is that this process may provide an intervention to protect individuals at the point of suicidal ideation and provide some protection before professional help can be obtained. The studies on impulsivity show that intervention needs to be in place with very little delay so having this information in an electronic form that is available 24 hours a day may provide protection to reduce the suicidal action steps and further research should be put into place to assess if this benefit is seen.

This study measured the impact of the program delivered in a form that can be easily shared online, through social media and electronically, without any need for trainers, professionals or facility costs. The benefits are potentially very significant to change the way community education is delivered to improve the mental health and resilience of the community in an effective, safe and economically sustainable way.

Further research needs to be performed to increase numbers and industries assessed and to measure the impact of the TUFMINDS app in the community to measure all parameters as performed in this study to confirm similar results without the initial training program.

Declarations

This study was performed by the creators of the TUFMINDS program, Dr John and Elizabeth McIntosh in the process of developing and accessing the program content and acknowledge the conflict of interest.

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