The Effectiveness of a Depression Literacy Program on Stigma and Mental Help-Seeking Among Adolescents in Malaysia: A Control Group Study With 3-Month Follow-Up

**Norhayati Ibrahim, PhD[1], A'isyah Mohd Safien, MS[1],
Ching Sin Siau, PhD[2], and Suzana Shahar, PhD[1]**

Abstract

This study evaluated the effectiveness of a depression literacy program on depression literacy, mental health stigma, and help-seeking attitude among adolescents with a monthly household income of RM3900 a month or less (B40) in Malaysia. The program included a lecture, mental awareness activities, and a short video on depression. Residents from a boarding school for lower income families were involved in this study (N = 101); 53 of them underwent the program and another 48 served as the control group. There were significant improvements for all variables in the intervention group (better depression literacy, reduced self-stigma, reduced negative beliefs on mental health, and increased help-seeking) at posttest. However, the results were sustained at 3-month follow-up only for the depression literacy, mental help-seeking attitude, and self-stigma of seeking help variables when compared with the control group. The findings highlight the need to improve the program to enhance the effectiveness and sustainability of the outcomes.

Keywords

depression literacy, health literacy, stigma, attitude, help-seeking, SES, adolescent, control groups, Malaysia

> **What do we already know about this topic?**
> Depression literacy has an impact on stigma and help-seeking attitudes. Adolescents from the bottom 40% socioeconomic group are at a compounded risk of suffering from depression and other mental health issues. Most current mental health literacy programs do not specifically target adolescents with depression or had depended on 1 mode of delivery (eg, presentation of information) which may not be appealing to the adolescent population.
> **How does your research contribute to the field?**
> This dynamic depression literacy program targets lower socioeconomic adolescents with elevated depression scores, to decrease stigma and improve help-seeking attitudes through a combination of intervention modes, which are small-group activities, video animation, and information presentation.
> **What are your research's implications toward theory, practice, or policy?**
> The Depression Literacy Program which employs multiple modes of delivery has been shown to be effective in increasing depression literacy and help-seeking attitudes while decreasing stigma toward mental illness. Thus, it should be implemented nationwide.

Introduction

There are various factors that prevent individuals from seeking help when they experience emotional disturbance. The barriers may originate from difficulty accessing treatment from health service providers,[1] cost and financial considerations,[2,3] and prejudice, ill-treatment, and bias from health providers.[4] The individuals themselves may also have personal issues that hinder them from seeking help, such as a

[1]Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia
[2]UCSI University, Kuala Lumpur, Malaysia

Corresponding Author:
Norhayati Ibrahim, Health Psychology Programme, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, Kuala Lumpur 50300, Malaysia.
Email: norhayati70@gmail.com

negative perception about confidentiality and the effectiveness of therapy,[5] a lack of insight about the illness and the need for treatment,[6] belief on self-efficacy to get help,[7] and stigma about the mental disorder or the act of seeking help for it.[8,9]

Stigma has been listed as one of the top reasons that caused those affected by mental illness to forgo mental care. A recent review of 144 studies involving 90 189 participants indicated that stigma was the fourth out of 10 highest barriers to help-seeking.[10] The main types of stigma preventing people from accessing care were "treatment stigma," that is, the stigma associated with using mental health services or receiving mental health treatment, and "internalized stigma," such as shame and embarrassment.[10] The direct impact of public stigma on the utilization of psychological services has been indicated in earlier studies. An individual is more likely to hide his or her psychological concerns and avoid treatment if there is fear of stigma from society.[11] A mentally ill patient could be perceived as being "crazy"[12] and dangerous.[13] Meanwhile, those who seek help were viewed less favorably[14] and are rated as being more emotionally unstable.[15] The other type of stigma, namely self-stigma, also plays a significant role in the decision whether to seek and receive help or not. Self-stigma has been explored by a number of researchers.[15,16] Recent studies have established its role in predicting psychological help-seeking attitudes.[17,18] Studies by Vogel et al[18-20] revealed that self-stigma is indeed a unique and different concept of stigma that independently predicted the help-seeking attitude of an individual. Although self-stigma may originate from external influences such as societal expectations, the complex internalization of these negative perceptions and prejudices could lead to shame and loss of self-esteem.[21] This subsequently affects an individual's attitude and willingness to seek counseling or therapy.[22-24]

An estimated 29.2% of the Malaysian population suffer from a mental disorder,[24] and 11.0% of adolescents reported severe depression.[25] However, there is a low rate for help-seeking for mental illness, and psychiatric disorders are treated at a late stage.[26] This could stem from a lack of knowledge and cultural variations such as making a spiritual rather than a medical diagnosis for the mental disorder.[27] There is also evidence of perceived stigma toward mental illness among patients, caregivers and health care providers.[28-31] In spite of the magnitude of the problem, there is a paucity of intervention studies which focus on improving mental health literacy, stigma, and help-seeking attitudes among mentally ill adolescents in the Southeast Asian region. For this reason, a concise module on depression and the stigma that surround it was developed and evaluated in a depression literacy program for the Malaysian population, specifically among adolescents.

Mental health literacy has a clear relationship with the help-seeking attitude of an individual.[32] Those who have better information about the symptoms, causes, and treatment of mental illnesses generally have more favorable and positive attitudes on seeking mental help.[32] Among adolescents, a relationship was observed between low mental health literacy and higher levels of depression.[33] However, adolescents who knew how to obtain mental health services and maintain a positive mental health reported higher mental well-being levels.[34] Unfortunately, the rate of health literacy, especially mental health literacy, in emerging economies such as Malaysia is low. As indicated by the National Health and Morbidity Survey, adequate health literacy was observed for only 5.1% among those with a secondary school education.[35]

This study seeks to test the efficacy of the program on the bottom 40% (B40) population in Malaysia. B40 refers to households with an average income of RM3900 a month or less. They are the bottom group in the 3 household categories in Malaysia (bottom 40%, middle 40%, and top 20%)[36] and includes those who earn an income below the poverty line index. Poverty is closely related with the increased incidence of mental illness.[37-39] Lower socioeconomic status is usually associated with a lower educational level, and this is closely associated with lower levels of mental health literacy.[39] In Malaysia, adequate health literacy was observed in only 3.6% among those with a monthly household income of less than RM3000, compared with 11.6% among those whose household earned above RM6000.[35] Therefore, there is a need to target the mental health literacy of adolescents from the lower socioeconomic background.

There are a number of mental health literacy programs developed or adapted for adolescents, such as the Youth Mental Health First Aid (YMHFA), Question Persuade Refer (QPR), and Signs of Suicide (SOS).[40-44] A review of mental health interventions for adolescents revealed that most of these programs were developed and tested in high-income countries, with a few notable exceptions from Thailand, Nigeria, Tanzania, and Brazil.[42] In addition, most had targeted suicide and self-harm,[44] or a number of common mental health problems (eg, YMHFA).[40] As most mental health literacy programs do not specifically target depression literacy or had been developed in high-income contexts, this study aims to demonstrate the efficacy as well as stability of a Malaysian Depression Literacy Program immediately after the program ended and at 3-month follow-up among adolescents with elevated depression levels.

Method

Sample Selection

Participants of this study were recruited from a boarding school managed by a nongovernmental organization located in Rawang, Selangor. There were 156 students from B40 households from all over Malaysia in this school aged between 13 and 17 years old. The warden of the boarding school selected 127 students who were deemed to benefit from the Depression Literacy Intervention, such as those

observed to be depressed or had exhibited problematic behavior. The researchers screened the participants based on their depression level measured by the Kutcher Adolescent Depression Scale (KADS)[45] to include only adolescents with significant depression symptoms in the study, that is, students who scored above the 50th percentile on the KADS.

Instruments

The effectiveness of the program was measured by 4 instruments. The Depression Literacy Scale (D-Lit) by Griffiths et al[46] is a 22-item scale which assesses depression-specific mental health literacy (eg, "People with depression may feel guilty when they are not at fault"). There are 22 items in the questionnaire and the participants choose 1 response from 3 options: "True," "False," or "Don't Know." One point is given for each correct response, and a higher depression literacy is indicated by higher scores. The original questionnaire has an internal consistency of $\alpha = .70$.[46] In this study, the questionnaire achieved the internal consistency of $\alpha = .831$.

The Mental Help Seeking Attitude Scale (MHSAS) by Hammer et al[47] consists of 9 items used to measure an individual's evaluation of help-seeking from mental health services if they find themselves dealing with a mental health concern. Participants respond on a 7-point semantic differential scale anchored by bipolar adjectives (good vs bad). The questionnaire has an internal consistency of $\alpha = .93$ to $.94$.[47] In this study, the questionnaire achieved the internal consistency of $\alpha = .928$.

The Self-Stigma of Seeking Help Scale by Vogel et al consists of 10 items which measure an individual's level of self-stigma experienced when they consider seeking professional mental health services (eg, "I would feel inadequate if I went to a therapist for psychological help"). Participants answer on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate higher self-stigma. The questionnaire has an internal consistency of $\alpha = .86$ to $.90$.[25] In this study, the questionnaire achieved the internal consistency of $\alpha = .747$.

Beliefs Toward Mental Illness (BMI) by Hirai and Clum[48] is a 21-item questionnaire designed to measure negative and stereotypical views of mental illness. Three subscales derived from factor analysis were dangerousness, poor social and interpersonal skills, and incurability. Participants answered on a 6-point Likert scale ranging from 0 (completely disagree) to 5 (completely agree). Higher scores reflect more negative beliefs on mental illness. The questionnaire has an internal consistency of $\alpha = .89$ to $.91$.[48] In this study, the questionnaire achieved the internal consistency of $\alpha = .904$.

Procedure

This was a quasi-experimental study using preintervention and postintervention measures with a 3-month follow-up to evaluate the effectiveness of the Depression Literacy Program. Out of the 127 participants referred by the boarding school warden, 101 participants who reported depression scores above the 50th percentile on the KADS and who came from Selangor and Kuala Lumpur were assigned to the intervention group (n = 53); 48 participants who scored similar levels of depression and came from other states were allocated into the control group whereas the rest who scored lower levels of depression were excluded from the study. Each participant and their guardian gave informed consent to voluntarily participate in this study.

For the intervention group, the participants received depression literacy intervention in the form of small group activities, an explanatory talk, and an animation video. The development of the program was based on a thorough literature review of existing mental health programs.[40-44] Facts on mental health statistics in Malaysia, especially among adolescents, have also been incorporated. To build activities to elicit adolescents' expression of knowledge and perceptions on depression, a brainstorming session was conducted among the researchers (N.I., A.M.S., and S.S.). The lead author (N.I.) wrote the script and commissioned the animation video on depression. The following are features unique to the Malaysian depression literacy program:

1. Information on mental health and depression presented in the lecture were culture-specific and context-specific to Malaysia, for example, the importance of spirituality and religion, and statistics on mental health in Malaysia.
2. The animation video depicted Malaysian characters and settings and was delivered in the Malaysian language.

Before the intervention, they answered a set of questionnaires to gather pretest data for depression literacy, mental help-seeking attitude, self-stigma on seeking help, as well as negative beliefs that they have on mental illness. After pretest was completed, participants were divided into multiple small groups and participated in the following activities:

1. Who am I? Participants draw pictures based on their perception of depression and the healthy mental state, followed by a group discussion.
2. Post-it graffiti: Participants express their thoughts and beliefs of mental illness by writing them down on a post-it sticker and paste it on a board, followed by a group discussion.
3. Body drawing: Participants express their knowledge and perceptions of a person with depression by writing them down on a body picture, followed by a group discussion.

The tasks were intended to elicit their current knowledge and understanding in identifying symptoms of depression,

the stigma they have on depression and their initiatives in helping friends who are seen to be mentally disturbed and troubled. Facilitators evaluated if the participants expressed wrongful knowledge or stigmatizing attitudes on depression based partially on the vignette procedure by Mannarini and Boffo[49,50]: (1) etiological beliefs (eg, failure to adopt a bio-psychosocial perspective or attributing moral weakness as the reason for developing depression); (2) stereotypes (eg, always dressed sloppily or smelled bad); (3) the degree of dangerousness; and (4) the desire for social distance. Facilitators then discussed the correct facts on depression, what consists of a stigmatizing attitude, and the impact of stigma on persons with depression.

After completing the activities, the program then continued with the presentation and explanation of depression. It covered topics on causes of the illness and risk factors (eg, a biopsychosocial perspective),[51] symptoms of depression (eg, depressed mood, anhedonia),[51] and steps to overcome and how to treat the illness (eg, seeking professional help, psychopharmacological interventions).[52] Participants were also informed of the stigma that surround this particular mental disorder. Facilitators distinguished the 2 types of stigma that exist, which are the stigma toward depression itself, as well as the stigma that hinders a person from seeking help when they experience depression. Facilitators also presented information on the myths and facts of mental illness.

Last, to strengthen the participants' understanding on the symptoms and treatment of depression, the participants watched a 4-minute depression-related animation video. This video was produced based on the Major Depressive Disorder symptoms stated in the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-5*).[51] The rationale of placing the video at the end of the program was based on the peak-end rule, a psychological theory proposed by Kahneman et al,[53] whereby the remembered feelings of an experience were predicted by the most intense (peak) experience near the end of an event. This means that the pleasant or unpleasant memory of an individual incident or event depends on this crucial timeframe. This particular theory has been tested in medical, financial, and workplace settings.[54-56] Table 1 outlines the content of the intervention program.

Participants were then given the same set of questionnaires to measure their response immediately after completing the depression literacy program (posttest data). The same procedures were replicated for the control group, with the exception that they were not given any intervention, and therefore no posttest measures were collected. To determine the stability of the program, participants in both the intervention and control groups were given the same set of questionnaires 3 months after completion of the program (follow-up). This study was granted ethical approval from Ethics Committee from the Universiti Kebangsaan Malaysia (PPI/111/8/JEP-2018-267). Figure 1 outlines the procedures of the study.

Results

A total of 101 adolescents (mean age = 14.61, SD = 1.39) participated in the study. The cumulative dropout rate for this study at 3-month follow-up was 12.1%. Missing data were deleted listwise. At baseline, there were more women in both the control group (56.3%) and the intervention group (64.2%). Most of the participants in the control group were 17 years old (25%), followed by 14 (22.9%) and 13 (20.8%), and the rest were those aged 15 and 16 years. For the intervention group, most of participants were aged 14 (35.9%). More than half of the control group participants came from households with income between RM1000 to RM3000 (58.5%) and only 1 participant (1.9%) was from the RM3001 to RM3860 household income group. Similarly, most participants in the intervention group were from the RM1000 to RM3000 household income group (54.2%). Most participants in the control (62.5%) and intervention (52.8%) groups came from moderate size families with 4 to 6 siblings. They were also mostly the older siblings in their family. A total of 64.6% participants from the control group and 62.3% from the intervention group lived with both of their parents when they are away from school. Chi-square analyses revealed that there were no significant differences ($P > .05$) regarding the demographic information between the intervention and control group (Table 2).

The repeated measures analysis of variance (ANOVA) was conducted to evaluate the effectiveness of the Depression Literacy Program to increase depression literacy (D-Lit) and mental help-seeking attitude (MHSAS), and to decrease self-stigma on help-seeking (SSOHS), and negative beliefs on mental illness (BMI). The program significantly increased MHSAS at posttest ($P < .001$) and follow-up—$P = .034$; $F_{(2, 84)} = 9.939, P < .001, \eta_p^2 = .191$—and significantly decreased BMI at posttest ($P < .001$) and follow-up—$P = .014$; $F_{(2, 84)} = 41.298, P < .001, \eta_p^2 = .496$. Results also indicated that the program significantly increased D-Lit at posttest ($P < .001$) but not at follow-up—$P = .143$; $F_{(2, 84)} = 13.266, P < .001, \eta_p^2 = .240$. Similarly, for SSOHS, significant decreases at posttest ($P = .001$) could not be maintained at follow-up—$P = .242$; $F_{(2, 84)} = 8.659, P < .001, \eta_p^2 = .171$ (Table 3).

The 2×2 mixed model ANOVA was conducted to compare the effectiveness of the depression literacy program on the intervention group upon control group at 3-month follow-up, while controlling the pretest scores of the variables. Results indicated that at 3-month follow-up, significant results were maintained for increased D-Lit—$F_{(1, 87)} = 4.343, P = .040, \eta_p^2 = .048$—and MHSAS—$F_{(1, 87)} = 8.587, P = .004, \eta_p^2 = .090$. There was also a significant decrease in SSOHS scores—$F_{(1, 87)} = 20.517, P < .001, \eta_p^2 = .191$ (Table 4).

Discussion

The goals of the Depression Literacy Program was to build awareness and understanding about depression, decrease stigma on mental illness, and ultimately increase the

Table 1. Details of the Depression Literacy Program for B40 Adolescents.

Objective	Details	Mode of training
To elicit current knowledge and stigma on depression	Activity 1: Who am I? • Participants draw 2 pictures on their perception of (1) depression and (2) the normal and healthy state. • The depiction of the 2 states could involve humans, symbols, objects, or anything that represents their perception of the above states • Participants present their drawings after 20 minutes • The facilitator evaluate the participants' current knowledge and stigma and discuss this with the participants	Small group activity and facilitated discussion
	Activity 2: Post-it Graffiti • Participants use post-it stickers to write their perception of mental illness and stick it on a notice board with the label "Mental Illness" on top. • Participants are encouraged to be honest and are reminded that there are no right or wrong answers • After 15 minutes, the facilitator evaluates the participants' stigma on mental illness and discuss this with the participants	Small group activity and facilitated discussion
	Activity 3: Body drawing • Participants are given a body picture and are asked to write their knowledge of the person with depression in terms of their (1) behavior, (2) speech, (3) clothing, and (4) smell • Participants present their body picture after 15 minutes • The facilitator evaluates the participants' current knowledge and stigma based on participants' drawings and descriptions of the healthy and depressed states, and discusses any misconceptions with the participants.	Small group activity and facilitated discussion
Impart correct knowledge and attitudes on depression	Talk on depression • Information on depression predisposing/risk factors, symptoms and interventions • Information on mental illness stigma origins, its impact on the person with depression, myths regarding depression and how to overcome stigma	PowerPoint presentation
Strengthen knowledge of depression and surrounding issues	Animation video on depression • A 4-minute animated video on depression and its surrounding issues is shown to the participants	Animation video presentation
Conclusion	• Emphasis on the importance of knowledge about depression and the impact of stigma Question and answer session	Interactive session

willingness to seek help when facing mental health problems among adolescents from B40 households. The results revealed that this program was successful in meeting these goals where the participants were found to have better depression literacy, attitudes toward seeking help, decreased self-stigma toward seeking mental help, as well as decreased negative beliefs on mental illness after the program. However, when compared with the control group at 3-month follow-up, only negative BMI was not significant. Therefore, it could be concluded that the Depression Literacy Program is effective in increasing depression literacy and attitudes toward seeking mental health help and decreasing self-stigma to seek help, but may not necessarily change stigma toward others' mental health condition. The results are in line with the meta-analysis of Schomerus et al,[58] which revealed even though knowledge of mental illness and willingness to seek mental help increased in the past decades, stigma toward persons with mental illness remained stagnant. This may be because most mental illness programs, while they provided ample information on this issue, did little to expose their participants to real contact with mentally ill persons, who are still considered as "the other."[58] Especially for adolescents, for whom peer acceptance is important during this developmental stage, mental illness is perceived to incur personal and social risks, leading to the stigmatization of the mentally ill adolescent.[59]

Our results suggest that the participants' knowledge of depression is associated with their attitude toward getting help. This is similar to findings from Schmidt et al,[60] Spagnolo et al,[61] and Strunk et al.[62] Information related to the biological and neurological origins of mental illness, especially, may lead the public to be more open to seeking medical help for their condition.[58] This is relevant in Malaysia, where the perception that mental illness and suicidality stem from moral weakness or spiritual forces alone is still rife.[27,63]
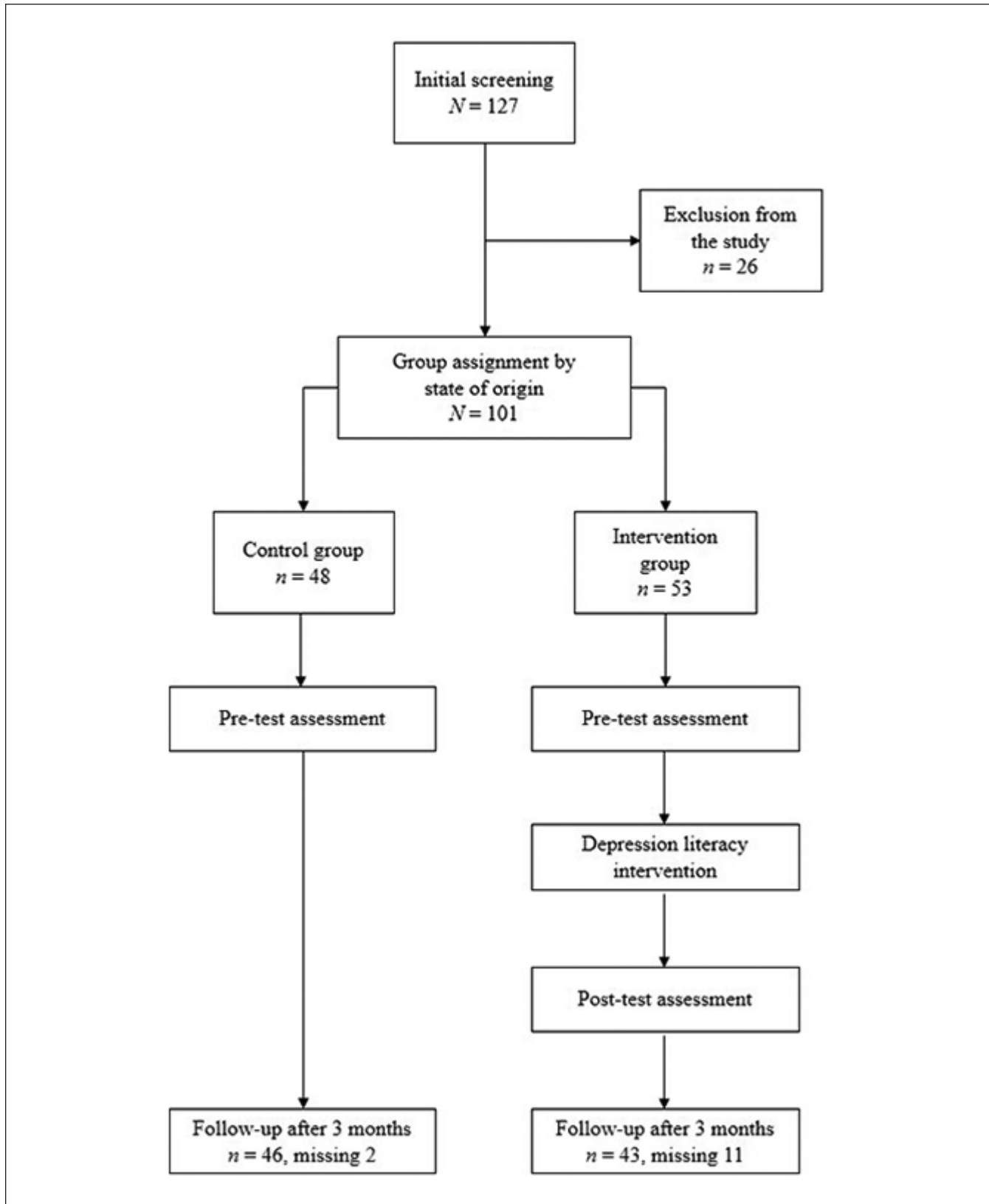
Figure 1. Flow chart of the depression literacy program study.

Table 2. Demographic Data of the Participants at Baseline (N = 101).

	Control group (n = 48)		Intervention group (n = 53)		χ^2 statistics	P
	Frequency (n)	%	Frequency (n)	%		
Gender					0.590	.442
Male	21	43.8	19	35.8		
Female	27	56.3	34	64.2		
Age, y					4.926	.425
12	0	0.0	2	3.8		
13	10	20.8	12	22.6		
14	11	22.9	19	35.8		
15	8	16.7	13	24.5		
16	7	14.6	3	5.7		
17	12	25.0	4	7.5		
Household income					1.584	.453
<RM1000	16	33.3	21	39.6		
RM1000 to RM3000	26	54.2	31	58.5		
RM3001 to RM3860	6	12.5	1	1.9		
Number of siblings					8.417	.588
1-3	11	22.9	16	30.2		
4-6	30	62.5	28	52.8		
7-9	5	10.4	8	15.1		
10-12	2	4.2	1	1.9		
Birth order					12.400	.134
1-3	34	70.8	34	64.2		
4-6	11	22.9	17	32.1		
7-9	2	4.2	2	3.8		
10-12	1	2.1	0	0.0		
Stay with					6.303	.098
Mother only	12	25.0	9	17.0		
Father only	0	0.0	2	3.8		
Father and mother	31	64.6	33	62.3		
Caregivers	5	10.4	9	17.0		

Table 3. Repeated Measures Analysis of Variance for the Intervention Group at Baseline (T1), Posttest (T2), and 3-Month Follow-Up (T3) (n = 43).

	Baseline (T1)	Posttest (T2)			Three-month follow-up (T3)			
Variable	Mean (SD)	Mean (SD)	d mean T2-T1	P	Mean (SD)	d mean T3-T1	P	η^2_p
Depression literacy[a]	9.44 (2.96)	12.67 (3.78)	3.233	<.001***	10.53 (4.32)	1.093	.143	.240
Mental help-seeking attitude[b]	46.53 (8.67)	53.07 (9.19)	6.535	<.001***	50.16 (10.38)	3.628	.034*	.191
Self-stigma on seeking help[c]	26.91 (4.24)	23.23 (5.59)	−3.674	.001**	25.30 (5.64)	−1.605	.242	.171
Negative beliefs toward mental illness[d]	62.51 (11.16)	44.49 (11.65)	−18.023	<.001***	55.74 (14.93)	−6.767	.014*	.496

Note. Cohen effect size cut-off points related to η^2_p values: Small = .0099; medium = .0588; large = .1379.[57]
[a]$F_{(2, 84)}$ = 13.266, $P < .001$.
[b]$F_{(2, 84)}$ = 9.939, $P < .001$.
[c]$F_{(2, 84)}$ = 8.659, $P < .001$.
[d]$F_{(2, 84)}$ = 41.298, $P < .001$.
*$P < .05$. **$P < .01$. ***$P < .001$.

Table 4. The 2 × 2 Mixed Model Analysis of Variance for the Intervention and Control Group at Baseline (T1) and 3-Month Follow-Up (T3).

	Intervention group			Control group			
Variable	T1 mean (SD)	T3 mean (SD)	d mean T3-T1	T1 mean (SD)	T3 mean (SD)	d mean T3-T1	η^2_p
Depression literacy[a]	9.44 (2.96)	10.53 (4.32)	1.09	9.22 (2.42)	8.74 (3.89)	−0.48	.048*
Mental help-seeking attitude[b]	46.53 (8.67)	50.16 (10.38)	3.63	50.00 (9.43)	46.54 (13.54)	−3.46	.090**
Self-stigma on seeking help[c]	26.91 (4.24)	25.30 (5.64)	−1.61	27.28 (4.56)	31.46 (4.46)	4.18	.191***
Negative beliefs toward mental illness[d]	62.51 (11.16)	55.74 (14.93)	−6.77	63.83 (10.45)	60.09 (15.78)	−3.74	.011

Note. d = difference. Cohen effect size cut-off points related to η^2_p values: Small = .0099; medium = .0588; large = .1379.[57]
[a]$F_{(1, 87)}$ = 4.343, P =.040.
[b]$F_{(1, 87)}$ = 8.587, P =.004.
[c]$F_{(1, 87)}$ = 20.517, P < .001.
[d]$F_{(1, 87)}$ = 0.987, P = .323.
*P < .05. **P < .01. ***P < .001.

The consistent and measurable impact of this program on depression knowledge and help-seeking attitudes for at least 3 months' duration after the 1-day program is believed to be influenced by the use of combined approaches in the program delivery. Researchers provided information and understanding to the participants in 3 ways: (1) traditional lecture using slide presentation, and (2) activities and (3) educational video. The group activities that facilitated the participants' articulation of knowledge and perceptions, as well as the animation video at the end of the program, may have served to consolidate their knowledge and attitudes while providing an engaging learning environment to facilitate positive affect in the learning process, consistent with Kahneman peak-end rule.[53]

This study strongly suggests that the Depression Literacy Program may be efficaciously implemented among B40 adolescents in Malaysia. Testing it among adolescents from a lower income background is important because socioeconomic status is a factor affecting mental health literacy and stigma. The lower mental health literacy among those from lower socioeconomic backgrounds may occur partly due to the lack of access to information through education, which is routinely received by the higher classes.[64] The lack of knowledge may also explain why people of low socioeconomic status have a higher likelihood of developing and experiencing mental health problems.[64]

This study has limitations. First of all, the participants were divided into control and intervention groups based on their locality. Therefore, we could not rule out the existence of bias. We have also deleted all missing data listwise and have utilized the per-protocol analysis rather than the intention-to-treat (ITT) analysis. In future clinical trials, to ensure the comparability of the control groups, randomization and ITT analysis should be implemented.[65] Apart from that, the group activities held may prime the participants to socially desirable responses when answering the posttest and follow-up questions. However, social desirability and demand characteristics are checked through the use of a control group, which was not exposed to any activities. There needs to be further studies on the efficacy of the Depression Literacy Program, especially with emphasis on the area of the destigmatization of mental illness.

Conclusion

The current study examined the effectiveness of a literacy program on stigma toward depression and help-seeking attitude among the B40 adolescents. The data suggest that upgrading the knowledge on depression will eventually lead to increasing mental help-seeking attitude. However, this positive outcome is limited as the stigma level of the participants toward those with mental illness was similar to those who did not receive the intervention. Despite this limitation, the study provides an important indication on the efficacy of the Depression Literacy Program to improve depression-related knowledge and increase the potential of seeking help among adolescents from the lower socioeconomic background. Considering the program's potential and feasibility, it is highly suggested to attempt the trial on older and more heterogeneous populations across the country.

agency had no role in the study design, data collection, data analysis, manuscript writing, or publication.

References

1. Bass JK, Bornemann TH, Burkey M, et al. A United Nations General Assembly Special Session for mental, neurological, and substance use disorders: the time has come. *PLoS Med*. 2012;9(1):e1001159.

2. Clemans-Cope L, Long SK, Coughlin TA, Yemane A, Resnick D. The expansion of Medicaid coverage under the ACA: implications for health care access, use, and spending for vulnerable low-income adults. *Inquiry*. 2013;50(2):135-149.

3. Rowan K, McAlpine DD, Blewett LA. Access and cost barriers to mental health care, by insurance status, 1999–2010. *Health Aff (Millwood)*. 2013;32(10):1723-1730.

4. Hamilton S, Pinfold V, Cotney J, et al. Qualitative analysis of mental health service users' reported experiences of discrimination. *Acta Psychiatr Scand*. 2016;134(suppl 446):14-22.

5. Thornicroft G, Rose D, Mehta N. Discrimination against people with mental illness: what can psychiatrists do? *Adv Psychiatr Treat*. 2010;16(1):53-59.

6. Mojtabai R, Olfson M, Mechanic D. Perceived need and help-seeking in adults with mood, anxiety, or substance use disorders. *Arch Gen Psychiatry*. 2002;59(1):77-84.

7. Henshaw EJ, Freedman-Doan C. Conceptualizing mental health care utilization using the health belief model. *Clin Psychol Sci Pract*. 2009;16(4):420-439.

8. Mantovani N, Pizzolati M, Edge D. Exploring the relationship between stigma and help-seeking for mental illness in African-descended faith communities in the UK. *Health Expect*. 2017;20(3):373-384.

9. Hipes C, Lucas J, Phelan JC, White RC. The stigma of mental illness in the labor market. *Soc Sci Res*. 2016;56:16-25.

10. Clement S, Schauman O, Graham T, et al. What is the impact of mental health-related stigma on help-seeking? A systematic review of quantitative and qualitative studies. *Psychol Med*. 2015;45(1):11-27.

11. Corrigan P, Matthews A. Stigma and disclosure: implications for coming out of the closet. *J Ment Health*. 2003;12(3):235-248.

12. Link BG, Cullen FT, Frank J, Wozniak JF. The social rejection of former mental patients: understanding why labels matter. *Am J Sociol*. 1987;92(6):1461-1500.

13. Sibicky M, Dovidio JF. Stigma of psychological therapy: stereotypes, interpersonal reactions, and the self-fulfilling prophecy. *J Couns Psychol*. 1986;33(2):148-154.

14. Ben-Porath DD. Stigmatization of individuals who receive psychotherapy: an interaction between help-seeking behavior and the presence of depression. *J Soc Clin Psychol*. 2002;21(4):400-413.

15. Corrigan P. How stigma interferes with mental health care. *Am Psychol*. 2004;59(7):614-625.

16. Miller WR. Motivation for treatment: a review with special emphasis on alcoholism. *Psychol Bull*. 1985;98(1):84-107.

17. Pattyn E, Verhaeghe M, Sercu C, Bracke P. Public stigma and self-stigma: differential association with attitudes toward formal and informal help seeking. *Psychiatr Serv*. 2014;65(2):232-238.

18. Vogel DL, Bitman RL, Hammer JH, Wade NG. Is stigma internalized? the longitudinal impact of public stigma on self-stigma. *J Couns Psychol*. 2013;60(2):311-316.

19. Vogel DL, Wade NG, Haake S. Measuring the self-stigma associated with seeking psychological help. *J Couns Psychol*. 2006;53(3):325-337.

20. Vogel DL, Wade NG, Hackler AH. Perceived public stigma and the willingness to seek counseling: the mediating roles of self-stigma and attitudes toward counseling. *J Couns Psychol*. 2007;54(1):40-50.

21. Lo K, Gupta T, Keating JL. Interventions to promote mental health literacy in university students and their clinical educators. A systematic review of randomised control trials. *Health Prof Educ*. 2018;4(3):161-175.

22. Reavley NJ, McCann TV, Jorm AF. Mental health literacy in higher education students. *Early Interv Psychiatry*. 2012;6(1):45-52.

23. Zhuang XY, Wong DF, Cheng CW, Pan SM. Mental health literacy, stigma and perception of causation of mental illness among Chinese people in Taiwan. *Int J Soc Psychiatry*. 2017;63(6):498-507.

24. Institute of Public Health Malaysia. *National Health and Morbidity Survey 2015*. Kuala Lumpur: Ministry of Health Malaysia; 2016. iku.moh.gov.my/images/IKU/Document/REPORT/nhmsreport2015vol2.pdf. Accessed November 21, 2018.

25. Ibrahim N, Amit N, Suen MW. Psychological factors as predictors of suicidal ideation among adolescents in Malaysia. *PLoS One*. 2014;9(10):e110670.

26. Abdullah AF, Minas HI, Meadows G, Kumaraswamy N. *Common mental disorders and mental health services in primary care setting of Kota Kinabalu-Treatment gap, disability and needs*. Paper presented at: 16th MCPM Conference; July 21-23, 2011; Kuala Lumpur, Malaysia.

27. Shoesmith WD, Borhanuddin AF, Yong Pau Lin P, et al. Reactions to symptoms of mental disorder and help seeking in Sabah, Malaysia. *Int J Soc Psychiatry*. 2018;64(1):49-55.

28. Ahmad Ramli FZ, Tilse C, Wilson J. Qualitative interviewing of Malay caregivers: stigma and mental health problems of older adults. *Int J Cult Ment Health*. 2017;10(2):127-135.

29. Hanafiah AN, Van Bortel T. A qualitative exploration of the perspectives of mental health professionals on stigma and discrimination of mental illness in Malaysia. *Int J Ment Health Syst*. 2015;9:10.

30. Siau CS, Wee LH, Adnan TH, Yeoh SH, Perialathan K, Wahab S. Malaysian nurses' attitudes toward suicide and suicidal patients: a multisite study. *J Nurses Prof Dev*. 2019;35(2):98-103.

31. Ong HC, Ibrahim N, Wahab S. Psychological distress, perceived stigma, and coping among caregivers of patients with schizophrenia. *Psychol Res Behav Manag*. 2016;9:211-218.

32. Mottus R, Johnson W, Murray C, Wolf MS, Starr JM, Deary IJ. Towards understanding the links between health literacy and physical health. *Health Psychol*. 2014;33(2):164-173.

33. Lam LT. Mental health literacy and mental health status in adolescents: a population-based survey. *Child Adolesc Psychiatry Ment Health*. 2014;8(1):26.

34. Bjornsen HN, Espnes GA, Eilertsen MB, Ringdal R, Moksnes UK. The relationship between positive mental health literacy and mental well-being among adolescents: implications for school health services. *J Sch Nurs*. 2019;35(2):107-116.

35. Institute of Public Health. *National Health and Morbidity Survey 2015*. Putrajaya: Ministry of Health Malaysia; 2016. http://www.moh.gov.my/moh/resources/nhmsreport2015vol2.pdf. Accessed August 28, 2019.

36. Department of Statistics Malaysia. *Department of Statistics Malaysia Press Release Report of Household Income and Basic Amenities Survey*. Kuala Lumpur: Department of Statistics Malaysia; 2016. https://www.dosm.gov.my/v1/index.php?r=column/pdfPrev&id=aHhtTHVWNVYzTFBua2dSUlBRL1Rjdz09. Accessed August 28, 2019.

37. Pickett KE, James OW, Wilkinson RG. Income inequality and the prevalence of mental illness: a preliminary international analysis. *J Epidemiol Community Health*. 2006;60(7):646-647.

38. Safran MA, Mays RA Jr, Huang LN, et al. Mental health disparities. *Am J Pub Health*. 2009;99(11):1962-1966.

39. Mills C. The psychiatrization of poverty: rethinking the mental health–poverty nexus. *Soc Personal Psychol Compass*. 2015;9(5):213-222.

40. Kelly CM, Jorm AF, Wright A. Improving mental health literacy as a strategy to facilitate early intervention for mental disorders. *Med J Aust*. 2007;187(S7):S26-S30.

41. McGorry P, Bates T, Birchwood M. Designing youth mental health services for the 21st century: examples from Australia, Ireland and the UK. *Br J Psychiatry Suppl*. 2013;54:S30-S15.

42. Das JK, Salam RA, Lassi ZS, et al. Interventions for adolescent mental health: an overview of systematic reviews. *J Adolesc Health*. 2016;59(4 suppl.):S49-S60.

43. Werner-Seidler A, Perry Y, Calear AL, Newby JM, Christensen H. School-based depression and anxiety prevention programs for young people: a systematic review and meta-analysis. *Clin Psychol Rev*. 2017;51:30-47.

44. Wasserman D, Hoven CW, Wasserman C, et al. School-based suicide prevention programmes: the SEYLE cluster-randomised, controlled trial. *Lancet*. 2015;385(9977):1536-1544.

45. LeBlanc JC, Almudevar A, Brooks SJ, Kutcher S. Screening for adolescent depression: comparison of the Kutcher Adolescent Depression Scale with the Beck Depression Inventory. *J Child Adolesc Psychopharmacol*. 2002;12(2):113-126.

46. Griffiths KM, Christensen H, Jorm AF, Evans K, Groves C. Effect of web-based depression literacy and cognitive–behavioural therapy interventions on stigmatising attitudes to depression: randomised controlled trial. *Br J Psychiatry*. 2004;185:342-349.

47. Hammer JH, Parent MC, Spiker DA. Mental Help Seeking Attitudes Scale (MHSAS): development, reliability, validity, and comparison with the ATSPPH-SF and IASMHS-PO. *J Couns Psychol*. 2018;65(1):74-85.

48. Hirai M, Clum GA. Development, reliability, and validity of the beliefs toward mental illness scale. *J Psychopathol Behav Assess*. 2000;22(3):221-236.

49. Mannarini S, Boffo M. Anxiety, bulimia, drug and alcohol addiction, depression, and schizophrenia: what do you think about their aetiology, dangerousness, social distance, and

50. Mannarini S, Rossi A. Assessing mental illness stigma: a complex issue. *Front Psychol*. 2018;9:2722.

51. American Psychiatric Association. *The Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Washington: American Psychiatric Association; 2013.

52. Fornaro M, Solmi M, Veronese N, et al. The burden of mood-disorder/cerebrovascular disease comorbidity: essential neurobiology, psychopharmacology, and physical activity interventions. *Int Rev Psychiatry*. 2017;29(5):425-435.

53. Kahneman D, Wakker PP, Sarin R. Back to Bentham? Explorations of experienced utility. *Q J Econ*. 1997;112(2):375-406.

54. Redelmeier DA, Katz J, Kahneman D. Memories of colonoscopy: a randomized trial. *Pain*. 2003;104(1-2):187-194.

55. Fraser A. Peak well and end well. *Human Capital Magazine*. 2013:48-49.

56. Salina L, Ruffinengo C, Garrino L, et al. Effectiveness of an educational video as an instrument to refresh and reinforce the learning of a nursing technique: a randomized controlled trial. *Perspect Med Educ*. 2012;1(2):67-75.

57. Cohen J. *Statistical Power Analysis for the Behavioral Sciences*. 2nd ed. Hillsdale, NJ: Lawrence Erlbaum; 1988.

58. Schomerus G, Schwahn C, Holzinger A, et al. Evolution of public attitudes about mental illness: a systematic review and meta-analysis. *Acta Psychiatr Scand*. 2012;125(6):440-452.

59. O'Driscoll C, Heary C, Hennessy E, McKeague L. Adolescents' explanations for the exclusion of peers with mental health problems: an insight into stigma. *J Adol Res*. 2015;30(6):710-728.

60. Schmidt RC, Iachini AL, George M, Koller J, Weist M. Integrating a suicide prevention program into a school mental health system: a case example from a rural school district. *Child Sch*. 2015;37(1):18-26.

61. Spagnolo AB, Murphy AA, Librera LA. Reducing stigma by meeting and learning from people with mental illness. *Psychiatr Rehabil J*. 2008;31(3):186-193.

62. Strunk CM, King KA, Vidourek RA, Sorter MT. Effectiveness of the surviving the Teens(R) suicide prevention and depression awareness program: an impact evaluation utilizing a comparison group. *Health Educ Behav*. 2014;41(6):605-613.

63. Wee LH, Ibrahim N, Wahab S, Visvalingam U, Yeoh SH, Siau CS. Health-care workers' perception of patients' suicide intention and factors leading to it: a qualitative study [published online ahead of print November 27, 2018]. *Omega (Westport)*. doi:10.1177/0030222818814331.

64. Dohrenwend BP, Dohrenwend BS. *Social Status and Psychological Disorder: A Causal Inquiry*. New York, NY: Wiley-Interscience; 1969.

65. Ranganathan P, Pramesh CS, Aggarwal R. Common pitfalls in statistical analysis: intention-to-treat versus per-protocol analysis. Perspect Clin Res. 2016;7:144-146. http://www.picronline.org/article.asp?issn=2229-3485;year=2016;volume=7;issue=3;spage=144;epage=146;aulast=Ranganathan. Accessed August 28, 2019.