Exploring Mental Health Literacy Among Undergraduate College Students

by

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Background: Society's understanding of mental illness is integral to reducing stigma and encouraging individuals to seek care. The purpose of this study is to investigate mental health literacy in college students, explore the use of campus mental health service, and to examine whether students' mental health literacy differ in relation to individual characteristics.

Methods: This study used a cross-sectional and descriptive approach to explore mental health literacy and mental health service among undergraduate students. A sample of 277 undergraduate students and 9 employees at the University Counseling Center at a large public university in the Northeastern United States agreed to participate in the study and completed the study via the Qualtrics survey software from Feb 2020 to March 2020. The study was approved by the Institutional Review Board (IRB) of the large public university. Descriptive statistics, T-test, and ANOVA test were used to analyze data.

Results: There were found to be significant relationships between mental health education, major, gender and mental health literacy among undergraduate students. The study found that undergraduate students have a relatively good mental health literacy. Results from the clinicians at the counseling center showed high rates of anxiety, depression, and suicidality among undergraduate college students, barriers of family and self-stigma, moderate knowledge of resources on campus, and poor knowledge of resources off campus.

Discussion: There are a multitude of avenues through which mental health literacy of depression, anxiety, and suicidality can be improved. To address individual behaviors and influences of the microsystem, improved access to information and education should be considered.

Conclusion: The findings of this study show that undergraduate students at this university have a relatively good mental health literacy, and thus, have an understanding of different mental illnesses, reduced stigma and resources on campus and in the community.

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1.0 INTRODUCTION

It is estimated that 20.3% of college students had a mental illness (Auerbach et al., 2016). Young adulthood is a peak-onset period of most mental illnesses, which is significantly influenced by various stress factors such as academic pressure, transition to adulthood life, and use of substances in college (Pedrelli, Nyer, Yeung, Zulauf, & Wilens, 2015). However, only 16.4% of students receive minimally adequate treatment for their mental illness (Auerbach et al., 2016). Low rate of seeking help among college students was believed to be in part due to lack of understanding of mental health issues and services (Pedrelli et al., 2015). Students did not acknowledge their mental illness nor the need for treatment (Zivin, Eisenberg, Gollust & Golberstein, 2009). The mental illness is a most prominent cause of disability, accounting for one third of the year spent disabled from illness. Untreated mental illness during this critical period has negative effects on this population; not only poor academic performance and school attrition, but also illness trajectory. In addition, it may lead to homelessness, violence, suicidality, unemployment, and debt (Mental Illness Policy Org, n.d.).

The problem of low rate of seeking help can be addressed by mental health literacy training. Mental health literacy is best defined as "knowledge and belief about mental disorders, which aid in their recognition, management, or prevention" (Kutcher, Wei, & Coniglio, 2016, p. 155). It has evolved to include first aid skills to help others and self-help skills. (Jorm, 2012). Healthcare providers agree that health literacy is an important concept for improving the health and self-efficacy of patients to pursue an overall goal of improving the standard of health for all. By improving health literacy, individuals are better equipped to understand their healthcare plan,

prevent further disease processes, and educate and support their peers who are suffering from diseases.

Various programs have been implemented as a tool of improving mental health literacy in numerous different ways. Examples include a gatekeeper-training program that teach people the warning signs of suicide and how to respond to a suicidal peer (Hangartner, Totura, Labouliere, Gryglewicz, & Karver, 2019). Mental Health First Aid (MHFA) is another program that teaches individuals to how to navigate situations where they interact with individuals in a mental health or substance use crisis, how to help provide immediate care for that individual, and how to help the individual find long-term solutions to their crises (Corrigan, 2018). However, studies show inconsistent results concerning the effectiveness of mental health literacy programs, particularly in the United States. While knowledge about mental health improves, participants' behaviors towards mental health do not result in identification of and aid to those experiencing a crisis. While some programs were successful in improving health literacy, many of the results were short term and did not reduce stigmas about mental illness nor lead to positive behavioral changes (Corrigan, 2018).

The inconsistent findings for improving mental health literacy call for a reform in intervention programs on mental health and indicate the need for a more comprehensive approach to improving mental health literacy. In this sense, it is important to understand college students' mental health literacy to determine core components of mental health literacy interventions as well as to develop strategies to deliver interventions appropriately. Against this backdrop, the goal of this study was to explore mental health literacy among college students. Results of this study will provide fundamental information regarding mental health literacy among college students. The

findings of this study will inform educational and health administrators at colleges regarding how improving mental health literacy can create a more supportive and responsible community.

2.0 BACKGROUND

2.1 MENTAL HEALTH LITERACY

The mental health literacy, emerging from the construct of health literacy, is an evolving construct (Kutcher et al., 2016). Health literacy is defined as "The degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions" including four domains; cultural and conceptual knowledge, speaking and listening skills, reading and writing, and numeracy (Institute of Medicine, 2004). Comparatively, the World Health Organization defines health literacy as: "the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health" (World Health Organization, n.d.). Freedman et al. (2009) argue that public health literacy is a necessary addition to the list of definitions of health literacy because it emphasizes the need for the foundations of health literacy to be present in communities so that all community members are better able to understand different common diseases. They define health literacy as "The degree to which individuals and groups can obtain, process, understand, evaluate and act upon information needed to make public health decisions that benefit the community" (Freedman et al., 2009).

Mental health literacy incorporates stigma to broaden the construct of health literacy. Mental health literacy is defined as "knowledge of how to prevent a mental disorder; recognition of disorders when developing; knowledge of effective self-help strategies for mild-to-moderate problems; and first aid skills to help others" (Jorm, 2012, p. 232). Recent studies extended Jorm's

definition to include stigma and help-seeking strategies, defined mental health literacy as "understanding how to obtain and maintain positive mental health; understanding mental disorders and their treatments; decreasing stigma related to mental disorders; and, enhancing help-seeking efficacy" (Kutcher et al., 2016).

Previous studies support the importance of health literacy due to its emphasis on community education, empowerment, and overall health improvements. Chinn (2011) emphasized the importance of health literacy to evaluate population health and literacy, as it helps the patients understand the health information given to them, and understand the impact of health on their community, highlighting the intersections of health sciences and politics of healthcare. Nutbeam (2000) states that the social determinants and socioeconomic environment of patients are integral to how they understand health and their healthcare, and the use of health literacy allows for these factors to be accounted for while evaluating the health of a community. Additionally, health literacy includes patient education about misconceptions and stigmas that often are linked to illnesses that plague populations; thus, it is incredibly relevant to the work of this study, as implementing health literacy allows the opportunity for healthcare providers to educate their patients about mental illnesses. Guzy, D., Keny, A., Dickson-Swift, V., & Threlkeld, G. (2015) state that by working within the definition of health literacy to improve community health, health outcomes are more likely to enhance individual confidence and resilience, contributing to improved community empowerment and health (Guzy et al., 2015).

2.2 MENTAL HEALTH LITERACY INTERVENTIONS

Research evidence of intervention programs to improve mental health literacy was identified and reviewed. Databases PubMed, CINHAL, PsychInfo, and EBSCO were used for the purpose of collecting studies used in this systematic review. Criteria for inclusion in this review were as following: 1) Randomized controlled trial, cluster-controlled trial, or pilot study, 2) Published within the last 6 years, 3) Obtained from a research search engine. Terms used to collect literature included: Mental health literacy, Clinical trials, Randomized controlled trials, Mental Health First Aid, Health literacy, Mental health, Pretest and posttest intervention. A total of 13 studies were identified and reviewed (see Table 1).

Setting. 9 of the 13 studies in the literature review for this study involved students in high schools, collegiate nursing, and medical students from nations such as Australia, the United Kingdom, and the United States of America. 9 of the studies occurred outside the United States, with 5 studies being conducted in Australia.

Interventions. 3 of the 13 studies utilized Mental Health First Aid as an intervention, often lasting from 8 to 14 hours. 2 studies used "fotonovelas", educational interventions for primary care providers to provide to adult patients at their visits. 3 studies utilized website/social media, including mental health phone applications and websites with mental health information. No specific timelines were included for mobile mental health applications/social media and web-based interventions. 5 studies utilized school-based curricula typically conducted over a semester or school year. Interventions that were most effective in reducing stigma and improving knowledge regarding mental health were usually conducted in small groups or one-on-one between an

educator and individual, were culturally sensitive and conducted in smaller time frames or spread out over many sessions.

Effectiveness of intervention. 10 of the 13 studies saw improvements in knowledge in posttest surveys (Burns et al., 2017; Cabassa et al., 2015; Campos et al., 2018; Chisholm et al., 2016; Hernandez & Organista, 2013; Imamura et al., 2016; Milin et al., 2016; Morgan et al., 2019; Perry et al., 2014; Swartz et al., 2017), and 6 of the studies found a reduction in stigma after the intervention (Burns et al., 2017; Cabassa et al., 2015; Campos et al., 2018; Chisholm et al., 2016; Milin et al., 2016; Perry et al., 2014). Of the 4 studies conducted in the United States, 3 showed improvements in knowledge (Cabassa et al., 2015; Hernandez & Organista, 2013; Swartz et al. 2017), and 2 showed a reduction in stigma after the intervention (Cabassa et al., 2015; Hernandez & Organista, 2013).

In summary, multiple studies evaluated if various intervention programs have improved mental health literacy. Outcomes of studies that evaluated mental health literacy trainings are mixed, as some find an improvement in knowledge, with a decrease in stigma (Chisolm et al., 2016), while others show the interventions to be ineffective (Reavley, McCann, Cvetkovski, & Jorm, 2014). Often, a source of mental health education for students is through their secondary or high school education. Although classroom educational programs that present high volumes of information to participants in short amounts of time have been shown to lower information retention rates and lessen effects on the mental health literacy (Corrigan, 2018), the studies resulted in decreased stigma (Perry et al., 2014) and improved knowledge (Swartz et al., 2017) in the school-based curriculum program groups. However, it is important to note that mental health education is not mandatory in public schools in the United States, and therefore, many states do not require it in their school curriculum (National Alliance on Mental Illness Virginia, 2018).

Table 1. Literature Review

Reference	Treatment groups sample	Intervention	Outcome/effectiveness of intervention
Bakker et al. (2018), Australia	N=312, with n=78 in each group including waitlist, MoodKit, MoodPrism, and MoodMission. Median age=34 years; 81% female	Mental Health apps (MHapps) – MoodKit, MoodPrism, MoodMission apps. These apps included cognitive behavioral therapy and mood tracking. Intervention used for 30 days.	Mediated regressions show larger improvements in self-efficacy to coping skills and confidence in skills rather than improvements in mental health literacy. The p values for the Patient Health Questionnaire-9 for mental health literacy per intervention was: MoodKit, -0.06; MoodPrism, .03; MoodMission, 0.004). The p values for the General Anxiety Disorder-7 for mental health literacy per intervention was: MoodKit, 0.10; MoodPrism; MoodMission, .07. The p values for the Warwick-Edinburgh Mental Well-being Scale for mental health literacy per intervention was: MoodKit, 0.11; MoodPrism, 0.0001; MoodMission, .02).
Burns et al. (2017), Australia	N=181 First year nursing students 92 students in an intervention group and 82 students in a control group; 86.4% female.	Intervention group received two 6.5-hour sessions of tailored Mental Health First Aid course for 2 days.	There was a significant improvement among intervention compared to control group participants across the three time periods for knowledge ($p < 0.001$), confidence in helping ($p < 0.001$), mental health first aid intentions ($p < 0.001$), total personal stigma ($p < 0.05$), personal dangerous/unpredictable stigma ($p < 0.05$) and social distance ($p < 0.05$) scores.

Cabassa et al. (2015), USA	N=132 adult students at three community adult schools in the Los Angeles Unified School District (LAUSD). 51% of participants were female.	Fotonovela, Secret Feelings, an entertainment-education standard depression brochure regarding depression. They use photographs with captions, soap opera narratives and raise awareness regarding health issues, such as depression, and address misconceptions and stigma. Study conducted from January-April 2011	Significant differences across time and between groups for depression treatment knowledge. In posttest, participants in the fotonovela group had significantly higher depression treatment knowledge scores than participants in the brochure group (B = 1.22, p < .001); the scores were slightly lower but the difference remained significant at the one-month follow-up (B = .81, p < .01). Overall, saw improved knowledge and understanding of depression and reduced stigma in the post-intervention follow up.
Campos et al. (2018), Portugal	543 students from 22 school classes: experimental (11 classes; n=259) and control (11 classes; n=284); 47% female	Finding space – 2 sessions with 90 min in each session; delivered at one-week intervals	Participants in the experimental group had significantly higher gains compared to the control group, global score and all mental health literacy dimensions (β = 7.707; 95% CI = 6.069, 9.345). Study found improvements in mental health literacy and a decrease in stereotypes regarding mental illness among the intervention group (β = 1.719; 95% CI = 0.404, 3.034).
Chisholm et al. (2016), United Kingdom	N=767 students n=354 Contacts and Education; 51.7% female n=303 Education; 52.5% female	One-day program: Contact module (20 min) + education (20 min)	At a 2 - week follow-up, attitudinal stigma improved after the intervention (p < .001). Significant improvements were found in the education alone intervention relating to knowledge-based stigma, mental health literacy, emotional well-being, resilience, and help-seeking attitudes (p < .001).

Hernandez & Organista (2013), USA	N=142 Women n=67 Control group n=75 Intervention group	Exposure to Fotonovela, Secret Feelings, an entertainment-education standard depression brochure regarding depression. They use photographs with captions, soap opera narratives and raise awareness regarding health issues, such as depression, and address misconceptions and stigma. The study was conducted from January-November 2011 during health education or parenting classes.	Significant improvement in depression knowledge, self-efficacy ($p < .001$; d = 1.19) to identify the need for treatment, but there was not significant difference in mean stigma scores between the control and experimental groups ($p = .479$).
Imamura et al., (2016), Japan	N=1236 adults aged 20-60y/o n=618 Intervention group n=618 Control group No gender ratio specified	Website for stress and depression - The University of Tokyo website for Stress Management and Education on Depression (UTSMed). This study was conducted over a 4-month period.	A significant intervention effect on improving depressive symptoms (t = 2.35, $p = 0.02$, d = 0.57) was observed at 1-month follow-up only in the high-risk subgroup
Lipson et al. (2014), USA	N=3,294 undergraduate students at baseline N=810 Resident Assistants (RA: second year and higher undergraduates) N= 2,108 students at follow up N=618 RAs at follow up 58.4% female in the intervention group 56.4% female in the control group	Residents were randomly assigned to intervention or control. Pre-existing mental health training + Mental Health First Aid (MHFA). Length of time was a 12-hour course	Incremental benefit of MHFA saw increases in participants in self-perceived knowledge, ability to identify students in distress and confidence to help. No significant effects on utilization of mental health care in the area where students lived.

Milin et al. (2016), Canada	24 high schools n=534 high school students 55.1% female	Curriculum integrated into the grade 11 and 12 Health Living courses discussing mental health knowledge and stigma (delivered by the teacher). No timeline involved.	There was a significant change in knowledge (F $(1,521.74) = 20.09$, $p < .001$) and a significant change in stigma at the follow up test (F $(1,479.96) = 8.86$, $p < .01$).
Morgan et al.(2019), Australia	N=119 parents attended MHFA courses N=100 adolescents in MHFA courses N=97 parents at 1-year follow up, N= 86 adolescents at 1-year follow up N=80 parents in MHFA at 2-year follow up, N=69 adolescents in First Aid at 2-year follow up; Gender ratio not reported	14 hours Youth MHFA – parents training courses	No significant difference between training groups in the proportion of cases of adolescents with a mental health problem over time ($ps > .05$). No significant difference between training groups in the quality of parental support provided to their adolescent at 1- or 2-year follow-up ($ps > .05$). There was a slight improvement in knowledge among parents at the 1- and 2-year follow up ($ps > .05$).
Perry et al. (2014), Australia	380 students, n=207 students in the intervention, n=173 students in the control; Gender ratio not reported.	Headstrong curriculum – 10-hour class time	Both groups saw an improvement in literacy and a reduction in stigma at the post intervention and follow up, with greatest effects seen in the Headstrong group (F $(2, 527) = 3.17$, $p < .05$). Significantly improved literacy in an intervention group between pre- and post-intervention (F$(2, 494) = 14.63$, $p < .05$). Significantly decreased stigma between pre- and follow-up in an intervention group.

Reavley et al. (2014), Australia	Nine university campuses and 767 students, Intervention – 6 clusters (n=426); 69.3% female, Control – 3 clusters (n=341); 52,5% female	MindWise, multifaceted intervention delivered via website/Facebook, Twitter, fact sheets/booklets. Email, campus special events, poster, project, etc. intervention were for both staff and students. Study conducted from March-May 2010.	There were not changes in alcohol use or psychological distress. Students in the intervention group were more likely to seek treatment for a drug/alcohol problem. There was a slight improvement in knowledge of alcohol use and psychological distress among participants.
Swartz et al. (2017), USA	N=66 schools participated N=27 school in the control group [n=2,998 students]; 51.6% female N=27 schools intervention group [n=3,681 students]; 51.6% female	School-based Adolescent Depression Awareness Program (ADAP) – two 90-min or three 45-60 min class period.	Depression literacy measured by the Adolescent depression knowledge questionnaire was improved after intervention ($p < .001$) and sustained after 4 months ($p < .001$). - Stigma measured by the reported and intended behavioral scale was not changed ($p > .05$)

2.3 THEORTETICAL FRAMEWORK

The theoretical framework for this study is the socio-ecological model (see Figure 1). The socio-ecological model developed by Bronfenbrenner (1977) emphasizes the importance of recognizing that many behaviors and diseases are affected by and affect the social environment surrounding individuals. It also suggests that interventions are necessary to address the social aspects of the community in addition to addressing the individual needs to improve the patient's health (McLeroy, Bibeau, Steckler, & Glanz, 1988). The need for multilevel interventions has become increasingly apparent as programs, such as Mental Health First Aid, which address just one level and aspect of a health issue, have shown to be less successful in changing behaviors and reducing stigma. The social-ecological model helps shed light on these results given its focus on a holistic approach to behavioral and cultural change based on addressing issues on an individual, microsystem, mesosystem, exosystem, and macrosystem level (Dunn, Masyn, Yudron, Jones, & Subramanian, 2014).

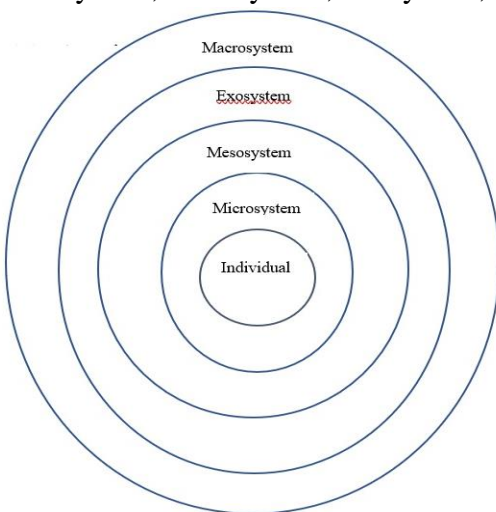**Figure 1. Socioecological model**

Many of the mental health literacy programs aforementioned address individual's mental health literacy; yet, there is a lack of supporting evidence that these programs also change behaviors and therefore outcomes. The individual system represents the intrinsic characteristics of a person, such as race or gender. The microsystem represents the immediate

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influences on an individual, such as family values, religion and education. The mesosystem acts as a mediator between the microsystem and the exosystem, connecting small groups of people to community members and resources. The exosystem includes populations that have more of an indirect influence on the patient, such as the mass media, industry, and distant community members. The exosystem's values influence individuals' perception of their community and the world around them. Lastly, the macrosystem represents widely accepted ideologies and values that may influence one's knowledge and belief regarding mental illness. The social-ecological model states that changes at one level affect all other levels of the community (Dunn et al., 2014).

2.4 PURPOSE

College campuses have become a focal point in the media regarding mental health of students, their understanding of different mental illnesses, and resources available to them. The concerns voiced by media outlets and society regarding mental health on college campuses embodies a concern of the level of mental health literacy among college students. The purpose of this study was to enhance the knowledge of mental health literacy to develop more appropriate intervention programs and delivery strategies for college students.

Specific Aim 1: Investigate mental health literacy in college students.

Specific Aim 2: Explore the use of campus mental health services among college students.

Specific Aim 3: Examine whether adolescent mental health literacy differs in relation to individual characteristics, such as demographics or education.

3.0 METHODS

3.1 DESIGN AND PARTICIPANTS

This study used a cross-sectional and descriptive approach to explore mental health literacy and mental health service among undergraduate students. A sample of 277 undergraduate students and 9 employees at the University Counseling Center at a large public university in the Mid-Atlantic United States agreed to participate in the study. For undergraduate students, the inclusion criteria were that they must be over the age of 18 years and an enrolled undergraduate student at the university. No individuals of gender, racial, or ethnic subgroups was excluded from participation. For the employees at the University Counseling Center, the inclusion criteria were that they must be over the age of 18 years, and employees of the University Counseling Center counseling staff at the public university.

3.2 MEASURES

Demographic information. Undergraduate students provided the following information; school/college, major (health and non-health majors), race/ethnicity, identified gender, attendance at a mental health training program, learning about mental health in a classroom setting outside of college, learning about mental health at college, mental health knowledge perception, and overall mental health literacy.

Mental health service. Staff at the university counseling services were asked to answer six items relating to the types of issues for which students seek support from the counseling center, how they come in and react to being at the counseling center, and how long it takes students to receive aid from the counseling center after initial contact. A 5-point Likert Scale (Not well at all to Extremely well) was used for questions to evaluate how well the counseling staff believes students know about the resources and services offered at the counseling center and in the surrounding area.

Mental health literacy scoring. A 30-item self-report multicomponent mental health literacy measure was used (Jung, von Sternberg, & Davis, 2016). The scale measures the knowledge-oriented, belief-oriented, and resource-oriented mental health literacy. Example questions include "*taking prescribed medications for mental illness is effective*", "*poor parenting cause schizophrenia.*" Based on the literature (Jung, von Sternberg, & Davis, 2016), this study used 26 items to compute each subscale of mental health literacy. 10 questions assessed beliefs and 12 questions assessed knowledge of mental health using a 5-point Likert Scale, ranking answers from Strongly Agree to Strongly Disagree. These 22 questions were recoded 1 (if their answer is strongly agree or agree) or coded 0 (if their answer is strongly disagree, disagree, neutral, or I do not know). Negative-stated items were reversely coded. Four questions assessed knowledge of mental health resources with a binary yes (coded 1) / no (coded 0) response. The possible score of belief, knowledge, and resource of mental health literacy ranged from 1 to 10, 0 to 12, and 0 to 5 respectively. The higher scores indicate higher levels of mental health literacy. Internal consistency is reported at 0.83 and a convergent validity is 0.37 (Jung et al., 2016).

3.3 PROCEDURES

All undergraduate students at the university were sent an email encouraging their participation in the study. According to Fincham (2008) and FluidSurveys University (2014), the average response rate for web/email surveys is 25-30%. The current full-time undergraduate enrollment at the university is approximately 18,700; therefore, we expected approximately 4,600 participants in the sample size for this study. The current University Counseling Center counseling staff consists of 19 clinicians; therefore, we anticipated 5 participants in the sample for this study.

Recruitment. The study team contacted schools and departments at the university to introduce the study and to learn their interests in the study. A total of eight schools and departments expressed interest in the study. Email introductory script and survey link were sent to directors of communication in eight different schools and departments at the university, who then sent the email introductory script and survey to undergraduate students in each school. Email verification from the directors of communication to the study team regarding informing the students of the survey were required. Fliers with QR codes leading to the survey were also distributed in a university building that houses many academic departments and classes.

Students were invited to take the survey by following an active link embedded in the email, or through fliers distributed in an academic facility. Participation in the study was voluntary. At the end of their respective study, students had the option to include their email in a separate online survey for the chance to be entered to win a $10 gift card. The winner was chosen using the random number generator of Excel.

The study team also contacted the director of the university counseling services. The director was emailed the introductory script and the active link to the survey for dissemination to

counseling staff at the center. Email verification from the director of the counseling center stating the survey being sent to the counseling staff was required. Each counseling staff member was sent the introductory script and active link to participate in the study from the director of the University Counseling Center upon the instruction of the study team. At the end of their respective study, clinicians had the option to include their email in a separate online survey for the chance to be entered to win a $10 gift card. The winner was chosen using the random number generator of Excel.

Data collection. Data was collected through a Qualtrics email survey to undergraduate students at the public university from February 2020 to March 2020. The survey introduction briefly described the study, indicated that the study received IRB approval, and that all responses are confidential and anonymous with no participants' survey responses linked to the email address at which the survey request was linked. A follow-up email was sent every two weeks with up to four reminders over two months inviting participants to partake in the study. An email survey was sent to the University Counseling Center staff with the same time parameters and reminders.

3.4 DATA ANALYSIS

The de-identified data collected was stored in the University's secure server and then download to a statistical analysis software package for analysis. Data remained de-identified. IBM SPSS Statistics for Windows, Version 25 (IBM Corp., Armonk, N.Y., USA) was used to analyze date. Descriptive statistics were used for exploratory data analyses. T-test and ANOVA test were

used to examine any differences between demographic information in regards to the mental health literacy.

3.5 ETHICAL CONSIDERATION

The study protocol and material were approved by the University Institutional Review Board (IRB) with a waiver of informed consent for a web-based survey.

4.0 RESULTS

4.1 CHARACTERISTICS OF PARTICIPANTS

Characteristics of students are listed in Table 2. Of the 277 undergraduate students, 7.2% were male, 87.0% were female, and 3.6% were "other". "Other" gender category includes all those who identified as transgender male or female, non-binary, or other. Regarding race, 83.0% of participants were non-Hispanic white and 15.2% were non-white. Non-white included races and ethnicities such as Hispanic/Latino, non-Hispanic /Black, Asian, Mixed Race, and Other (Haitian-American). 38 were freshman, 42 were sophomores, 92 were juniors, and 99 were seniors.

Table 2. Demographic characteristics (*N*=277)

Characteristic		*n* (%) or *M* (*SD*)
Identified gender	Female	241 (87.0%)
	Male	20 (7.2%)
	Other	10 (3.6%)
Race	White	230 (83.0%)
	Non-white	42 (15.2%)
Year in college	Freshman	38 (13.7%)
	Sophomore	42 (15.2%)
	Junior	92 (33.2%)
	Senior	99 (35.8%)

Health science related major	Yes	214 (77.3%)
	No	55 (19.9%)
Attends mental health training program	Yes	57 (20.6%)
	No/Unsure	212 (76.6%)
Learning about mental health in a classroom setting	Yes	229 (82.7%)
	No	42 (15.2%)
Learning about mental health at college or before	Yes	161 (58.1%)
	No	116 (41.9%)
Mental health knowledge perception	<=average	79 (28.5%)
	>average	193 (69.7%)
Mental health literacy	Knowledge	9.83 (2.01)
	Belief	8.89 (1.39)
	Resource	3.39 (0.97)

4.2 MENTAL HEALTH SERVICES

Information about mental health service were collected from counselors (see Table 3). All participating University Counseling Center clinicians (n=9) were over the age of 18 years. No racial, gender, or other demographic information were collected. Valid information from seven counselors was used.

The reasons for use of the counseling services (multiple responses are available) include anxiety (n=7), depression (n=6), suicidality (n=4), and others (n=2). Clinicians stated that students

usually come to the university counseling center on their own (n=7). Although clinicians stated that students do not have a strong reaction to being there (n=3), there are students who feel ashamed to be at the counseling center (n=1). Clinicians stated that students are usually seen with 24 hours of contacting the counseling center (n=5), yet one clinician stated that students are seen within one week of contacting the counseling center. Upon the clinicians' report, students know about the resources and services offered at the University Counseling Center moderately well (n=4), but students did not know about resources and services in the surrounding area (n=4). The study also collected information regarding the barriers clinicians believe students commonly face when accessing mental health care on campus via opened ended questions. Clinicians stated that barriers include the following: a) anxiety about getting started and families finding out; b) feeling that they do not have the time; c) minimizing their own concerns as "not that bad" until it becomes a more pronounced problem; d) lack of insurance that covers providers in the campus area; e) unrealistic expectations about what the counseling center does; f) perceived ability to receive help; and g) perceptions about mental health care and their knowledge that individual treatment is short-term and every other week.

Table 3. Mental health services responses reported by clinicians (*N*=7)

Mental health services		*n (%)*
Reasons for counseling service use	Anxiety	7 (77.8)
	Depression	6 (85.7)
	Suicidality	4 (57.1)
	Others	2 (28.6)
	Substance use	0
Service use experience	Looking forward to coming	3 (42.9)
	Feeling ashamed about coming	1 (14.3)
	Not having a strong reaction to being there	3 (42.9)
Time frame	Less than 24 hours	5 (71.4)
	Over one week	1 (14.3)
Perception about students' knowledge about resources/services in school area	Students know slightly well	3 (42.9)
	Students do not know well	4 (57.1)

4.3 MENTAL HEALTH LITERACY

Results from an independent samples t-test indicated that white students (M=9.03, SD=1.19) scored higher on the belief subscale of mental health literacy than non-white students (M=8.12, SD=1.99) (t=2.84, p=.01) (see Table 4). Results from the study show that students who identified as health-related majors scored significantly higher on knowledge compared to non-health majors (t=2.10, p=0.04). However, no relationships were found between belief or resources subscale of mental health literacy and major. Students who attended a mental health training program (M=3.72, SD=.49) scored higher on the resource subscale of mental health literacy than students who did not attend a mental health training program (M=3.30, SD=1.04) (t=-4.32, p<.001). Similarly, students who learn about mental health in a classroom setting scored higher on knowledge and resources than the students who did not learn about mental health, respectively (t=2.48, p=.01; t=2.78, p=.008). Students who reported above average mental health knowledge perception (M=10.7, SD=1.88; M=9.04, SD=1.27; M=3.51, SD=0.87) scored higher on each subscale of mental health literacy than their counterpart (M=9.24, SD=2.20; M=8.52, SD=1.59; M=3.09, SD=1.13) (t=-3.12, p=0.002; t=-2.57, p=0.01; t=-2.99, p=.003).

Table 4. Mental health literacy and demographics of participants

		Knowledge M (SD)	t (p-value)	Belief M (SD)	t (p- value)	Resource M (SD)	t (p- value)
Race	White	9.95 (1.87)	2.02 (0.05)	9.03 (1.19)	2.84 (0.01)	3.36 (0.97)	-1.24 (0.22)
	Non-white	9.10 (2.58)		8.12 (1.99)		3.56 (0.98)	
Health-related major	Yes	9.94 (2.02)	2.10 (0.04)	8.89 (1.42)	0.01 (0.99)	3.42 (0.94)	0.73 (0.46)
	No	9.31 (1.95)		8.89 (1.27)		3.31 (1.05)	
Learning about mental health at college or before	Yes	9.94 (2.03)	- 1.09 (0.28)	8.91 (1.51)	-0.39 (0.70)	3.45 (0.91)	-1.31 (0.19)
	No	9.67 (1.98)		8.85 (1.20)		3.30 (1.50)	
Attending mental health training program	Yes	10.18 (1.83)	-1.47 (0.14)	8.95 (1.25)	-0.38 (0.71)	3.72(0.49)	-4.32 (<.001)
	No	9.73 (2.05)		8.87 (1.42)		3.30 (1.04)	
Learning about mental health in a classroom setting	Yes	9.97 (1.97)	2.48 (0.01)	8.86 (1.43)	0.21 (0.31)	3.48 (0.90)	2.78 (.008)
	Non	9.14 (2.08)		9.10 (1.03)		2.93 (1.22)	
Mental health knowledge perception	<=average	9.24 (2.20)	-3.12 (.002)	8.52 (1.59)	-2.57 (0.01)	3.09 (1.13)	-2.99 (.003)
	>average	10.07 (1.88)		9.04 (1.27)		3.51 (0.87)	

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A one-way Analysis of Variance (ANOVA) was used to determine whether students' mental health literacy was a function of individual characteristics (see Table 5). The test for homogeneity of variance was not significant indicating that this assumption underlying the application of ANOVA was met. If the equal variance assumption has been violated, this study use an adjusted F-statistic based on the Welch statistic. The one-way ANOVA of mental health literacy revealed a statistically significant main effect [(F= (2, 268) =7.84, p=0.003)] indicating that not all three identified gender categories result in the same belief subscale of mental health literacy score.

Table 5. Analysis of variance for years in college and identified gendere

Variables	Source		Sum of Squares	Degree of freedom	Mean Square	F (* adjusted F)	p-value
Years in college	Knowledge	Between Groups	2.36	2	1.18	0.29	0.75
		Within Groups	1096.49	268	4.09		
		Total	1098.85	270			
	Belief	Between Groups	6.74	2	3.37	1.79*	0.17
		Within Groups	514.72	268	1.92		
		Total	521.45	270			
	Resource	Between Groups	4.82	2	2.41	2.58	0.08
		Within Groups	249.72	268	0.93		
		Total	254.54	270			
Identified gender	Knowledge	Between Groups	8.92	2	4.46	1.10	0.34
		Within Groups	1089.28	268	4.06		
		Total	1098.19	270			
	Belief	Between Groups	16.16	2	8.08	7.84*	0.003

	Within Groups	505.29	268	1.89		
	Total	521.45	270			
Resource	Between Groups	0.37	2	0.18		
	Within Groups	253.95	268	0.95	0.19	0.82
	Total	254.32	270			

Table 6 shows the result of post hoc comparisons to determine which pairs of the three group means differed. The result indicates that the students who identified as other gender scored significantly higher on knowledge subscale of mental health literacy (*M*= 9.70) than did students (*M*=9.40) who identified as male (*p*=0.02).

Table 6. Post hoc results of identifed gender and years in college

		M	Mean Differences $(\bar{X}_i\text{-}\bar{X}_k)$		
			1	2	3
Knowledge	1. Freshman & sophomore	9.70	0.00		
	2. Junior	9.93	0.23	0	
	3. Senior	9.83	0.13	-0.11	0
Belief	1. Freshman & sophomore	8.65	0.00		
	2. Junior	8.93	0.28	0	
	3. Senior	9.03	0.38	0.10	0
Resource	1. Freshman & sophomore	3.20	0		
	2. Junior	3.53	0.33	0	
	3. Senior	3.41	0.21	-0.12	0
Knowledge	1. Male	8.15	0		
	2.Female	8.92	-0.69	0	
	3. Other identified gender	9.60	-0.50	-0.19	0
Belief	1. Male	9.40	0		
	2. Female	9.92	0.77	0	
	3. Other identified gender	9.70	1.45 (*p*=0.02)	0.68	0
Resource	1. male	3.05	0		
	2. female	2.78	-0.01	0	
	3. other identified gender	2.60	-0.20	-0.19	0

5.0 DISCUSSION

Three research questions were investigated in this study. This study demonstrated undergraduate students at the university and the clinicians at the University Counseling Center believe students have above adequate knowledge of resources to care for their mental health but there may be barriers and other factors that hinder undergraduate students' mental health literacy.

Initially, it was hypothesized that students whose major is related to health science, may have an overall higher mental health literacy compared to students with non-health science majors. Students with majors related to health science may have learned about mental illness in their curricula or participated in clinicals or practicum experiences where they interacted with patients diagnosed with a mental illness. A study conducted by Zolezzi, Bensmail, Zahrah, Khaled, and El-Gaili (2017) found that students in science-based majors had a greater understanding of the role of chemical imbalances in mental illness and, therefore, felt less stigmatizing beliefs towards people with mental illness compared to those in non-science based majors. Along these lines, the results the study found that individuals who identified as health majors had a significantly better understanding of knowledge-oriented mental health literacy.

It was hypothesized that undergraduate students who are classified as seniors would have a higher mental health literacy compared to students who are freshman, sophomore, and junior. However, it was found that there were no significant differences between year in college on knowledge, belief, and resources. These results may be due to students having a high level of mental health literacy, and a majority of students identified as health science related majors. More studies should be completed regarding mental health literacy among non-health related majors,

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and among different ages to better understand the relationship between mental health literacy and year in college.

The study found that individuals who are transgender, non-binary, or other have a higher overall mental health literacy, and this result may be due to effect that belonging to the LGBTQIA+ community has on mental health and illness. Many who identify with the LGBTQIA+ have faced mental health challenges due to the entrenched stigma and prejudice that the community historically faces (Centers for Disease Control and Prevention, 2017). Prejudice and mental health are tightly related and, thus, persistent prejudice may promote a better understanding of mental illness, retain less stigma towards mental illness, and enhance better knowledge of resources in their community (Gnan, Raham, Ussher, Baker, West, & Rimes, 2019).

White and non-white (i.e., Black, Latino, Asian, or other) participants were found to differ significantly on belief of mental health literacy. Non-white participants (Black, Latino, Asian, or other) comprised a smaller proportion of the participant pool compared to white patients, which may be an explanation for the lack of significant difference in knowledge or resource of mental health literacy. However, it is important to recognize the role of culture in mental health stigma and that the lack of racial diversity in counseling center staff may hinder use of resources on campus. In a systematic review conducted by Chowdhary et al. (2014), the authors found that adapting evidence-based psychological treatments to different cultures was more effective in improving outcomes in depressive patients. This study shows the importance of cultural competence, diversity, and bias training for improving delivery of mental health care to patients in the LGBTQIA+ community and people of color and different ethnicities.

Clinicians stated that students believed that the counseling center would help treat their mental health issues; while it helps provide some care for students, the counseling center also helps

bridge them to community resources. Some students' misunderstandings regarding care at the counseling center may discourage them from pursuing further treatment in the community because their expectations differed from the services they received. A low mental health literacy and retained stigma may additionally influence misunderstandings regarding care. During freshman orientation, the resources at the counseling center are discussed; however, conversations regarding mental health treatment are often limited and continuity of mental health discussions throughout the college experience is not guaranteed. Students are not actively introduced to community resources, and this may hinder students' knowledge of resources in the community. To properly improve mental health literacy, undergraduate students must have knowledge of illnesses, reduced stigma, and awareness of resources in the community.

Two clinicians cited barriers to mental health care including students' perceived ability to receive help, a tendency to minimize worries about their mental health, and delay in seeking treatment until being on the brink of a crisis. The World Health Organization's Mental Health Survey found that low perceived need to treatment was a pervasive barrier to initiating care (Auerbach et al., 2016).

Clinician responses regarding student perceptions to barriers of care highlight the role of family and self-stigma in student readiness. Lacking family support and feeling prejudice from family members may prevent students from seeking mental health care. Results from a study conducted by Bapitista and Zanon (2017) show that family stigma and support are integral variables to help-seeking behaviors among students. Retention of self-stigma and low knowledge of mental illness, especially anxiety, depression, suicidality, and substance abuse are barriers that are best addressed through mental health literacy trainings and creating safe environments for conversations on mental health. A study by Cheng, Wang, McDermott, Kridel, and Rislin (2018),

found that poor knowledge of mental illnesses and self-stigma prevented students from seeking help.

The results of the study found that there were no significant differences in mental health literacy between participants who learned about mental health at college or before college and students who did not learn about mental health. However, there was significant differences in mental health literacy between the students attended mental health training program or learning about mental health in a classroom setting and students who did not attend training program or not learn about meatal health in a classroom setting.

Thus, these results show that earlier education regarding mental health can reduce stigma and help students identify helpful resources in their areas. To properly improve mental health literacy and reduce mental health stigma, students must be educated regarding mental health, illness, resources in the community, and stigma before entering college. Doing so adequately prepares them to aid peers in crisis and have a strong mental health literacy in their adult life. Previous studies (Campos et al., 2018) show that implementing a mental health literacy education for students ages 12-14 years improves knowledge of mental illnesses, help-seeking behaviors, and first aid skills and reduces stigma as short-term effects. Literature regarding mental health literacy training in school-age students in the United States is widely inconclusive regarding the long-term effects of such training; yet, their short-term effects hold hope that consistent mental health education and improved literacy will equip individuals with the skills necessary to recognize mental illnesses and provide help for peers and themselves. Additionally, it is important to note that this study found a significant difference only in resources among those who indicated they had attended a mental health literacy training program, such as Mental Health First Aid or Suicide Prevention Training. The lack of relationships between knowledge and belief and attendance at a

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mental health literacy training program may indicate such trainings are not effective in or improving knowledge or reducing stigma.

There is a significant difference in mental health literacy between participants who reported above average mental health knowledge perception and their counterparts. Coles et al. (2016) investigated depression and social anxiety disorder literacy among adolescents and found that improved literacy and knowledge of mental illnesses directly resulted in improved help-seeking and referral behaviors. However, it is important to note that students' perception of their mental health literacy may not match their actual mental health literacy. Students may be more apt to over-rate their knowledge of mental illness and willingness to help a peer in a crisis due to internal bias and social desirability, leading to a discrepancy in reported and intended behaviors. Reported behaviors reflect the steps and knowledge demonstrated by students in an actual mental health crisis, while intended behaviors are steps the student would take in the event of a mental health student. (Burns et al., 2017).

5.1 IMPLICATIONS

While undergraduate students at the university in this study showed an above average mental health literacy score, steps must be taken to advance the atmosphere of mental health on campus, reduce stigma, improve knowledge of anxiety, depression, suicidality, and substance use, and educate students regarding how to aid peers in a crisis. There are a multitude of avenues through which mental health literacy of anxiety, depression, suicidality, and substance use can be improved. To address individual behaviors and influences of the microsystem, improved access to

information and education are necessary. This goal can be efficiently achieved through mental health literacy training.

Mental health educational programs such as suicide prevention training, depression, developed by the Substance Abuse and Mental Health Services Administration (SAMSHA) and The National Institute of Mental Health (NIMH) can help students improve their knowledge of mental illness and suicidality, decrease stigma against them, and improve knowledge of resources for support during a crisis. Infographic about mental illness developed by SAMHSA or NIMH can also be utilized in a concise and easy-to-understand manner. Placing infographics in visible and convenient locations that describe different mental illnesses and how they present differently based on gender, race, and age improves access to mental health information and education.

Most universities and cities have their own mental health treatment centers and programs. Phone numbers to on-campus and off-campus services and their location, therapeutic services, instructions to access necessary health care, and updates on new mental health resources are often provided. This information can be advertised in infographics and pamphlets in visible and populated areas, on the university website, and social media so that the maximum number of students have access to this information. Collaboration is essential between a university counseling center, different student organizations, and the university administration. Information should be posted in languages that are commonly spoken by students, faculty, and community members (i.e., in both Spanish and English) to improve accessibility of information resources. Placing signs and symptoms of mental illnesses, warning signs of suicidality, and mental health resources at the university and in the community, in conjunction with improving mental health education and training of university students, are necessary to improving mental health literacy on college campuses.

Utilizing mental health literacy training programs and educating students on how to assist peers in crisis is an integral step to improving the mental health literacy. When orienting undergraduate students to the university, leaders should provide students opportunities for mental health crisis and literacy trainings. Often, university programs that aim to improve mental health literacy, train students in crisis management and resources on campus, but are either poorly understood or not widely offered to reach enough students (Lipson et. al., 2014). Programs, such as #Bethe1 through SAMSHA helps teach individuals five steps to aiding someone who is a danger to themselves or others; Ask, Be There, Keep them Safe, Help them Connect and Follow Up. The #BeThe1To program can be complemented with conversation starter tips that aim to teach individuals how to open a dialogue with someone they are concerned about (National Suicide Prevention Lifeline, n.d.).

Programs such as Campus Connect, developed at Syracuse University in 2007, Mental Health First Aid, and other Suicide Prevention/Gatekeeper trainings are often available at universities for students to enroll. Such trainings aim to improve knowledge of mental illness, promote awareness of resources in the area, decrease stigma, and teach helping behaviors for individuals in crisis. However, these opportunities are not always accessible, time-conscious, or known to students. Yet, improving knowledge of mental illnesses and resources among university students will not be effective in improving mental health literacy on college campuses without addressing stigma, mental health atmosphere on campuses, and the role of empathy in mental health discussions. Seeking mental health care or discussing signs and symptoms of mental illness with peers must be destigmatized if universities are to be successful in improving mental health literacy among their undergraduate students. Such would require addressing both self-stigma and public stigma (Baptista & Zanon, 2017). Baptista and Zanon (2017) state that interventions that

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specifically focus on destigmatizing mental illness and care and embrace a positive attitude are key to promoting mental health literacy and help-seeking behaviors.

Lastly, the utilization of lived experience speakers or peer specialists in debunking stigma and improving knowledge of mental illnesses is an avenue for improving mental health literacy on college campuses. Lived experience education provides people with context to mental illness, improves knowledge of resources in the community, and destigmatizes conversations around mental illness. In a study investigating the role of lived experience videos in treatment for patients experiencing psychosis, results found that viewing the lived experience videos made them feel more connected and more comfortable discussing their mental illness with a healthcare professional (Williams, Fossey, Farhall, Foley, & Thomas, 2018). The role of lived experience education in destigmatizing conversations around mental illness and creating a comfortable atmosphere for learning is integral to improving mental health literacy, and should therefore, be widely incorporated for undergraduate college students.

5.2 LIMITATIONS

This study lacked diversity in demographics, as a majority of participants were white/Caucasian, female, and health science majors, predominately from the School of Nursing. Furthermore, a majority of participants were juniors and seniors at the university. Only 277 students participated in the study, while the university hosts over 18,000 undergraduate students, thus, the data collected is not an accurate representation of the student body. Additionally, the survey was only sent to students in the School of Nursing, School of Health and Rehabilitation

Science, College of General Studies, and to select majors within the School of Arts and Sciences, once again showing that this data is not representative of the entire undergraduate student body's mental health literacy. At the closing data collection period, the COVID-19 pandemic began in the United States, which impacted data collection as the university commenced online classes, and communication became more difficult. Lastly, the response set collected from clinicians at the University Counseling Center is not representative of the overall counseling center beliefs and perceptions, as only approximately 50% of clinicians responded.

6.0 CONCLUSION

The findings of this study show that undergraduate students at this university have a relatively good mental health literacy and, thus, have an understanding of different mental illnesses, reduced stigma, and resources on campus and in the community. However, results of this study showed that different demographics and features, such as gender, major, and previous mental health education may influence students' mental health literacy. Additionally, while students may have knowledge of different mental illnesses and/or resources, the study did not define if students felt able to discuss mental health with peers or refer them to different services. Furthermore, the findings from the clinicians at the University Counseling Center show that while students often present with anxiety, depression, or suicidality, there are multiple barriers to seeking mental health care, such as stigma (self and/or family), insurance, or lack of knowledge of community resources. It is integral that university campuses work to improve undergraduate student mental health literacy by expanding student understanding of mental illnesses, reducing stigma, and improving knowledge of resources on campus and in the community. However, simply improving mental health literacy at the collegiate level will not adequately prepare young adults to understand mental illness and assist in crisis situations. Mental health literacy education must be expanded in the school system in the United States to effectively reduce stigma and improve knowledge. Holistic policies that expand mental health literacy education in primary, secondary, and high school education and at the collegiate level are needed, while also addressing help-seeking barriers, such as insurance and stigma.

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