Teacher Mental Health Literacy is Associated with Student Literacy in the Adolescent Depression Awareness Program

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Abstract

The Adolescent Depression Awareness Program, developed by psychiatrists and psychiatric nurses at the Johns Hopkins University School of Medicine, is a depression literacy program delivered to high school students by teachers. This mode of delivery represents an effective and sustainable way to increase awareness of mental health, reduce stigma, improve early detection, and facilitate help-seeking behavior among adolescents. The present study explores the depression literacy and stigma of teachers and their students. Survey responses of 66 teachers and 6679 high school students about depression literacy and stigma pre- and post-education intervention were analyzed using a multilevel model fit in Mplus. Teacher depression literacy was significantly associated with student depression literacy [$\beta = 0.199$, SE $= 0.095$, $p = 0.035$, 95% CI (0.044, 0.355)] at the post-assessment, but was not associated with student stigma. Teacher stigma was not significantly related to student depression literacy or stigma in the post-assessment. These findings highlight the importance of optimizing teacher depression literacy in order to maximize student depression literacy while also diminishing concerns about the transmission of stigmatized beliefs from teachers to students.

Keywords

Introduction

Depression, the most common mental health disorder in the USA, is associated with increased morbidity and mortality as well as impairment in multiple areas of functioning (McLaughlin, 2011). Adolescence is a particularly salient time period due to the increased incidence of depression (Avenevoli, Swendsen, He, Burstein, & Merikangas, 2015). Data from the National Comorbidity Study-Adolescent Supplement (NCS-A) of youth ages 13–18 reveal a lifetime prevalence of major depressive disorder of 11% and 12-month prevalence of 7.5% (Avenevoli et al., 2015). In the NCS-A sample, 63% of adolescents with depression reported significant impairment in at least one area of functioning, and approximately 30% reported suicidality in the past year, with 10.8% reporting a suicide attempt (Avenevoli et al., 2015). Suicide recently surpassed homicide as the second leading cause of death among youths ages 10–24 in the USA, accounting for nearly 5000 deaths annually (Curtin, Warner, & Hedegaard, 2016). Despite the high prevalence and significant morbidity and mortality, 39.6% of depressed youth received no treatment and 66.1% received improper treatment in a 12-month period (Avenevoli et al., 2015). When treatment is undertaken, there is often a delay of several years (Wang, Berglund, & Olfson, 2005).

For these reasons, it is imperative to increase awareness of this underdiagnosed and undertreated mental health disorder. Mental health literacy is a term introduced by Jorm et al. (1997) to denote "knowledge and beliefs about mental disorders which aid their recognition, management or prevention" (Jorm, Kitchener, Sawyer, Scales, & Cvetkovski, 2010). Improving mental health literacy represents an important avenue for promoting early identification and treatment, on both individual and societal levels (Wright, Jorm, Harris, & McGorry, 2007; Olsson & Kennedy, 2010; Rüsch, EvansLacko, Henderson, Flach, & Thornicroft, 2011).

(Stigma poses another obstacle to help seeking (Clement et al., 2015). In fact, the US. Surgeon General's report (1999) identified stigma as the number one barrier to mental health treatment. Stigma is a complex social process involving the devaluation of others based on stereotype, prejudice, and discrimination (Goffman, 1963; Jones et al., 1984; Link & Phelan, 2001). Among the strategies used to combat stigma (Corrigan et al., 2001), education, specifically universal educational programs designed to enhance mental health literacy, has received great interest (Wei, Hayden, Kutcher, Zygmunt, & McGrath, 2013). By increasing mental health knowledge, educational programs aspire to decrease stigma (Conner, McKinnon, Ward, Reynolds III, & Brown, 2015) and improve help-seeking behavior (Rüsch et al., 2011). Adolescence is a particularly important developmental period to address stigma through implementation of anti-stigma education and increasing mental health knowledge, which may positively influence adolescent help-seeking behavior (Chen, Koller, Krupa, & Stuart, 2016). For this reason, a major emphasis within adolescent universal interventions has involved reducing stigmatized beliefs to facilitate engagement in treatment.

Schools are an optimal setting for universal depression prevention programs because of the potential to reach large populations of youth (Calear & Christensen, 2010). One such program, the Adolescent Depression Awareness Program (ADAP), is currently being taught in approximately 280 schools, reaching over 90,000 students in 20 states across the USA.

This intervention was developed at the Johns Hopkins University School of Medicine and involves teacher-led depression education as part of the standard high school health education curriculum. ADAP's goals are to increase treatment-seeking behavior and reduce mental health stigma (Hess et al., 2004; Ruble et al., 2013) by increasing depression literacy in a practical, effective, noninvasive, and sustainable manner (Swartz et al., 2010).

ADAP was recently shown to improve depression literacy in high school students in a large randomized trial (Swartz et al., 2010). Students who received the ADAP curriculum (n = 3681) had significantly higher levels of depression literacy compared to wait-list controls (n = 2998), with an adjusted odds ratio of 3.1 (95% CI 2.0, 5.0) at the post-assessment (Swartz et al., 2017). This study demonstrated that ADAP is an effective public health intervention to improve depression literary in high school students (Swart et al., 2017). Another study utilizing ADAP found a positive relationship between school climate and student mental health literacy and a negative relationship between school climate and student stigma beliefs (Townsend et al., 2017). Specifically, a positive school climate was associated with greater odds of depression literacy and less stigmatized beliefs (Townsend et al., 2017).

As part of the current randomized trial utilizing ADAP, we collected data about school teacher characteristics and assessed whether there is an association between teacher and student mental health literacy and stigma. Since mental health literacy encompasses both knowledge and beliefs about mental health (Jorm et al., 2010), studying teachers' knowledge and beliefs is important (Whitley, Smith, & Vaillancourt, 2012), since teacher beliefs can potentially impact those of their students (Rubie-Davies, Flint, & McDonald, 2012). Data from other studies indicate that teachers report a desire to help students regarding mental health issues, but they cite a lack of mental health knowledge as a barrier to doing so (Dods, 2016; Fortier, LaLonde, Venesoen, Legwegoh, & Short, 2017; Whitley, et al., 2012). Focusing on increasing teacher mental health literacy can lead to positive outcomes, such as recognizing early psychiatric illness (Whitley et al., 2012), whereas limited knowledge can lead to a delay in early intervention. Furthermore, because knowledge and self-efficacy are interrelated (Dods, 2016), focusing on increasing mental health literacy for teachers can lead to greater self-efficacy regarding mental health, which may extend to student mental health literacy.

Therefore, teachers play a pivotal role in learning and imparting mental health literacy, specifically depression literacy in this study, to their students. Despite their importance, teachers represent an oft-neglected area of research. To our knowledge, there has been no research on the depression literacy and stigma held by teachers teaching a depression curriculum and its association with the depression literacy and stigma of their students after being taught the curriculum. We hypothesize that teachers with both high depression literacy and low mental health stigma will be highly associated with high depression literacy and low health stigma in their students.

Methods

Participants

Seventy-six percent ($n = 66/87$) of educators, sampled from 54 public, private, and parochial high schools, participated in the study. The participants were chosen across five participating states of Maryland, Delaware, Pennsylvania, Michigan, and Oklahoma. The ADAP intervention was implemented in primarily ninth- and tenth-grade high school health classes, which totaled 6679 students. Students were between the ages of 14–16.

Instruments

Teachers and students received the same measures, detailed below, to assess mental health knowledge and stigma prior to and after ADAP training. Teacher pretests were administered at training sessions immediately prior to receiving the training. Posttests were electronically administered through the Research Electronic Data Capture (REDCap) system 6 months to 2 years after training. Students received pretests before ADAP implementation and posttests at 6 weeks and 4 months after ADAP implementation.

The Adolescent Depression Knowledge Questionnaire (ADKQ) (Hart et al., 2014) assesses student knowledge and help-seeking attitudes about depression. Psychometric data support the use of the ADKQ to assess adolescent depression literacy pre- to posttest (Hart et al., 2014). The measure consists of 13 yes/no questions about depression literacy and four clinical vignettes (scores range from 0 to 17, higher score denotes higher depression literacy). Depression literacy scores were calculated based on the percent of correct answers. The help-seeking attitude section inquired about seeking help from others and was modified for the teachers to include options such as spouse or colleague.

The Reported and Intended Behavior Scale (RIBS) (EvansLacko et al., 2011), an eight-item scale that assesses an individual's experience and behaviors toward people with mental health issues in four different contexts: living with, working with, living nearby someone with a mental health problem, and continuing a relationship with a friend who has mental health problems. This version of the RIBS was modified for adolescents. Question 2 was changed from "Are you currently working with, or have you ever worked with, someone with a mental health problem?" to "Have you ever encountered a student with a mental health problem?" The first four items assess reported behavior, and the last four items assess future intended behaviors. The response format of the first four items is yes/no, and for the last four items, a five-point response scale is used ranging from strongly disagree = 1 to strongly agree = 5 (scores range from 4 to 20; higher score denotes higher stigma). Only the last four items are scored and used as a proxy for stigma since not all individuals have experienced the situations listed in the first four questions. RIBS has demonstrated good internal consistency (Cronbach's alpha = 0.85) and test–retest reliability (kappa = 0.75). In this study, the test–retest reliability for the RIBS was 0.65 and the internal consistency ranged from 0.79 to 0.82 from the pre-assessment to the post-assessment for the students. The internal consistency for teachers for the RIBs was 0.80 on post-assessment. The RIBS was used to measure the effect of the intervention on students' and teachers' perceptions about people with mental illness.

Design and Procedure

Sixty-six schools were randomized to receive the ADAP intervention in the ninth or tenth grades. Twelve schools dropped out after randomization due to feasibility issues. The study implemented a stepped-wedge wait-list design in which the year 2 intervention schools were wait-list controls during the first year. Schools from five states were matched by state into pairs according to school characteristics [e.g., community type (rural, urban, suburban), school type, number of students, number of teaching faculty] and student characteristics (gender, race/ethnicity, proportion with free or reduced cost meals, median household income, average days absent, average total SAT scores). After schools were matched, one school was randomized to receive the ADAP implementation and the other to waitlist control. The wait-list control schools were trained in and implemented ADAP in the next academic year. The analyses were restricted to year one schools before the wait-list controls were trained in ADAP.

All teachers received the same 6-h ADAP-manualized training led by the ADAP psychiatric team. The ADAP instructor training has successfully trained over 1850 school and health professionals including teachers, counselors, nursing and medical students, and other health professionals. This comprehensive in-person training included a program overview, medical overview of mood disorders, curriculum overview, and school-based implementation instructions. Teachers were given supplemental ADAP educational kits consisting of a teaching manual, Power Point lectures, group activities, handouts, and DVDs (http://www.adap-training.com/). Refresher sessions were provided annually via webinars. The ADAP team was also available to answer questions during the study period. After a brief introduction to the program, but preceding the mental health training, teachers received the pretest.

The ADAP intervention was administered to students as part of their standard health curriculum taught in health and physical education courses. Pretest, posttest, and follow-up data of the ADKQ and RIBS were collected for overall evaluative purposes. ADKQ and RIBS data were collected from both teachers and students. Teachers implemented ADAP within the school setting in 2–3 successive health or physical education classes. To assess intervention integrity and fidelity, ADAP staff randomly selected 25% of ADAP intervention sessions to observe and evaluate adherence to ensure standardized delivery of the intervention. Teachers also completed fidelity assessments. Ninety-five percent of teachers sampled had high fidelity and quality to implementation scores. While the other five percent did not follow the curriculum as instructed, they covered at least 50% of the ADAP material.

Within the school-based teacher-led intervention, student pretest, 6-week posttest, and 4-month follow-up data were collected. Following the conclusion of the ADAP intervention, electronic teacher surveys were administered 6 months to 2 years post-training.

Study procedures were approved by the University Institutional Review Board. Parental consent was not required at the individual schools since ADAP was incorporated as part of the routine health curriculum approved by the superintendent of schools. No student identifiers except gender were collected since pre- and posttests were conducted for

evaluative purposes. Consent was obtained from ADAP teachers since specific information was collected about demographics in addition to the pre- and posttest data.

Data Analysis

Preliminary analyses were performed in SPSS 22.0 for descriptive statistics (see Table 1). Two-level models were conducted in Mplus V. 7.1 to examine the influence of teacher-level variables on student outcomes (depression literacy and mental health stigma). For the outcome of depression literacy, we fit a hierarchical model utilizing maximum likelihood estimation and the results are reported in terms of beta coefficients and adjusted standard errors. All models were examined using the cluster command, which allows for the calculation of robust standard errors to account for clustering of students by teachers. All models controlled for student gender as well as pre-intervention measures. We used full information maximum likelihood estimation in Mplus (Muthén & Muthén, 1998–2011) to take into account missing data in our analyses. Full information maximum likelihood is considered the appropriate method for handling data missing at random (Schafer & Graham, 2002).

Results

Teacher Characteristics

As seen in Table 1, the teacher sample was comprised of 58% female educators and was predominantly white (89%) with a fairly even age distribution. The school-personnel participants identified as mainly health and physical education teachers, as well as a few school nurses, counselors, campus ministers, and directors of guidance. The majority of teachers have a master's degree (80%), with most having a graduate degree in teaching. Fifteen percent of participants have a master's degree in social work, counseling, or psychology. Eighty-five percent of teachers have ten or more years of teaching experience. Thirty percent of teachers previously received mental health treatment, 85% of whom were satisfied with their treatment. Additionally, 70% of teachers reported having had a friend or relatively received mental health treatment, 83% of whom were satisfied with the treatment. For those who were unsatisfied with the mental health treatment, the reasons included: inability to access treatment due to insurance issues or scarcity of providers; unhappy with treatment options or providers; and cost.

Teacher Literacy, Student Literacy, and Stigma

For the student control group, the average pre-assessment ADKQ was 68.2% correct answers and average post-assessment ADKQ was 71.3% correct answers. Comparatively, for the student intervention group, the pre-assessment ADKQ correct answers was 69.7% while post-assessment correct answers was 78.2%.

In terms of the RIBS, the control group had a pre-assessment average of 9.2 and post-assessment average of 8.7. On the other hand, the intervention group had a pre-assessment average of 9.0 and post-assessment average of 8.5. Lastly, on post-assessment, teachers had an average ADKQ of 93.5% and an average RIBS of 6.2.

The relationship between teacher depression literacy post-ADAP training and student depression literacy and stigma was explored using the ADKQ and the RIBS (see Table 2). This relationship was explored using a multilevel model fit in Mplus with teacher ADKQ acting as the between-level variable and teacher acting as the cluster variable. This model exploring the relationship between teacher depression literacy and student depression literacy fit the data well (CFI = 1.0). Teacher depression literacy was significantly associated with student depression literacy at post-assessment [β = 0.199, SE = 0.095, p = 0.035, 95% CI (0.044, 0.355)]. The model to explore the relationship between teacher depression literacy and student stigma also fit the data well (CFI = 1.0). Teacher depression literacy was not significantly related to student stigma at the post-assessment [β = 0.009, SE = 0.006, p = 0.141, 95% CI (− 0.001, 0.020)].

The relationship between teacher stigma post-ADAP training and student depression literacy and stigma was also explored using the ADKQ and the RIBS. This relationship was explored using a multilevel model fit in Mplus with teacher stigma acting as the between-level variable and teacher acting as the cluster variable. This model fit the data well (CFI = 1.0). Teacher stigma was not significantly related to student depression literacy at the post-assessment [β = 0.509, SE = 0.315, p = 0.106, 95% CI (− 0.009, 1.027)]. Lastly, the model to explore the relationship between teacher stigma and student stigma fit the data well (CFI = 1.0). Teacher stigma was not significantly related to student stigma at the post-assessment [β = 0.009, SE = 0.025, p = 0.715, 95% CI (− 0.032, 0.050)].

Discussion

Teachers play a pivotal role in the education of students and can be instrumental in promoting mental health literacy and reducing stigma through the implementation of depression education programs. Our team was interested in studying whether a teacher's degree of depression literacy or stigma could potentially impact that of their students. For this reason, we explored the relationship between teacher and student depression literacy and mental health stigma.

From the ADAP sample, teacher depression literacy was associated with student depression literacy, suggesting a teacher's knowledge about depression could potentially influence their student's acquisition of this information, regardless of student baseline depression literacy. Utilization of a mental health curriculum that is medically accurate and well taught to the teachers is of prime importance for teachers to pass on the information to their students. The ADAP curriculum was developed by academic psychiatric experts in the field of depression and was taught to teachers on-site by these experts. This evidence-based curriculum is an excellent resource for teachers to be educated on this complex medical subject. Well-educated teachers can then maximize associated gains in student learning.

We also explored whether stigmatizing behaviors about mental health held by teachers would impact student knowledge or stigma. We theorized that if a teacher held stigmatized beliefs regarding mental health that this could interfere with their implementation of ADAP and subsequent acquisition of information by the students. However, we found no significant association between teacher stigma and student stigma or knowledge. Thirty percent of

teachers had received mental health treatment themselves, and 70% knew a friend or relative who had treatment. While the sample size was too small to examine a relationship between personal experience receiving mental health services and stigma, dissatisfaction with one's own treatment could lead to stigmatizing attitudes while positive experiences could negate stigma. Regardless, it was a reassuring finding that teacher's knowledge about depression was more important to student acquisition of knowledge that teacher attitudes toward mental health.

This study examined the association of teacher depression literacy with student depression literacy. Schools are well suited to implement depression intervention programs with the goals of promoting mental health literacy including: increasing knowledge of mental disorders based on evidence-based research; decreasing stigma surrounding mental illness; and encouraging help seeking when indicated (Kutcher, Wei, McLuckie, & Bullock, 2013). Within school settings, teachers can be trained to deliver mental health interventions. Han and Weiss (2005) found that factors such as acceptability and perceived effectiveness of the program, reduced teacher burnout, and principal support can positively impact teacher implementation of programs. Advantages of having teacher-led interventions are sustainability of the intervention, skill of teachers to transmit knowledge, reinforcement of information outside of the program, and student comfort to approach teachers for support or help (Ojio et al., 2015; Lai et al., 2016). Of note, 23% of teachers reported students seeking treatment for themselves or helping a friend seek treatment after ADAP.

In a review of 49 school-based mental health interventions, teachers alone implemented the intervention in 18% of these studies (Franklin, Kim, Ryan, Kelly, & Montgomery, 2012). Furthermore, several studies, including ADAP, have demonstrated similar outcomes regardless of the personnel delivering the intervention (i.e., teachers or mental health professionals; Franklin et al., 2012; Lai et al., 2016). Aside from benefitting students, researchers have found benefits for teachers leading the interventions. Teachers who participated in a Mental Health First Aid training course had improved mental health knowledge, decreased stigmatized beliefs, and increased confidence to offer help to students and colleagues compared to those who did not receive the training (Jorm et al., 2010). In another study, teachers who received educator training prior to implementing a mental health school-based intervention also had improvement in mental health knowledge and decreased stigma (Kutcher et al., 2013). Improving teacher mental health knowledge and decreasing stigma can have a long-lasting positive impact on students (Kutcher et al., 2013).

There are several limitations to this study. The teacher sample size was relatively small, and the schools were limited to certain geographic regions, which may limit the generalizability of the results. Approximately 80% of teachers completed the post-ADAP training survey. It is possible the teachers who did not complete the posttest survey had different depression literacy and stigma scores than the teachers who participated. The characteristics of the student population were unknown, making it impossible to explore student depression literacy and stigma by race and sociodemographic characteristics. ADAP was part of the school curriculum, and parental consent was not required. Although RIBS is a psychometrically sound survey, it has only been validated in adults. Also, self-report survey data on stigma are inherently prone to social desirability (Gove, McCorkel, Fain, & Hughes,

1976), inaccurate responses, nonresponse, and responder bias, which could result in different scores on RIBS. The ADKQ survey tool was specifically designed for adolescents but was used by the teachers for pre- and post-surveys. Since the ADKQ is a depression knowledge assessment, results from adults should still be applicable.

Conclusion

Teachers are well positioned to provide depression literacy curricula to a large number of adolescents in a community. The depression literacy of teachers was positively associated with depression literacy of their students, suggesting that teacher depression literacy could have influenced student depression literacy. Stigmatizing behaviors and attitudes held by teachers were not associated with depression literacy of the students. Having teachers well versed on depression literacy is crucial for the successful implementation of school-based programs. Optimization of depression literacy in students will have a major impact on student acquisition of the tools necessary to recognize depression and seek help should they need it. Conversely, there was no evidence in this study that mental health stigma was transmitted from teachers to students, and teacher stigma was not associated with students' learning.

Acknowledgements

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Table 1

Characteristics of teachers in adolescent depression awareness program study

Teacher characteristics	% (*n*)
Age	
25–34	19.7% (*n* = 13)
35–44	25.8% (*n* = 17)
45–54	30.3% (*n* = 20)
55–64	24.2% (*n* = 16)
Gender	
Male	42.4% (*n* = 28)
Female	57.6% (*n* = 38)
Ethnicity	
Black/African American	7.6% (*n* = 5)
White	89.4% (*n* = 59)
Other	3% (*n* = 2)
Years of experience	
2–4 years	4.5% (*n* = 3)
5–6 years	3.0% (*n* = 2)
7–9 years	7.6% (*n* = 5)
10 years	84.8% (*n* = 56)
Education background[a]	
Teaching	80% (*n* = 53)
Counseling/social work/psychology	15% (*n* = 10)
Other	11% (*n* = 7)
Received mental health treatment themselves	30.3% (*n* = 20)
Satisfied with own mental health treatment	85% (*n* = 17)
Friend/relative received mental health treatment	71.2% (*n* = 47)
Friend/relative satisfied with mental health treatment	82.6% (*n* = 38)

[a]Total > 100% due to some Adolescent Depression Awareness Program teachers having more than one educational background

Table 2

Association between teacher depression literacy and stigma and student depression literacy and stigma

	Teacher depression literacy [a]			Teacher depression stigma [b]		
	β	SE	*p* value	*β*	SE	*p* value
Student depression literacy [a]	0.199	0.095	0.035	0.509	0.315	0.106
Student depression stigma [b]	0.009	0.006	0.0141	0.009	0.025	0.715

[a] Adolescent Depression Knowledge Questionnaire (ADKQ)

[b] The Reported and Intended Behavior Scale (RIBS