IncludeMe Mobile Application

A workplace mental health training app

Pilot program evaluation report

includeme
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DISCLAIMER

The IncludeMe evaluation team at Queen's University was comprised of Dr. Heather Stuart, PhD, a Professor in Epidemiology, and Porpong Boonmak, MD, MPHS, a PhD student in Epidemiology, Department of Public Health Sciences. The team provided this report as a third-party, independent evaluation of the IncludeMe app. Funding for the project was provided by IncludeMe; however, the results and conclusions presented in this report were entirely the authors and were not influenced in any regard by IncludeMe.

TABLE OF CONTENTS

List of tables and figures

EXECUTIVE SUMMARY

- Workplace mental health problems are common and costly, both for businesses and society as a whole. IncludeMe is an interactive smartphone-based mental health training application that aims to help small business owners and managers understand and take action on mental health issues. The main goal is to positively change users' attitudes towards mental health problems in the workplace setting.

- A research team at Queen's University is tasked to perform an independent third-party evaluation on the application. The specific objective for this project is to detect whether there is a change of attitudes regarding mental health problems in the workplace among the IncludeMe targeted end-users, defined as small business owners and managers.

- A pre- and post-application design was implemented. A total 209 consenting IncludeMe users were asked to complete 2 questionnaires upon registration; (1) a demographic survey and (2) an adapted 15-statement 5-point Likert-scale survey assessing the attitudes and behavioural intentions towards employees with a mental health problem. Participants were then asked to complete the second survey again after having completed IncludeMe. The results were compared using paired analyses.

- There was evidence of positive changes in attitudes after using IncludeMe. Seventy-eight percent of participants had a higher score overall (from 3.94 to 4.23, an increase of 0.29). Approximately 90% of participants had a score increase in at least one statement. Upon examining each statement, 11 out of 15 of them increased significantly.

- Selection bias, low recruitment rate, and limited sample size were identified as the main limitations to this evaluation project. The evaluation team suggests a short follow-up questionnaire to send to incomplete users, with the objective of identifying any specific barriers to completing the application.

BACKGROUND

Workplace mental health problems are a major cause of absenteeism in a business setting.[1] In a given week, 500,000 Canadian workers are unable to go to work due to their mental health problems.[2, 3] This also comes at a cost, as companies lose an estimated 20 billion dollars a year from associated labour force nonparticipation,[4] while the Canadian economy as a whole loses over 50 billion dollars annually.[5]

Mental health problems are also common among working populations and are associated with workplace cultures. Approximately 20% of workers in the Organization for Economic Co-operation and Development (OECD) countries experience moderate-to-severe mental health problems at a given point in time,[6] with depression, phobias, and anxiety disorders among the top.[7] Working conditions and management practices have gained research attention in the past few years and are sometimes defined as modifiable risk factors for workplace-associated mental health problems.[8] Excessive work demands, lack of control, poor communication, poor relationships and poor support are some of the work-related stresses that affect an employee's mental well-being, as well as productivity and absenteeism.[8]

Managers play an important role in adjusting these modifiable risk factors for their employees, as they often have the power to make workplace-related decisions.[9] Positive attitudes and attitudes of acceptance, for example, demonstrated by managers have been shown to act as protective factors against workplace stressors, and might even help with the recovery process, in case an employee is already living with a mental health problem.[10] Other positive concrete actions that have been shown to be useful also include having non-stigmatizing conversations, and planning work and return-to-work strategies.[11] While in lager businesses, these roles are systematically implemented by a larger entity, for instance, a human resource department, for a small business, an absence of an HR department often means that the roles fall directly on the owners and the managers of that business. Specific training targeting these owners and managers are needed.

Figure 1. A screenshot from IncludeMe

IncludeMe is a free, interactive, workplace mental health training mobile application that aims to help small business owners and managers understand and take action on workplace mental health. It is conceptualized and developed by Iris the Dragon, a registered Canadian charity (#81398 5017 RR 0001). The application is an interactive, graphic novel that exposes

users to 3 workplace mental health scenarios, gives them strategies to address mental health challenges, and builds their confidence in addressing these situations. Users get to problem-solve in order to progress through the game. They start by becoming aware of challenges, then learn how to engage employees, and finally learn how to be more accommodating. The application employs Prochaska's Stages of Change model[12] and Iris the Dragon's narrative formula—the latter of which has been empirically validated by the Mental Health Commission of Canada for its effectiveness in changing attitudes towards those with mental health concerns.

The Transtheoretical Model

Prochaska and Clemente proposed a transtheoretical model of change in 1977. The 5 stages of change reflect the temporal and intentional aspects of change. These stages are;

1. Precontemplation,
2. Contemplation,
3. Preparation,
4. Action, and
5. Maintenance.

Prochaska JO, DiClemente CC. The Transtheoretical Approach. In: *Handbook of Psychotherapy Integration*. 2nd ed. Oxford University Press; 2005:147-171.

In line with the application's main goal, the specific objective of this evaluation project was to detect whether there was a change of attitudes regarding mental health problems in the workplace among the IncludeMe targeted end-users defined as small business owners and managers.

METHODS

Study design

We used a one-group longitudinal “pre- and post-app” design. All consenting participants answered a set of questions before using IncludeMe and were presented with the same set of questions once they had completed the application. The 2 results were then compared using various statistical and visual analyses to assess the success of the program, as well as to answer any questions related to the application use.

Sampling and participants

The intended participants were owners and managers of small business, which was defined as having less than 99 employees; although, participants from lager business were not excluded from using and participating in the program evaluation process. A target sample size was calculated prior to the launch of the application; 126 participants were needed in order to detect a change of 5% in the questionnaire score using paired analysis (paired t-test), with an alpha of 0.05 and 80% power, assuming a standard deviation of 1. This target number could be lower as the test statistics also depend on the actual changes that participants demonstrated.

Non-probability sampling was used to recruit participants. Recruitment was the responsibility of Iris the Dragon.

Surveys and measures

The final questionnaire was comprised of 2 parts; (1) demographic questions, and (2) and questions assessing the attitudes and behavioural intentions towards employees with a mental health problem.

The demographic part included; (1) personal demographic information and personal exposure to individuals with a mental health problem, (2) information regarding their business, as well as the nature of their employment, and (3) specific resources within their business. A full list of demographic items is located in Table 1.

The second part of the questionnaire was adapted from the Opening Minds Scale for Health Care Providers.[13] Although, the health care contexts in which the scale was developed was different from the general workplace environment, the questionnaire has been validated and used in the Canadian context before, and also contained several items that explore attitudes towards colleagues with a mental illness. The items were modified in their wordings to fit with the workplace environment in general. The decision to retain or add items was shared between the evaluation team from Queen’s University and the IncludeMe developers. A total of 15 5-point Likert-scale items were included in the final questionnaire; making possible values range from 5 – 75. The higher values indicated more favourable attitudes towards employees living

with a mental health problem. Items 3, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15 were reverse-coded.

Data management and statistical approaches

Ethical clearance was obtained from Queen's University Health Sciences and Affiliated Teaching Hospitals Research Ethics Board (HSREB). The final version of the questionnaires, including a letter of information and a consent form, was sent from the evaluation team to the developing team to be embedded into the IncludeMe app. Recruitment, consent, and data collection were executed independently by the IncludeMe app team. Data collection lasted approximately 5 months. Final data were sent to the evaluation team with censored personal information.

Multiple statistical approaches were used to assess the effect of the application. Analyses of means were used to measure the spread and distribution of the aggregated scale scores and for the individual item scores. Paired analyses (e.g. paired t-test for parametric statistics and Wilcoxon signed-rank test for non-parametric statistics) were used to compare the pre- and post-app scores. Proportions were interpreted using various data visualization methods. Linear regressions were used to identify potential demographic variables that might be associated with the predicted scores. All analyses were performed using R Statistical Package version 3.5.3.

Users' qualitative feedbacks

IncludeMe users were also given an option to submit any comments they might have had regarding the application. These were not collected systematically, and therefore, were not analyzed according to the standard of qualitative data analysis. Some of the comments were presented in the Result section.

RESULTS

Number of …		
accessible accounts	1,200,000	(100%)
campaign reaches	474,300	(39.53%)
application page views	18,950	(4.00%)
downloads	2,080	(10.98%)
evaluation project users	209	(10.05%)

Figure 2. Flow of IncludeMe target population to application users

Campaign reach

Data describing the campaign reach was provided by Iris the Dragon. Iris the Dragon was able to target approximately 1,200,000 social media accounts of managers and owners on various platforms. The campaign advertisement reached 40% of all target accounts. This resulted in 18,950 hits (4%) on the IncludeMe application page, and 2,080 application downloads (11%). Two-hundred-and-nine of the accounts created participated in the evaluation surveys.

The Average Participant

A 40 – 49-year-old university-educated female manager in a health care and social assistance business.

Demographics

Who were the participants?

A total of 209 IncludeMe users agreed to participate in the evaluation surveys. Of these, 21 completed only the demographic part of the surveys, 108 completed only the demographic and the pre-app surveys, and 80 completed all 3 parts of the surveys.

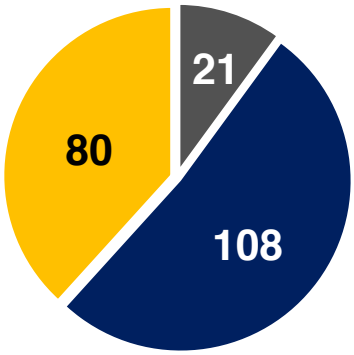

Figure 3. Eighty participants completed all parts of the survey.

Looking at all participants, the majority of the 209 participants were female (73%) aged 40 – 49 (32%). Sixty-four percent had received a bachelor's degree of higher. A little more than half (53%) were managers in a health care and social assistance business sector (21%), with an average employment length at their current business of 8.6 years.

With the focus only on those who completed all 3 parts of the surveys, 76% were female, with a fairly equal distribution of age (from 29 and under to 64 years old). Eighty-six percent received at least a college diploma or higher. Forty (50%) of the participants were managers, 4 (5%) were owners, while the rest reported working as other position in their business, 26% of which were in the arts, entertainment and recreation sector, and 16% were in the health care and social assistance sector. The average current employment length was 9.4 years. Approximately 60% of their business were conducted in the Province of Ontario, Canada.

Table 1. Demographic characteristics of participants

Demographic characteristics	All participants N	All participants Percent (Total 209)	Pre-app only N	Pre-app only Percent (Total 108)	Completed both N	Completed both Percent (Total 80)
Gender						
Female	152	72.73 %	80	74.07 %	61	76.25 %
Male	56	26.79 %	27	25.00 %	19	23.75 %
Choose not to identify	1	0.48 %	1	0.93 %	0	0.00 %
Age						
29 and under	34	16.27 %	10	9.26 %	17	21.25 %
30 - 39	51	24.40 %	25	23.15 %	21	26.25 %
40 - 49	66	31.58 %	40	37.04 %	22	27.50 %
50 - 64	56	26.79 %	32	29.63 %	19	23.75 %
Over 65	2	0.96 %	1	0.93 %	1	1.25 %
Highest level of education						
Some high school or less	8	3.83 %	0	0.00 %	5	6.25 %
High school diploma	12	5.74 %	4	3.70 %	6	7.50 %
College or equivalent diploma	55	26.32 %	29	26.85 %	22	27.50 %
Bachelor's degree	77	36.84 %	42	38.89 %	30	37.50 %
Master's degree or higher	57	27.27 %	33	30.56 %	17	21.25 %
Exposure to perons living with a mental health problem						
Know a close friend or family member with a mental health problem	195	93.30 %	102	94.44 %	74	92.50 %
Know an employee with a mental health problem	177	84.69 %	97	89.81 %	65	81.25 %
Principal location of operations						
Ontario	134	64.11 %	69	63.89 %	52	65.00 %
British Columbia	26	12.44 %	9	8.33 %	14	17.50 %
Alberta	17	8.13 %	8	7.41 %	7	8.75 %
Quebec	9	4.31 %	5	4.63 %	1	1.25 %
Nova Scotia	4	1.91 %	3	2.78 %	1	1.25 %
Newfoundland and Labrador	6	2.87 %	4	3.70 %	2	2.50 %
Saskatchewan	3	1.44 %	1	0.93 %	2	2.50 %
Others	12	5.74 %	10	9.26 %	1	1.25 %
Industry sector						
Health care and social assistance	44	21.05 %	27	25.00 %	13	16.25 %
Arts, entertainment and recreation	31	14.83 %	10	9.26 %	21	26.25 %
Public administration	29	13.88 %	20	18.52 %	6	7.50 %
Educational services	23	11.00 %	15	13.89 %	7	8.75 %
Professional, scientific and technical services	11	5.26 %	5	4.63 %	3	3.75 %
Retail trade	9	4.31 %	1	0.93 %	7	8.75 %
Others	62	29.67 %	30	27.78 %	23	28.75 %
Position						
Owner	15	7.18 %	8	7.41 %	4	5.00 %
Manager	111	53.11 %	56	51.85 %	40	50.00 %
Others	83	39.71 %	44	40.74 %	36	45.00 %
Time having worked for the current business (years)	8.56	9.11 (sd)	7.90	7.26 (sd)	9.4	9.80 (sd)

Table 1 *(cont.)*. Demographic characteristics of participants

Demographic characteristics	All participants N	All participants Percent (Total 209)	Pre-app only N	Pre-app only Percent (Total 108)	Completed both N	Completed both Percent (Total 80)
Number of employees in business						
1 - 4	18	8.61 %	7	6.48 %	5	6.25 %
5 - 9	4	1.91 %	2	1.85 %	0	0.00 %
10 - 19	8	3.83 %	3	2.78 %	4	5.00 %
20 - 49	17	8.13 %	11	10.19 %	4	5.00 %
50 - 99	38	18.18 %	20	18.52 %	14	17.50 %
More than 99	124	59.33 %	65	60.19 %	53	66.25 %
Number of employees under direct supervision						
None	81	38.76 %	40	37.04 %	34	42.50 %
1 - 4	56	26.79 %	27	25.00 %	21	26.25 %
5 - 9	25	11.96 %	16	14.81 %	6	7.50 %
10 - 19	21	10.05 %	11	10.19 %	9	11.25 %
20 - 49	14	6.70 %	9	8.33 %	3	3.75 %
50 - 99	12	5.74 %	5	4.63 %	7	8.75 %
Resources within the business						
In-house mental health support	106	50.72 %	63	58.33 %	32	40.00 %
Mental health/mental illness knowledge training	125	59.81 %	74	68.52 %	40	50.00 %
Employee Assistance Program	178	85.17 %	95	87.96 %	66	82.50 %
Human resource department	171	81.82 %	91	84.26 %	63	78.75 %

Exposure to persons living with a mental health problem

Virtually all participants reported personally knowing a person living with a mental health problem (95%). Across all groups of participants (those who completed some or all parts of the surveys), 93 – 94% knew a close friend or family member with a mental health problem. More specific to the workplace environment, 81 – 90% knew an employee with a mental health problem.

Resource availability within business

Of all 209 participants, 60% reported having received some mental health or mental illness knowledge training. Half of these participants also had an in-house mental health support within their business.

The number of both resources were slightly lower among those who completed all 3 parts of the surveys; with 50% having received mental health training, and 40% having an in-house mental health support structure within their business.

For more a more detailed summary of demographic characteristics, see **Table 1**.

Baseline attitudes of mental health problems in the workplace

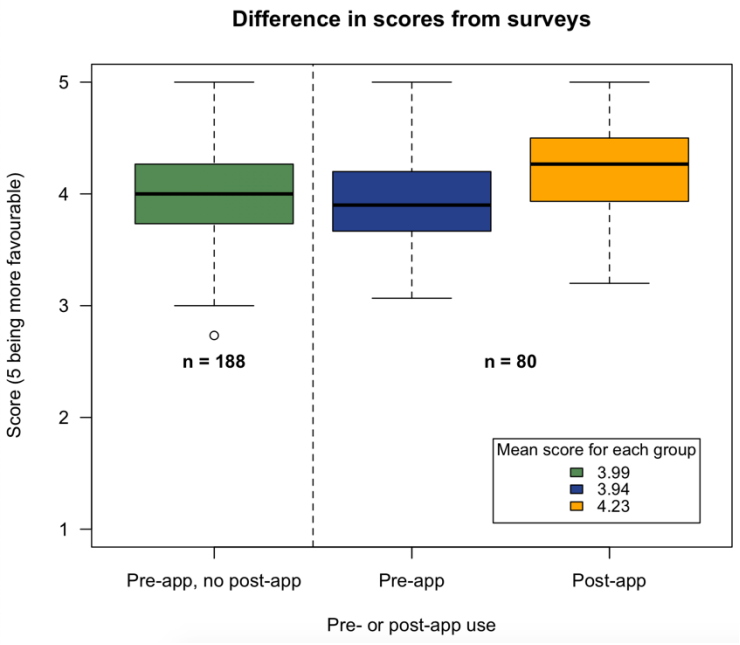

Figure 4. Boxplots of scores comparing averaged pre- and post-app scores. All scores are out of 5.

Following the exclusion of those who completed only the demographic portion of the surveys, 188 participants were included in this part of the analyses. With all 15 statements having equally weighted attitude scores, and each item taking possible values of 1 – 5 (1 representing less favourable attitudes towards mental health problems in the workplace setting, while 5 representing more favourable attitudes), the average score of the 188 participants was **3.99** out of 5.

Figure 4. displays averaged pre- and post- app scores. The blue and yellow boxes represent those who completed all parts of the surveys. The green box represents those who did not complete the post-app survey.

When the 188 participants were categorized into; (1) having only completed the pre-app surveys, and (2) having completed both pre- and post-app surveys, the average scores for these 2 groups were similar on their baseline survey results. The first group had an average of **3.99**, while the second group had an average of **3.94**, both out of 5. There was no statistically significant difference between the 2 scores (t-score = 1.58, df = 172.93, p-value = 0.12).

The 15 statements were also explored individually in the same manner (dividing participants into the 2 groups, as mentioned above). Only one showed any statistically significant difference (p-values ranging from 0.07 – 0.95). The scores were different among the 2 groups for statement 9 "*I don't know how to help an employee with mental health problems*," with the first and second groups having average scores of **3.93** and **3.61** (t-score = 2.23, df = 186, p-value = 0.03).

Detailed analyses comparing those with and without post-app surveys can be found in **Appendix 1**.

Changes after using IncludeMe

Eighty participants who completed all parts of the surveys were included in this part of the analysis. Results in this section will be presented from 2 perspectives: (1) the average

changes in the scores, and (2) the proportions of participants whose scores changed after having completed IncludeMe.

Average score changes

Overall, the average score increased from baseline, 3.94 to 4.23, an increase of **0.29** out of 4, indicating that participants gained more favourable attitudes after having used InclueMe. The change was statistically significant (p-value < 0.01). Refer back to **Figure 4**. to see the average change for all participants. **Figure 5**. shows the changes for all participants.

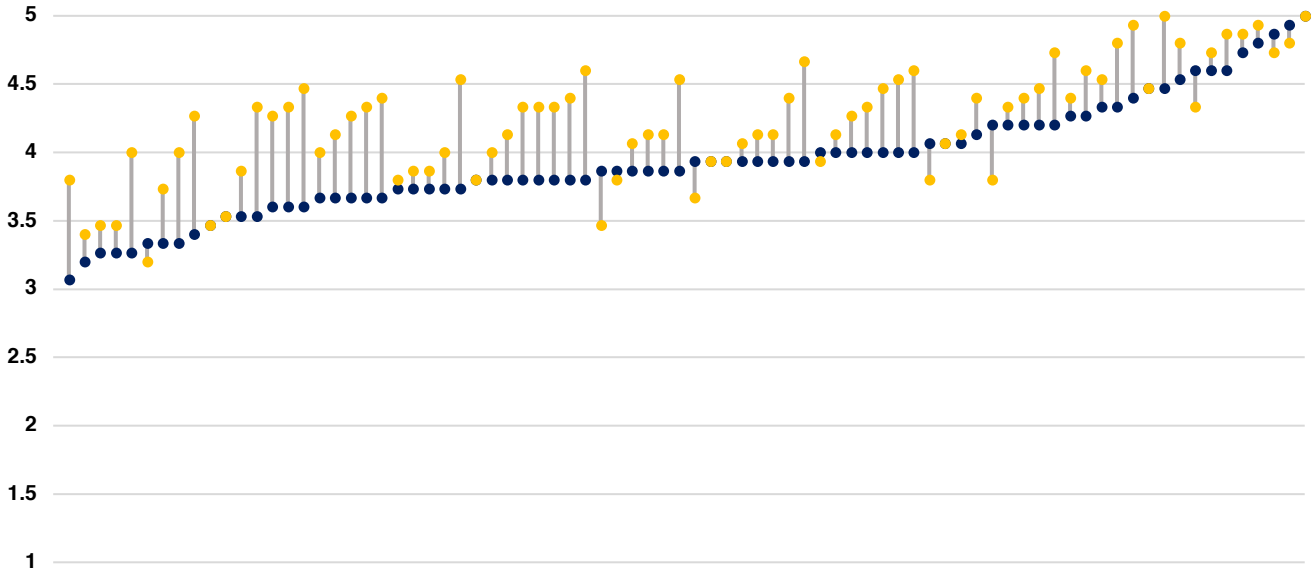

Figure 5. The blue dots represent each participant's pre-app scores. The yellow dots represent the post-app scores. The scores range from 1 to 5. Seventy-eight percent of participants had an increase in their overall averaged score.

Upon exploring each individual statement, 13 out of 15 statements received an increase of scores in varying degrees. Statement 3 "*The company takes a significant risk when hiring employees with mental health problems*" had the highest improvement, from 3.51 to 4.24 (an increase of **0.73**, (t-score = 6.79, df = 79, p-value < 0.01). Statement 1, "*It is in the interest of a company to support employees with mental health problems*" and 4, "*Negative attitudes from co-workers are a major barrier to employees with mental health problems*" received the smallest increases in their scores (both an increase of **0.13**) and neither were statistically significant (t-scores = 0.94 and 0.98, df = 79 and 79, p-values = 0.35 and 0.33, respectively).

There was a decrease in the score for 2 of the statements; statement 6, "*If one of my employees had a mental health problem, I would not want him/her to tell me*" and 15, "*I have negative reactions towards employees who have mental health problems*." The decreases were small, **-0.06** and **-0.03**, and not statistically significant (t-scores = 0.41 and 0.31, df = 79 and 79, p-values = 0.68 and 0.76).

Table 2. Score changes by statement

	Statement	Pre-app score (●) and post-app score (●) for each statement
1	It is in the interest of a company to support employees with mental health problems.	4.36 → 4.49
2	I would employ someone who I knew had a history of mental health problems.	3.93 → 4.15
3	The company takes a significant risk when hiring employees with mental health problems.	3.51 → 4.24
4	Negative attitudes from co-workers are a major barrier to employees with mental health problems.	3.83 → 3.95
5	Employers should make a special effort to accommodate the needs of employees with mental health problems.	4.00 → 4.21
6	If one of my employees had a mental health problem, I would not want him/her to tell me.	4.36 → 4.30
7	If I knew that an employee had a mental health problem, I would reduce the responsibility given to them.	3.76 → 4.08
8	If I knew that an employee had a mental health problem, I would not consider them for a leadership role.	4.06 → 4.39
9	I don't know how to help an employee with mental health problems.	3.61 → 4.31
10	It's not a good idea to ask an employee if they are experiencing mental health difficulties.	3.84 → 4.25
11	I know little about the mental health problems employees are likely to face.	3.50 → 3.88
12	I find it difficult to work with employees who have mental health problems.	4.11 → 4.28
13	I never know what to say to an employee who is experiencing mental health problems.	3.75 → 4.16
14	If an employee disclosed a mental health problem to me, I would worry that I would do more damage than good.	3.96 → 4.26
15	I have negative reactions towards employees who have mental health problems.	4.46 → 4.44
	Averaged score	3.94 → 4.23

3.50 **3.70** **3.90** **4.10** **4.30** **4.50**

Increases were detected in all but 2 statements (6 and 15). Statements highlighted in yellow indicate that there are statistically significant differences between the pre- and post-app scores (p-value < 0.05, paired t-tests). All scores are out of 5.

Table 3. Proportions of participants with increased, same, or decreased scores by statement

	Statement	Proportions (in percentage) of participants with increased ( ), same ( ), and decreased ( ) scores
1	It is in the interest of a company to support employees with mental health problems.	15 / 73.75 / 11.25
2	I would employ someone who I knew had a history of mental health problems.	27.5 / 68.75 / 3.75
3	The company takes a significant risk when hiring employees with mental health problems.	53.75 / 41.25 / 5
4	Negative attitudes from co-workers are a major barrier to employees with mental health problems.	32.5 / 52.5 / 15
5	Employers should make a special effort to accommodate the needs of employees with mental health problems.	25 / 68.75 / 6.25
6	If one of my employees had a mental health problem, I would not want him/her to tell me.	17.5 / 66.25 / 16.25
7	If I knew that an employee had a mental health problem, I would reduce the responsibility given to them.	36.25 / 53.75 / 10
8	If I knew that an employee had a mental health problem, I would not consider them for a leadership role.	30 / 68.75 / 1.25
9	I don't know how to help an employee with mental health problems.	50 / 46.25 / 3.75
10	It's not a good idea to ask an employee if they are experiencing mental health difficulties.	37.5 / 55 / 7.5
11	I know little about the mental health problems employees are likely to face.	38.75 / 42.5 / 18.75
12	I find it difficult to work with employees who have mental health problems.	22.5 / 70 / 7.5
13	I never know what to say to an employee who is experiencing mental health problems.	35 / 58.75 / 6.25
14	If an employee disclosed a mental health problem to me, I would worry that I would do more damage than good.	23.75 / 73.75 / 2.5
15	I have negative reactions towards employees who have mental health problems.	15 / 70 / 15
	Averaged score	77.5 / 10 / 12.5

There are higher proportions of increases for every statement, except for Statement 15, where the proportions of increases and decreases are the same. "No change" proportions were not used for comparison.

Table 2 illustrates the changes by statement. Detailed analyses, as well as test statistics can be found in **Appendix 2**.

Proportions of changes

Post- and pre-app surveys were also analyzed by looking at a participant's score for each item increased, decreased, or remained the same after having used IncludeMe. This part of the analyses only included those who completed all 3 components of the surveys.

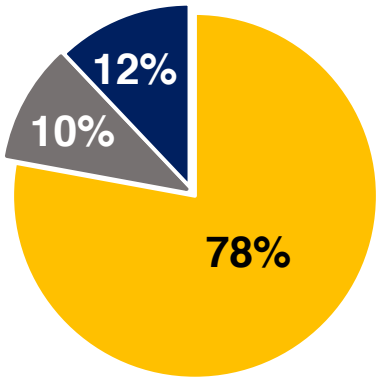

Figure 6. Increase among the 78% of participants; no change in 12%; and decrease in 10%.

Seventy-eight percent of participants scored higher on the surveys overall after having completed IncludeMe. No changes were detected in 10% of the participants, and 12% had a decrease in their scores. It is worth noting, however, that these numbers represent the changes in the total score of all 15 items combined, not individually. Small reductions in scores (see Figure 3) could be due to chance alone.

Figure 6 illustrates the 3 proportions.

When each statement was analyzed separately, all but one had a higher proportion of those with an increased score, compared to those with a decreased score. Statement 3 "*The company takes a significant risk when hiring employees with mental health problems*" received the highest proportion improvement (54%). Statement 9, "*I don't know how to help an employee with mental health problems*" also received a high improvement (50%). Statement

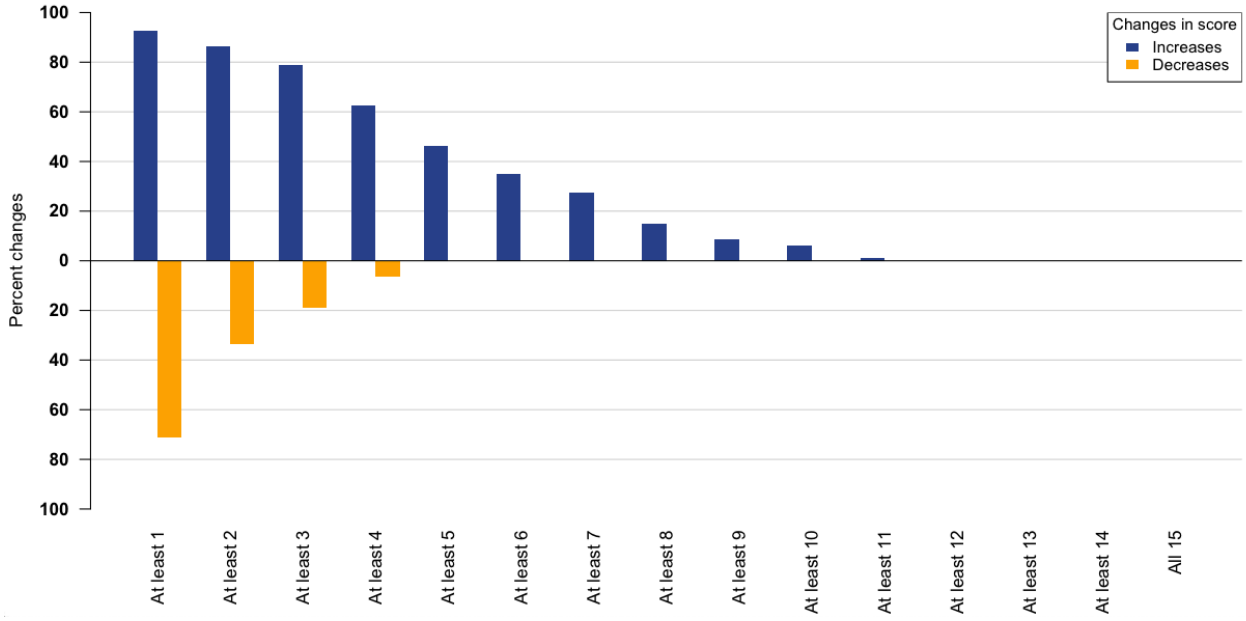

Figure 7. Cumulative percent of increases and decreases in scores across the 15 statements

15, "*I have negative reactions towards employees who have mental health problems*" was the only statement where the increase and decrease in proportions were the same (at 15% each). Proportions of those whose scores remained the same were not included in the analyses. **Table 3** illustrates these proportions in multiple stacked bar graphs.

Another approach to analyzing the proportions of changes was to look at the proportions of changes regardless of their scores. Ninety-three percent of participants had at least one increase in their score item, 86% had at least 2 increases, and 89% had at least 3 increases. One percent of participants had 11 increases, the highest increases detected (**Figure 7**).

Other analyses

Who scored higher even before using IncludeMe?

The demographic data was used to predict the scores of participants prior to using IncludeMe using a linear regression model, with backward elimination to help adjust for the final regression model. Participants who completed the demographic and the pre-app surveys (188) were included in this analysis.

The final regression model included the following demographic information: (1) knowing a person living with a mental health problem, (2) level of education, (3) position, and (4) having received mental health training. Knowing a person with a mental health problem and having received mental health training were associated with 12% and 7% higher predicted scores (βs 0.39 and 0.22, p-values < 0.01, R^2 23%), adjusted for other demographic variables. This indicates that these 2 variables were associated with more favourable views even before using IncludeMe.

Whose scores increased the most after using IncludeMe?

In this analysis, 80 participants who completed both pre- and post-app surveys were included. Linear regression and backward elimination were also used, with percent changes of the total score being the predicted outcome. The final model suggested that managers were associated with a higher predicted change of score (9% higher than owners), adjusted for their pre-app scores (p-value 0.03, R^2 24%) (**Table 4**).

Did IncludeMe work among the intended target groups (small business managers and owners)?

Small business (total employees less than 99) managers who completed the surveys were explored separately as a group. This included a total of 11 managers. A paired t-test was performed to detect the differences in the scores pre- and post- app use. An increase of **0.28** of the total averaged score was detected (p-value 0.02). This corresponded to a 7% increase (**Table 5**).

A sufficient participant size was not reached to conduct a meaningful analysis to answer the same question among the small business owners (sample size 4).

Table 4. Coefficients from final model predicting baseline attitudes

	Coefficient (β)	Standard error	t-value	p-value
Model intercept	3.17	0.23	13.79	< 0.01
Gender				
Male	*(reference)*			
Female	0.13	0.07	1.87	0.06
Not identified	-0.19	0.39	-0.48	0.63
Education				
Some high school	*(reference)*			
High school	0.15	0.22	0.68	0.50
College	0.00	0.19	0.02	0.98
Beachelor's	0.15	0.19	0.80	0.42
Master's	0.32	0.19	1.66	0.10
Position				
Owner	*(reference)*			
Manager	0.14	0.13	1.06	0.29
Other	-0.01	0.13	-0.05	0.96
Knowing someone with a mental health problem	0.39	0.14	2.72	< 0.01
Having received mental health training	0.22	0.06	3.76	< 0.01

Table 5. Coefficients from final model predicting percent changes in scores

	Coefficient (β)	Standard error	t-value	p-value
Model intercept	36.87	8.63	4.27	< 0.01
Position				
Owner	*(reference)*			
Manager	8.99	3.94	2.28	0.03
Other	7.89	3.94	2.00	0.05
Pre-app score	-0.63	0.14	-2.59	< 0.01

Users' qualitative feedbacks

"What I loved about this app is that in only 30 minutes, it uses an immersive, narrative approach to teach managers and other leaders concrete steps to apply principles of psychological safety to their workplace. What I haven't seen before this app was an empathy- and evidence-based combination of teachings about:
how managers and other leaders can support people with mental illnesses in the workplace, *and* how managers and other leaders can better recognize, understand, and support their *own* mental health at the same time.

I found it very valuable even after almost 3 years as Western's Wellness Coordinator, doing a PhD dissertation about decreasing the stigma of mental illness, and completing your excellent Mental Health Interactive Learning Module, Mental Health First Aid, and ASIST!"

"I wasn't expecting to learn much from it coming from a mental health background, and was therefore surprised by how engaged I ended up being as I progressed through it. The tips for conversation starters, accommodations, etc. were excellent and on-pointe - I felt like you really nailed it when providing relevant and useful tools. Literally the evening after I completed the training, my partner shared an issue he's having at work with one of his staff and I was able to support him with the techniques taken in the app. It was actually unbelievable, the timing and how closely his scenario was to one in the narrative."

"I found the interactivity of the IncludeMe training enjoyable and engaging. The workplace mental health scenarios are delivered using a narrative approach which provides relatable context; I could actually see myself having these types of conversations with staff.

IncludeMe also incorporates the principles of psychological safety in the workplace; these principles provide a broader understanding of the importance of workplace civility, respect, and culture. If looking for a training solution that is able to provide context and practical solutions to addressing workplace mental health, IncludeMe is the solution."

"What I found helpful about the IncludeMe training that it made me reflect on my daily interactions with other employees and consider their behavior and what it meant before reacting to it. I found the training encouraged an explorative approach to engaging employees in developing collaborative solutions that would work well for both employee and the organization. I also found the training helped to remind me and other managers about the impact of our own mental health on our work and interactions with others. I highly recommend this training to other companies looking for an introduction to psychological safety in the workplace."

DISCUSSION

Overall, there is evidence to suggest that IncludeMe was successful at positively changing users' attitudes towards employees living with a mental health problem, which is the application's intended short-term objective. The application appeared to improve users' attitudes as a whole. Almost 80% of all participants increased their averaged attitude score after having used the application. When looking at the participants individually, 93% had at least one positive change among the 15 statements, with almost half had at least 5 positive changes.

The application was also successful in sending out positive specific messages regarding dealing with mental health problems in the workplace. This was reflected when comparing the scores for each of the 15 statements individually. Thirteen statements had an increase in their attitude scores. The other 2 statements had already scored very highly (above 4.30) even prior to using the application, which indicated more of a ceiling effect, rather than the scores having actually decreased post-application use.

These results were found to be comparable to another evaluation study done in Australia.[11] HeadCoach was an online mental health training tool for managers developed by a team at the University of New South Wales in Sydney, NSW, Australia. The effectiveness of the tool was measured by comparing pre- and post-program results using a Likert scale of confidence. The margins of change ranged from approximately 0 – 12%, compared to 0 – 20.8% for IncludeMe.

In unadjusted analyses, users who personally knew someone with a mental illness had more positive attitudes to begin with, when compared to those who did not. Having received formal training in mental health was also associated a more positive attitude. When results were adjusted for other variables using regression modelling these 2 factors were not statistically significant.

A limitation of the approach taken is that participants self-selected themselves into using the application, which could potentially result in selection bias which might over-estimate the results. However, the application was meant to be voluntary and to target those who were willing to change or were interested in dealing with mental health problems in their workplaces. One thing we don't know is whether attitudinal change would result in behavioural change. Behavioural chance could not be measured using this evaluation approach.

One major limitation to this study and the implementation of IncludeMe was the small uptake, both by general users, and more specifically, by small business-owners and managers, the intended target populations. Only 0.4% of those who saw the campaign advertisement ended up downloading the application. Among those who downloaded the application, only 10% participated in the evaluation surveys, and just about 40% completed the application and all parts of the surveys. As with other types of voluntary programs and interventions, lack of continuous interest, time, or lack of incentives (monetary or informational) might have been the barriers to getting at potential users. Making the application open to users from businesses of

all sizes was beneficial in obtaining a larger number of participants, but was offset by a lower number of small-business owners and managers. Future recruitment approaches should include focus groups with a sample of the target population to address campaign approaches that fit best with a nature of each business size and sector, specific personal incentives to download and complete the application, as well as informational incentives for businesses (for example, access to future mental health trainings or workshops).

To address the mentioned concern more immediately, the research team at Queen's University will provide simple follow-up questions to the IncludeMe application team to send to users who did not complete the application or the surveys. The purpose of this is to identify specific barriers for each incomplete user. Data will be analyzed and sent back to the application team to further modify the recruitment strategies.

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APPENDICES

Appendix 1. Demographic distributions among all participants, and those who completed only the pre-app parts and all parts of the surveys

Demographic characteristics	All participants N	All participants Percent (Total 209)	Pre-app only N	Pre-app only Percent (Total 108)	Completed both N	Completed both Percent (Total 80)
Gender						
Female	152	72.73 %	80	74.07 %	61	76.25 %
Male	56	26.79 %	27	25.00 %	19	23.75 %
Choose not to identify	1	0.48 %	1	0.93 %	0	0.00 %
Age						
29 and under	34	16.27 %	10	9.26 %	17	21.25 %
30 - 39	51	24.40 %	25	23.15 %	21	26.25 %
40 - 49	66	31.58 %	40	37.04 %	22	27.50 %
50 - 64	56	26.79 %	32	29.63 %	19	23.75 %
Over 65	2	0.96 %	1	0.93 %	1	1.25 %
Highest level of education						
Some high school or less	8	3.83 %	0	0.00 %	5	6.25 %
High school diploma	12	5.74 %	4	3.70 %	6	7.50 %
College or equivalent diploma	55	26.32 %	29	26.85 %	22	27.50 %
Bachelor's degree	77	36.84 %	42	38.89 %	30	37.50 %
Master's degree or higher	57	27.27 %	33	30.56 %	17	21.25 %
Exposure to perons living with a mental health problem						
Know a close friend or family member with a mental health problem	195	93.30 %	102	94.44 %	74	92.50 %
Know an employeee with a mental health problem	177	84.69 %	97	89.81 %	65	81.25 %
Principal location of operations						
Ontario	134	64.11 %	69	63.89 %	52	65.00 %
British Columbia	26	12.44 %	9	8.33 %	14	17.50 %
Alberta	17	8.13 %	8	7.41 %	7	8.75 %
Quebec	9	4.31 %	5	4.63 %	1	1.25 %
Nova Scotia	4	1.91 %	3	2.78 %	1	1.25 %
Newfoundland and Labrador	6	2.87 %	4	3.70 %	2	2.50 %
Saskatchewan	3	1.44 %	1	0.93 %	2	2.50 %
Others	12	5.74 %	10	9.26 %	1	1.25 %
Industry sector						
Health care and social assistance	44	21.05 %	27	25.00 %	13	16.25 %
Arts, entertainment and recreation	31	14.83 %	10	9.26 %	21	26.25 %
Public administration	29	13.88 %	20	18.52 %	6	7.50 %
Educational services	23	11.00 %	15	13.89 %	7	8.75 %
Professional, scientific and technical services	11	5.26 %	5	4.63 %	3	3.75 %
Retail trade	9	4.31 %	1	0.93 %	7	8.75 %
Others	62	29.67 %	30	27.78 %	23	28.75 %
Position						
Owner	15	7.18 %	8	7.41 %	4	5.00 %
Manager	111	53.11 %	56	51.85 %	40	50.00 %
Others	83	39.71 %	44	40.74 %	36	45.00 %

Appendix 1. Demographic distributions among all participants, and those who completed only the pre-app parts and all parts of the surveys (*continued*)

Demographic characteristics	All participants			Pre-app only			Completed both		
	N	Percent (Total 209)		N	Percent (Total 108)		N	Percent (Total 80)	
Time having worked for the current business (years)	8.56	9.11	(sd)	7.90	7.26	(sd)	9.4	9.80	(sd)
Number of employees in business									
1 - 4	18	8.61	%	7	6.48	%	5	6.25	%
5 - 9	4	1.91	%	2	1.85	%	0	0.00	%
10 - 19	8	3.83	%	3	2.78	%	4	5.00	%
20 - 49	17	8.13	%	11	10.19	%	4	5.00	%
50 - 99	38	18.18	%	20	18.52	%	14	17.50	%
More than 99	124	59.33	%	65	60.19	%	53	66.25	%
Number of employees under direct supervision									
None	81	38.76	%	40	37.04	%	34	42.50	%
1 - 4	56	26.79	%	27	25.00	%	21	26.25	%
5 - 9	25	11.96	%	16	14.81	%	6	7.50	%
10 - 19	21	10.05	%	11	10.19	%	9	11.25	%
20 - 49	14	6.70	%	9	8.33	%	3	3.75	%
50 - 99	12	5.74	%	5	4.63	%	7	8.75	%
Resources within the business									
In-house mental health support	106	50.72	%	63	58.33	%	32	40.00	%
Mental health/mental illness knowledge training	125	59.81	%	74	68.52	%	40	50.00	%
Employee Assistance Program	178	85.17	%	95	87.96	%	66	82.50	%
Human resource department	171	81.82	%	91	84.26	%	63	78.75	%

Appendix 2. Detailed analyses for each statement

	Item	Pre-app	Post-app	Average difference	p-value (paired t-test)	p-value (Wilcoxon signed rank)	% with increased scores
1	It is in the interest of a company to support employees with mental health problems.	4.36	4.49	0.13	0.35	0.36	15%
2	I would employ someone who I knew had a history of mental health problems.	3.93	4.15	0.23	**0.00**	**0.00**	28%
3	The company takes a significant risk when hiring employees with mental health problems.	3.51	4.24	0.73	**0.00**	**0.00**	54%
4	Negative attitudes from co-workers are a major barrier to employees with mental health problems.	3.83	3.95	0.13	0.33	0.11	33%
5	Employers should make a special effort to accommodate the needs of employees with mental health problems.	4.00	4.21	0.21	**0.02**	**0.01**	25%
6	If one of my employees had a mental health problem, I would not want him/her to tell me.	4.36	4.30	-0.06	0.68	0.79	18%
7	If I knew that an employee had a mental health problem, I would reduce the responsibility given to them.	3.76	4.08	0.31	**0.00**	**0.00**	36%
8	If I knew that an employee had a mental health problem, I would not consider them for a leadership role.	4.06	4.39	0.33	**0.00**	**0.00**	30%
9	I don' t know how to help an employee with mental health problems.	3.61	4.31	0.70	**0.00**	**0.00**	50%
10	It' s not a good idea to ask an employee if they are experiencing mental health difficulties.	3.84	4.25	0.41	**0.00**	**0.00**	38%
11	I know little about the mental health problems employees are likely to face.	3.50	3.88	0.38	**0.02**	**0.03**	39%
12	I find it difficult to work with employees who have mental health problems.	4.11	4.28	0.16	**0.01**	**0.01**	23%
13	I never know what to say to an employee who is experiencing mental health problems.	3.75	4.16	0.41	**0.00**	**0.00**	35%
14	If an employee disclosed a mental health problem to me, I would worry that I would do more damage than good.	3.96	4.26	0.30	**0.00**	**0.00**	24%
15	I have negative reactions towards employees who have mental health problems.	4.46	4.44	-0.03	0.76	1.00	15%
	Averaged score	**3.94**	**4.23**	0.29	**0.00**	**0.00**	78%

Statements highlighted in yellow indicate that there are statistically significant differences between the pre- and post-app scores (p-value < 0.05, paired t-tests and Wilcoxon sign rank tests). All scores are from 1 to 5.