

Online Supplement

Introduction

Broadly speaking, two types of depression interventions have been explored: formal depression prevention programs, which are based on principles of effective treatment for depression (such as the Penn Resiliency Program) (1) and mental health education and anti-stigma campaigns (such as Mental Health First Aid) (2). Each approach has its merits and limitations. Depression prevention programs feature a highly structured approach requiring strict adherence to detailed manuals and procedures to ensure standardization, which is admirable, but also creates an approach that can be inflexible and difficult to adapt to the needs of each school. Additionally, this relies on external health professionals, rather than empowering school staff to sustain the program or to manage self-referrals. While some existing school-based intervention programs are driven by the activity choices of the students, the vast majority are delivered exclusively by professionals such as clinicians, school psychologists, or teachers, despite research findings that peers have greater credibility among teens and are thought to be more familiar with the issues faced by other young people (3). Notable exceptions include Sources of Strength (SOS) (4–6), Natural Helpers, and the Bring Change to Mind High School Program.

Apart from the comprehensive depression prevention programs noted above, broader mental health and anti-stigma campaigns offer another approach: delivering a purely educational intervention to address depression literacy. Such health education campaigns benefit from effective prevention programming characteristics, including providing contact with adults and peers in a way that promotes strong relationships and supports positive outcomes, tailoring the program to the community and cultural norms of the participants, and involving the target group in program planning and implementation (7). Community-driven prevention programs can lead to high community acceptance and ownership, the potential for broader implementation across different organizations and institutions, and the opportunity to obtain immediate feedback to enhance program outcomes over time (8).

Methods

Setting and Participants

Since 2009, the P2P program has been carried out in Washtenaw County, a small region near Detroit, Michigan with a population of approximately 350,000. The program began with five Ann Arbor high schools and gradually expanded to 10 high schools in 2015. Over 450 students have participated directly on P2P teams, with more than 140 events run by P2P team members and program exposure to thousands of students. The program has a budget of approximately \$300 USD per school, funded through local grant support and individual donors.

In the 2015-2016 academic year, there were 121 P2P team members across 10 schools. Teams ranged from a minimum of five students to a maximum of 30 students. Due to the community-based participatory nature of the proposed project, the sample sizes were determined by interest and engagement of students and staff at each school.

Overall, 878 students (including 49 team members and a convenience sample of 829 non-P2P students from the 10 participating high schools) completed questionnaires. This is approximately 15% of the total population of the high schools that participated in the program (9). In the total population of participating schools, approximately 59% were white, 16% were black, 10% were Asian, 5% were Hispanic, .1% were Native Hawaiian or other Pacific Islander, .9% were American Indian or Alaska Native, and 6% were other. In addition, 51% were female and 49% were male. Of the students surveyed, over half (58%) were white, and approximately 17% were black, 6% were Asian, 9% were Hispanic, .1% were Native Hawaiian or other Pacific Islander, .5% were American Indian or Alaska Native, 16% were other and 3% reported that they would rather not say. Over half (51%) of respondents identified as female, 48% identified as male, and 1% identified as other. One third (28%) of respondents were in 9th grade, 41% were in 10th grade, 14% were in 11th grade, and 17% were in 12th grade. The institutional review board (IRB) waived the need for informed consent from participants; the study received exemption under the category of normal educational practices.

Intervention Procedure

The intervention is based in part on the Adolescent Depression Awareness Program (ADAP) (10), which employs various tools to educate high school students, teachers, and parents about depression. After the initial educational training, each P2P team spent October through December developing a depression awareness campaign tailored to fit their school. Two volunteer P2P team mentors at each school coordinated where, when, and how frequently the P2P team met during that time. The P2P mentors also made sure the P2P teams stayed on task with their campaign. Subsequently, the P2P teams were asked to submit project proposals to their P2P mentors and to the University of Michigan Depression Center (UMDC) staff for feedback and revision. Projects were implemented from January to May of the following year. In May, P2P teams attended the End-of-Year Celebration Conference and delivered oral presentations detailing their campaigns. P2P teams also submitted a final implementation report in May.

Instruments

Under the guidance of the University of Michigan Institute for Social Research (ISR) and faculty from the Department of Psychiatry, the existing P2P Depression Awareness Questionnaire was adapted from a previous version. Adaptation involved a cognitive interviewing evaluation, which required asking participants to think aloud as they completed the questionnaire, as well as the use of probing techniques to see how they formulated their response and how they interpreted the meaning of each question. Five high school students completed cognitive interviews that lasted between 30 to 45 minutes. Participants indicated that they understood every survey question and that they seemed to understand most of the terms/phrases in a uniform way. They also indicated that they felt comfortable answering the questions about depression and that every question applied to them.

The pretest questionnaire was comprised of 44 items, organized into six major domains. The posttest questionnaire was comprised of 49 items, organized into seven major

domains.

1. *Demographics* (4 items). All students were asked to report gender; whether they were of Hispanic, Latino, or Spanish Origin or descent; race; and grade.
2. *Helping Others with a Mental Illness* (3 items).
3. *Helping Yourself* (2 items).
4. *Depression Knowledge* (12 items). A modified version of the Adolescent Depression Knowledge Questionnaire (ADKQ; 11) was used to assess knowledge of depression and depressive illnesses. The original ADKQ consists of 13 yes/no questions that test adolescents' factual knowledge about depression (range: 0-13). Swartz et al. reported a mean of 13.0 on the ADKQ for a sample of 3,538 9th-graders, and approximately 6 weeks after participating in the Adolescent Depression Awareness Program (ADAP), the mean ADKQ score increased to 15.8. Another study by Hart et al. (2014) found good internal consistency estimates (0.89), indicating a homogeneous test with good reliability. Psychometric evidence supported the ADKQ as a measure to evaluate changes in adolescent depression literacy. In addition, the ADKQ was sensitive to changes in depression knowledge related to participation in school-based educational programs.
5. *Depression Help-Seeking* (12 items). The likelihood of seeking help for depression was measured with a modified version of the General Help Seeking Questionnaire (GHSQ; 12) by asking students to report their formal and informal intentions to seek help from 12 targeted help sources. Wilson and colleagues found that the GHSQ had satisfactory reliability and validity and supports the specification of different help sources (Cronbach's alpha = 0.70, test-retest reliability assessed over a three-week period = 0.86). Participants were asked, "If you thought that you had depression, how likely is it that you would seek help from the following people or places?" Response options included Friend, Teacher, Doctor, and Internet Website.
6. *School Environment and Stigma* (11 items). Attitudes about mental illness were measured with a 10-item modified version of the Revised Attribution Questionnaire (r-AQ), a 9-item self-administered scale designed to assess mental illness stigma in children and adolescents in the school setting (Watson et al., 2004), as well as one standalone question ("How comfortable are you talking about mental health issues in general with other students at your school?"). In a sample of adolescents, Pinto et al. (2012) reported a Cronbach's alpha of 0.70 for the r-AQ and concluded that the r-AQ is a reliable and valid measure of the emotional reaction of adolescents to people with mental illness.
7. *Visibility of P2P Program* (5 items, posttest only). Visibility of public awareness campaigns has been identified as an important topic (15). Several items were used to assess the visibility of each school's P2P program (e.g., "During the last school year, did you notice a student group in your school promoting mental health

awareness?”).

Measurement and Evaluation

Participants were assigned a confidential ID number and the questionnaire instructions clearly explained the confidential and anonymous nature of the study, as well as the voluntary nature of participation. All surveys were provided in hard copy, and the Project Coordinator entered all data into the project database.

The 5 additional questions included in the posttest questionnaire enabled us to assess whether students' depression-related knowledge and attitudes, stigma, and help-seeking outcomes differed by whether they were exposed to (or at least remembered being exposed to) campaign elements.

Limitations

The P2P program does have several limitations that should be mentioned. First, implementing universal school-based interventions requires substantial planning, buy-in from administrators, and ongoing funding in order to keep it sustainable. Second, as the program has been implemented for several years in 10 schools, students may have been exposed to the campaign in previous years. We did not account for this in our analyses. Third, given the program-oriented nature of the P2P project, analyses were primarily descriptive in nature. Future research may benefit from more sophisticated analyses and detailed examination of the program's value with respect to suicide prevention. Moreover, we sought to identify intervention effects by capturing “dose” in the form of respondents being aware of the intervention campaign and/or having attended P2P programs or events; a control “no-intervention comparison group” was not included. Finally, our conclusion that post-campaign scores showed a dose-response relationship was based on descriptive statistics and not based on group comparisons with statistical significance testing.

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TABLE 2 Post-intervention Questionnaire Response, Non-P2P Subjects, Divided by Involvement in Intervention

Item	Not aware and no attendance N=223		Aware and no attendance N=294		Aware and attendance N=250	
	M	SD	M	SD	M	SD
How confident are you in your ability to identify someone who is showing the common signs of depression? (M±SD) ⁱ	4.79	1.65	5.02	1.35	5.14	1.35
How confident are you in your ability to help a friend access mental health support services in your school or in the community? (M±SD) ^a	4.86	1.65	5.09	1.48	5.18	1.54
If you were seen going into the office of your school social worker or school psychologist, how would you feel? (M±SD) ⁱⁱ	2.91	1.71	2.89	1.69	2.74	1.59
Imagine that you recently heard about a new student at your school who has depression. To what extent do you agree or disagree with the following statements? (M±SD) ⁱⁱⁱ						
The new student is more dangerous than other students.	1.85	.91	1.80	.91	1.69	.88
The student is to blame for his or her condition.	1.72	.94	1.41	.69	1.43	.79
I would have sympathy for the new student.	3.64	1.06	3.96	.87	3.88	.93
The new student makes me feel scared.	1.69	.81	1.57	.79	1.61	.84
The new student makes me uncomfortable	1.79	.86	1.75	.92	1.73	.89
I would help the new student even if I did not know him or her well.	3.62	1.04	3.72	.99	3.83	.90
I would try to stay away from the new student.	1.90	.91	1.78	.86	1.71	.88
The new student would be made fun of at my school.	2.72	1.05	2.30	1.07	2.35	1.05
The new student would be ignored at my school.	2.80	1.04	2.47	1.07	2.39	1.02
I think other students in my school would try to help the new student.	3.19	1.05	3.44	.99	3.54	.99
How comfortable are you talking about mental health issues with other students at your school? ^{iv}	4.30	1.80	4.68	1.67	5.02	1.64
If you were having a personal or emotional problem, how likely is it that you would seek help from the following people? (M±SD) ^v						
Friend	3.06	.96	3.19	.84	3.22	.83
Parent/guardian	3.05	1.00	3.10	.99	3.00	.99
School counselor	2.38	1.03	2.52	1.02	2.51	.94
Teacher	2.09	.98	2.15	1.00	2.22	.94
Mental health professional	2.98	1.03	3.01	1.02	3.01	.94
Doctor	2.95	1.02	2.96	1.00	2.96	.93
Internet website	2.09	1.10	2.24	1.08	2.35	1.12
Clergy	1.93	1.05	1.85	.99	1.79	.99
Phone help line	1.88	1.00	1.89	.98	1.83	.94
Other relative	2.77	1.04	2.76	1.09	2.73	.99
Boyfriend or girlfriend	2.73	1.07	2.75	1.09	2.75	1.00
Coach	2.37	1.06	2.09	1.08	2.20	1.09

ⁱ Scores range from 1 to 7 with higher scores indicating greater confidence

ⁱⁱ Scores range from 1 to 7 with higher scores indicating greater embarrassment

ⁱⁱⁱ Scores range from 1 to 5 with higher scores indicating greater agreement

^{iv} Scores range from 1 to 7 with higher scores indicating greater comfort

^v Scores range from 1 to 4 with higher scores indicating greater likelihood