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Mental health literacy and stigma among Salvadorian youth: anxiety, depression and obsessive-compulsive related disorders.

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Abstract

This study examined 1) adolescent mental health literacy (MHL) and stigma for depression, anxiety and obsessive-compulsive and related disorders (OCDs), and 2) demographic moderators. Participants were 383 high school students (50.9% boys) aged 11-18 years ($M = 14.12$, $SD = 1.91$) in El Salvador. Participants read vignettes of adolescents with mental health problems and reported on their beliefs about 1) what was wrong with the young person, 2) expected recovery time, 3) help-seeking beliefs and recommendations, and 4) stigma and preferred social distance associated with each condition. Results suggested that recognition of mental health conditions, especially anxiety disorders and OCDs, was limited, although one third could recognize depression in a peer. Help-seeking attitudes were favorable. Adolescents were only somewhat willing to be affiliated with someone experiencing a mental health problem. Girls showed better MHL and lower stigma than boys. Stigma was lower among those with exposure to mental health problems.

Keywords: mental health literacy; stigma; child; adolescent; El Salvador; anxiety; obsessive-compulsive and related disorders

Mental health problems frequently arise during adolescence; however, few adolescents seek treatment for these problems (1–3). Moreover, those who do seek treatment only do so after long delays indicating a need for earlier intervention (4). While both structural and individual factors may play a role in low rates of treatment-seeking (5,6), one factor that impedes access to treatment is low youth mental health literacy (MHL; (6)). MHL refers to an individual's attitudes towards, and knowledge of psychological disorders, their symptoms, causes, and treatment, all of which are critical in facilitating recognition and treatment-seeking for these problems (7). Young people are more likely to seek treatment for mental health problems when they have lower levels of stigma about mental health and have better knowledge about mental health symptoms and sources of treatment (8,9). However previous studies have found that MHL is typically low among adolescents and varies greatly between disorders (10,11). It is critical to investigate MHL in developing countries, given that existing research on adolescent MHL has almost exclusively been conducted in high-income countries, and given that these youth often face even greater systemic barriers to treatment.

Understanding the various factors that influence MHL among adolescents is important to inform educational and intervention campaigns and to improve mental health promotion and treatment access for young people (8,12). In Western samples, certain demographic and personal factors have been found to relate to MHL and stigma among adolescents. Most notably, several studies have suggested that girls tend to have higher levels of MHL in comparison to boys (8,10,11,13). Age has also been associated with MHL, with improved MHL and lower levels of stigma towards mental health disorders among older adolescents (14). However, there is less research that has investigated the impact of exposure or lived experience with mental health problems and how this might impact adolescents' MHL and stigma. Being able to recognize mental health symptoms in oneself, or in peers, is important both in terms of facilitating help-seeking, and for reducing stigma associated with symptoms. Indeed, research among adults

suggests that having lived experience of a mental health disorder is associated with better MHL (15). Studies in youth samples are limited and have led to conflicting findings. One study with children of parents with mental health problems found that despite high desire for information, there were common limitations and inaccuracies in MHL (16). However, another population-based study found reduced stigma among those with exposure to mental health problems (17), supporting the notion that exposure to mental health problems, either direct or indirect, might help to de-stigmatize mental health and improve knowledge and understanding. However, another study found that exposure to mental health problems increased stigma among adolescents (18). Specifically, Corrigan et al (18) found among US adolescents higher familiarity with mental health problems was associated with attributing greater responsibility to peers for their mental illness and viewing them as more dangerous. This is in contrast to research among Australian adolescents (17), whereby both personal experiences with mental health difficulties and having a family member or friend with mental health difficulties was linked with lower rates of stigma, in particular lower rates of social distance and 'weak not sick' beliefs.

Furthermore, few studies have examined mental health stigma in developing countries. Previous research has indicated that stigma towards people with mental health difficulties may be higher in developing countries compared to developed countries (19,20). However, research among parents in El Salvador revealed that parents generally reported low rates of stigma regarding children's mental health difficulties and reported favorable attitudes towards help-seeking (21,22). However, no such research has been conducted with adolescents.

MHL has been reported to vary greatly between disorders, although the majority of research has exclusively focused on depression and social anxiety. Research has consistently shown that adolescent MHL is generally higher for depression compared to social anxiety disorder (11,23). However, with the exception of social anxiety disorder, few studies have examined youth MHL for other anxiety disorders (e.g., Generalized Anxiety Disorder; GAD) or

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for obsessive compulsive and related disorders (OCRDs) including different Obsessive Compulsive Disorder (OCD) symptoms dimensions (e.g., contamination, checking, harm and aggressive obsessions), Trichotillomania or Body Dysmorphic Disorder (BDD). While understanding of youth MHL related to depression and social anxiety is important, extending this understanding of youth MHL across a range of potential mental health conditions is especially relevant given the common age of onset for these disorders is during adolescence (24,25).

While most research on adolescent MHL has focused on adolescents in Western countries, little is known about youth MHL and stigma in low and middle-income countries (LMICs) such as El Salvador. Mental health is an increasing concern in El Salvador, with suicides rates of 13.5/100,000 (Males: 24.8/100,000; Females: 4.3/100,000) (26). In addition to individual barriers, such as poor MHL and stigma, adolescents in these countries face significant systemic and structural challenges, which exacerbate barriers to accessing treatment (27). On average, there are 3.56 mental health workers per 100,000 population in El Salvador, compared to 271.28 in the United States of America (28). Similar to other LMICs, El Salvador faces an imbalance of funding allocated to mental health care, compared to the burden these disorders have on society (29). As such, in El Salvador the burden of mental health disorders is 15 times higher than the funds allocated to mental health care (30). Further, training in mental health care among professionals is scarce and there is no dedicated mental health legislation in place (31). In addition, there are no reported mental health promotion and prevention programs in El Salvador, programs that have seen significant increases in MHL and reduction in mental health stigma in other countries (32).

Johnco et al. (22) examined parental MHL for childhood anxiety disorders and found that only around one third of parents recognized vignettes of anxiety disorders (social anxiety disorder, GAD, and separation anxiety disorder) as anxiety-related problems, with 9.6% of parents specifically recognizing Separation Anxiety Disorder, 4.4% recognizing Social Anxiety

Disorder, and only 0.4% recognizing GAD. Alarmingly, less than 5% identified the vignettes as a mental health problem, most commonly attributing symptoms to personal weakness or stress. Despite this limited recognition of mental health problems, there have been consistently positive attitudes towards treatment expressed by parents in El Salvador (21,22). In addition to expanding our knowledge of adolescent MHL across a range of disorders, it is also crucial to broaden this focus to understand youth MHL and mental health stigma in adolescents from LMICs in order to inform MHL campaigns. Accurate detection and knowledge about mental health is critical in all countries for encouraging early intervention, however perhaps even more so for youth in LMICs given the additional obstacles these youth and parents face in accessing appropriate treatment.

The current study had two aims: 1) to examine adolescent MHL for a wide range of mental health problems, including depression, social anxiety, GAD, contamination OCD (OCD – contamination), OCD characterized by harm and aggressive obsessions (OCD-harm), trichotillomania and BDD as well as non-pathological emotional symptoms such as bereavement in El Salvador. In particular, this study aimed to understand youth recognition of disorders, as well as their attitudes towards help-seeking for these disorders, and stigma; and 2) to examine demographic and personal factors associated with MHL and stigma. It was hypothesized that recognition of mental health disorders would be highest for depression, followed by social anxiety disorder and OCD-contamination given this is the stereotypical presentation of the widely varying OCD phenotype. We expected to find generally low recognition of OCD-harm and OCRDs (trichotillomania and BDD). Similar results were expected for mental health stigma, whereby stigma would be higher for less recognized disorders compared to more commonly-recognized disorders. In regard to demographic differences, it was hypothesized that age would be positively correlated with MHL and negatively with stigma, consistent with previous findings (14). Similarly, in line with previous studies, it was expected that there would be significant gender differences, with improved MHL and lower stigma among girls compared to boys

(10,11). Furthermore, it was expected that adolescents who had exposure, either personally or via knowing someone who had experienced similar problems, would have higher MHL and lower stigma, regardless of disorder type.

Methods

Participants

Participants were 383 high school students (50.9% boys) recruited from a private high school in El Salvador. Approximately 20% of high school students in El Salvador attend private schools (33). Students were aged between 11 to 18 years ($M = 14.12$, $SD = 1.91$) and answered an anonymous survey during class time.

Measures

Friend in Need Questionnaire - revised. Mental health literacy was assessed using a revised version of the Friend in Need Questionnaire (10). Participants were presented with eight brief vignettes describing teenagers with GAD, Major Depressive Disorder, Social Anxiety Disorder, OCD-contamination symptoms, Trichotillomania, BDD, and OCD-harm obsessions. The remaining vignette described a teenager going through typical life crises (death of a relative). The depression and bereavement vignette were revised from the Friend in Need Questionnaire (10). The social anxiety and general anxiety vignette were revised from the 'Mental Health Literacy Questionnaire' (34). The remaining vignettes (regarding the OCRD scenarios) were created by the authors. All vignettes described youth demonstrating core symptoms and characteristics of each disorder according to DSM-5 criteria. All vignettes are presented in Appendix A. For illustration, the OCD-Contamination vignette was as follows:

José is a 13-year old boy, who is constantly worried about dirt and germs. He is particularly concerned about getting an illness or getting sick. He washes his hands multiple times throughout the day, and has very elaborate

bathroom/cleaning routines that he must follow each time, or else he'll feel very nervous and will have to start the routine all over again. José will often refuse to do things like play basketball because he does not want to touch anything he thinks is dirty. José's worries about getting germs on him make him avoid lots of activities that he otherwise would enjoy doing.

After reading each vignette, participants answered several questions to assess their recognition and perceptions about the problem described in the vignette. These reflected questions about “If the character was your friend, how worried would you be about their wellbeing?” rated on a 4-point scale from ‘*not at all worried*’ to ‘*extremely worried*’; an open ended questions about what they believed was wrong with the adolescent, and which parts of the vignettes gave the strongest hints that the young person might be experiencing emotional difficulties; how long they thought it would take for each teen to improve, with responses rated from 1-2 days, 1-2 weeks, 1-2 months and longer than a few months; whether they thought the character needs help from another person to cope with their problems (yes/no), and if so, who they should seek help from (open ended response).

Social distance and stigma. To assess participants’ stigma, their willingness to be in close proximity (social distance) to the adolescent in each vignette was examined using three questions adapted from the Social Distance Questionnaire (35). These questions asked participants three questions about how willing they would be to move next door to the person, make friends with the person, and work closely with the person at school, with responses rated on a 5-point scale (1 = *Not at all*, 5 = *Definitely*). Responses on all three items were reverse scored, and averaged, with total scores ranging from 1 (low social distance and stigma) to 5 (high social distance and stigma).

Exposure to mental disorders. To assess participant’s personal exposure with mental health issues, they were asked three questions to indicate whether they, a family member, or a

friend had experienced similar problems to the character in the vignette. Items were answered on a dichotomous (yes/no) scale and combined for analyses to reflect whether a participant had any direct or indirect exposure with the disorder.

Procedure

This study was approved by the [REMOVED FOR BLIND REVIEW] Institutional Review Board. Opt out consent was used, with all parents informed that their children would be completing an anonymous and voluntary survey several days prior to completion. Measures were administered in English given the context of the school, as educational content was delivered in English. Students completed the measures during class time, supervised by school psychologists.

Data analytic plan

Analyses were conducted using SPSS version 24. First, adolescents' recognition of disorders was examined for each vignette by examining open-ended responses to the vignettes. Second, to examine whether adolescents' correct recognition of disorders differed based on whether they had exposure to the mental health disorder described in the vignette, gender, or age ordinal logistic regression analysis was conducted. Next, to examine whether adolescents' help recommendations differed based on whether they had exposure to the mental health disorder described in the vignette, gender or age, binary logistic regression analyses were conducted. Lastly, to investigate the relationship with stigma, linear regression analyses were conducted, testing level of stigma based on exposure, gender, age, and recognition by vignette.

Significance was assessed against a p-value of $<.05$. None of the regression analysis showed issues with multicollinearity (36).

Results

Recognition of disorders

Adolescents' recognition of disorders was examined for each vignette. Recognition was examined using two processes. First, open-ended responses were coded using thematic analysis,

and are summarized in Table 1. Secondly, responses were coded based on their level of accuracy. Responses were rated as ‘correct’ if participants named the disorder/mental health issue (e.g., “social anxiety” in social anxiety vignette), ‘specific – not pathological’ if participants described the presenting problem without making it clear that this was pathological (e.g., “worry about dirt and germs” in OCD – contamination vignette), ‘pathological – not specific’ if participants described the problem only vaguely but made it clear that this was pathological (e.g., “mental health problem”), ‘not specific – not pathological’ if participants were vague about the presenting problem and didn’t describe a pathological issue (e.g., “not enthusiastic” for depression vignette), and ‘incorrect’ if participants description did not match the disorder described in the vignette (e.g., “crazy”).

Recognition of social anxiety was moderate, with the most common attributions being shyness/timidness (37.4%), anxiety/fear/worry (27.3%), followed by low self-esteem/lack of confidence (17.6%). Recognition was similar for the GAD vignette, with the most common attributions being worry/overthinking (30.1%), stress (14.5%) and anxiety (11.8%). Depression was identified as correctly as depression or sadness by 36.0% of youth and by 15.4% as related to poor self-esteem or self-confidence. Obsessive (18.3%) was the most common attribution for the OCD-contamination vignette, however this was only identified by 1.0% of adolescents in the OCD-harm vignette, with anxiety (34.2%) and overthinking (15.1%) being the most commonly reported reasons. Bereavement was most commonly identified as depression/sadness (47.1%) or family stress (28.4%). Trichotillomania was most commonly identified as related to stress (52.2%) and anxiety (29.1%), and BDD as related to low self-esteem (24.9%) or overthinking (12.5%). Terms such as ‘weird’ or ‘crazy’ were most commonly used to describe OCRDs, including the OCD-harm vignette (7.2%), trichotillomania (6.2%) and OCD-contamination (5.5%) vignettes.

Accuracy data is reported in Table 2, and highlights that depression was recognized by 30.1% of participants, and OCD – contamination by 12.8%, with the remaining vignettes being correctly identified by 0.6-8% of participants. Disorders were incorrectly identified in 24.0-47.7% of cases, with symptoms of depression (47.7%), BDD (42.2%), OCD-harm (41.2%) and GAD (40.1%) being incorrectly identified by more than 40% of youth.

Next, we examined whether adolescents' correct recognition of disorders differed based on whether they had exposure to the mental health disorder described in the vignette, gender, or age. As shown in table 3, regression results suggested that girls were more likely to accurately recognize GAD, social anxiety, OCD-contamination, Trichotillomania, but there was no gender difference in recognition of depression, bereavement, BDD or OCD-harm. Age did not have a significant association with accuracy for any of the vignettes. Exposure to the disorder varied widely across vignette types with the lowest rates of exposure among the OCRDs (OCD – contamination: 13.7%; OCD – harm: 16.1%; Trichotillomania: 17.2%; and BDD: 37.6%), and greater exposure to anxiety and mood disorders (depression: 55.0%; social anxiety: 65.3%; and GAD: 67.4%). Most participants reported exposure to bereavement (87.0%). Exposure to similar mental health symptoms was only associated with greater odds of recognizing trichotillomania (OR = 1.76).

Help-seeking recommendations

Participants endorsed high rates of help-seeking beliefs across all disorder vignettes (62.7-91.4%) with the lowest rates reported for BDD (62.7%), OCD-contamination (65.3%), and social anxiety (70.7%; see Table 4). Interestingly, recommendations for help-seeking for the bereavement vignette were similarly high to that reported in the disorder vignettes (64.9%). Similarly, the expected duration of the relevant condition varied by disorder. Adolescents mostly commonly reported that it would take the students in the vignette a few months to feel better.

Estimated recovery time was lowest for the bereavement vignette, with most participants reporting that they expected the student would feel better within two months (80.3%) and highest for trichotillomania, whereby only 44.5% reported that the student would feel better within two months. Across vignettes, few participants reported that the student in the vignette would feel better within a few days (2.4 - 9.9%).

Despite generally high rates of support for help seeking, the source of that support differed substantially across disorders. Help from a psychologist, therapist or counsellor was the most commonly endorsed recommendation for GAD (42.4%), OCD – contamination (40.8%), trichotillomania (50.5%), BDD (35.3%), and OCD – harm (44.0%). Help from family members was the most commonly endorsed recommendation for depression (45.5%) and bereavement (67.7%). Whereas, help from friends was the most commonly endorsed recommendation for social anxiety (37.9%). Teachers were rarely endorsed as sources of support.

To examine whether adolescents' help recommendations differed based on whether they had exposure to the mental health disorder described in the vignette, gender or age, binary logistic regression analyses were conducted. The overall regression models for depression ($\chi^2(3) = 18.11, p = <.001, \text{Nagelkerke } R^2 = .08$), OCD – contamination type ($\chi^2(3) = 27.75, p = <.001, \text{Nagelkerke } R^2 = .11$), trichotillomania ($\chi^2(3) = 12.13, p = .007, \text{Nagelkerke } R^2 = .07$), and BDD ($\chi^2(3) = 15.98, p = .001, \text{Nagelkerke } R^2 = .07$), were significant, whereby exposure to the mental health disorder, gender and age significantly accounted for variance in adolescents' help recommendations. The overall regression models for GAD ($\chi^2(3) = 4.07, p = .254, \text{Nagelkerke } R^2 = .03$), social anxiety ($\chi^2(3) = 1.89, p = .597, \text{Nagelkerke } R^2 = .01$), bereavement ($\chi^2(3) = 7.11, p = .069, \text{Nagelkerke } R^2 = .03$), and OCD – harm type ($\chi^2(3) = 2.59, p = .459, \text{Nagelkerke } R^2 = .01$) were not significant.

Gender differences were observed for most mental health disorders. Boys were less likely to recommend help seeking compared to girls for the depression vignette ($B = -1.03, SE = .31, p$

= .001, OR = .36), the OCD – contamination type vignette ($B = -1.08$, $SE = .24$, $p < .001$, OR = .34), the trichotillomania vignette ($B = -1.00$, $SE = .35$, $p = .004$, OR = .37), and the BDD vignette ($B = -.73$, $SE = .35$, $p = .004$, OR = .48). Age differences were only observed for the bereavement vignette ($B = -.13$, $SE = .06$, $p = .027$, OR = .88), whereby younger adolescents were more likely to recommend help seeking compared to older adolescents. Exposure to the disorder was significantly associated with greater likelihood of recommending help seeking for the BDD vignette ($B = .58$, $SE = .27$, $p = .032$, OR = 1.78), but did not have any effect on help-seeking recommendations for any other vignette (all p 's $> .05$).

Stigma

There was some variation in stigma between the vignettes (see Table 5). Stigma was lowest for the bereavement vignette ($M = 1.57$, $SD = 1.22$) and the highest for OCD – contamination ($M = 2.97$, $SD = 1.05$). As can be seen in Table 5, girls consistently reported lower stigma related to all vignettes compared to boys. Furthermore, exposure to the mental health problem was consistently associated with stigma (with the exception of BDD), whereby adolescents' who had exposure to the mental health difficulty, showed less stigma than those without this exposure. Finally, age was significantly associated with stigma across all vignettes, whereby older adolescents reported higher stigma compared to younger adolescents. Notably, levels of recognition were significantly associated with stigma for some disorder vignettes (depression, OCD – contamination, and OCD – harm), whereby higher levels of recognition were associated with reduced stigma.

Discussion

Consistent with existing research examining adolescent MHL for depression and social anxiety in Western samples (10,11), youth recognition of mental health disorders in El Salvador

varied widely between the disorders. General recognition was better than the ability to accurately identify specific types of problems. Around 30% of adolescents accurately recognized depression, rates similar to those found previously among adolescents in Western societies (10,11) as well as in the general Australian adult community prior to major public MHL campaigns (39%; (37)). Recognition of other mental health problems was much poorer. OCD-contamination was correctly identified by 12.8% of youth. Recognition of social anxiety was 7.5%, slightly higher than rates reported in samples of Australian (3%; (37)) and American youth (1%; (38)) but still poor overall. GAD was the disorder least likely to be recognized (0.4%) with only around a quarter even recognizing that the problem was related to worry. Identification of other OCRDs (BDD, trichotillomania and OCD-harm) was particularly poor, ranging from 0.6% for BDD to 1.4% for the OCD-harm phenotype.

Despite generally poor recognition of specific mental health diagnoses by adolescents, general recognition of symptoms was better. Around 65% of individuals characterized social anxiety disorder as related to shyness or anxiety and 50% of individuals identified GAD as being related to worrying, stress or anxiety, both are which are similar to findings of MHL in Salvadorian parents (22). Depression was identified as being related to sadness or low self-esteem by around half of adolescents. Despite OCD-contamination being one of the most correctly-identified disorders (38), even this was poor in the current sample (<15%), and recognition of OCRDs was generally poor across all disorders, with only 18% of individuals noting OCD-contamination being related to obsessive thinking, and 1% identifying this for the OCD-harm phenotype. Around three quarters of youth characterized trichotillomania as being related to stress and anxiety, and around one third noted that BDD was related to low self-esteem or over thinking.

These findings suggest that while adolescents appear to be poor at identifying specific mental health diagnoses, they tended to have a more general awareness of symptoms experienced

by peers. However, the deficit in being able to recognize these problems, and particularly in being able to label them as pathological symptoms has clear implications for educational campaigns that need to focus on helping youth to distinguish normative symptoms compared to pathological symptoms that require intervention. Recognition of mental health symptoms has consistently been associated with treatment-seeking among youth and provides an important avenue for early intervention (6,9,39). Despite having only a general sense of problem areas and commonly not noting these as pathological, there were surprisingly high rates of help-seeking beliefs among youth, with 60-90% of adolescents recommending that a young person experiencing these symptoms should seek help for them. This is consistent with findings from Salvadorian parents, who also endorsed positive views about treatment seeking (22).

In line with findings suggesting a limited understanding of the mental health conditions, on average there were moderate levels of stigma associated with each type of mental health condition, and unexpectedly, with normal bereavement reactions. In general, youth noted that they would be only somewhat willing to live near, make friends with or work at school with someone experiencing these types of mental health problems. While this does not suggest a significant desire for social distance, there is some suggestion about exercising caution and restraint in their willingness to interact with peers who are experiencing common, treatable mental health conditions. This general hesitation and restraint when interacting may be barriers for youth experiencing these conditions in terms of eliciting social support from their peers. Improving MHL through education may be important in terms of reducing social distance and stigma from peers. The highest levels of stigma were related to OCD-contamination, consistent with the qualitative data that suggested that OCRDs including OCD-contamination, OCD-harm and trichotillomania were the disorders most likely to be described as being due to the young person being 'crazy' or 'weird'. Consistent with our hypothesis and previous findings (10,11,13,17), girls tended to have lower levels of stigma, and better recognition of mental health

problems in comparison to boys. This may reflect higher levels of empathy in adolescent girls versus boys, as well as better friendship attunement (40,41). Conversely, masculine gender norms may contribute to heightened mental health stigma among boys (42). Older age was associated with greater stigma across disorders, suggesting a concerning trajectory for youth with mental health problems in El Salvador. This finding is contrary to previous findings suggesting a reduction in stigma with age (14); however, contrary to previous findings we found little effect of age on MHL, potentially highlighting a different pattern in LMICs compared to developed countries. Personal or indirect exposure to mental health problems had little effect on recognition of problems, only improving the odds of recognizing trichotillomania. However, similar to findings from Jorm and Wright (17), exposure to mental health problems had a destigmatizing effect and was associated with lower levels of stigma for all disorders.

These findings should be interpreted in the context of a number of study limitations. This study is the first to examine MHL and stigma in Salvadorian adolescents across a range of different mental health presentations, including OCRDs that have typically been excluded from the existing MHL literature. However, as this an under-studied area, further research in El Salvador and other LMICs is needed to understand if the results of the study can be replicated and generalized in these populations. Further, other than age and sex, demographic and socio-economic features of the sample were not characterized which limits the ability to make comparisons to other samples and generalize results. Importantly, the current study was conducted in a private high school, which may limit the generalizability of the current findings to the broader population of El Salvador. Future studies should aim to investigate MHL among socioeconomically diverse participants, as well as those in rural areas. Second, while recognition rates were derived from open-ended responses, youth beliefs about whether this problem was related to a mental health problem were not assessed. While further understanding about adolescent attributions of the etiology of these problems would assist in understanding youth

MHL, the high levels of support for help seeking are promising, as regardless of youth beliefs about the symptoms, they expressed support for the young person to receive support in managing their symptoms. Lastly, the current study did not assess adolescents' current or past psychiatric symptoms beyond asking about their experience with the described mental health difficulties. Future research should include more detailed information about their experiences with mental health to further examine the role of experience with mental health difficulties in increasing MHL among adolescents.

The current findings have important implications for potential public health campaigns. Public and school-based MHL education campaigns have been found to improve MHL in the community and among adolescents (43,44). Our findings suggest there is considerable scope to improve adolescent understanding and recognition of mental health symptoms in themselves and their peers. Self-recognition of mental health symptoms has consistently been linked with treatment-seeking across disorders, highlighting the importance of increasing MHL among adolescents. Such public and school-based MHL education campaigns may be particularly effective in El Salvador, given the current lack of a public mental health initiative and need for further funding of mental health care (30). Further, these results serve to strengthen findings from studies with parents (22) that highlight the need for improving understanding about youth mental health across the community. Improvements in this area are particularly important in LMICs like El Salvador where significant systemic barriers already impede access to treatment. MHL reflects an important and modifiable individual factor that is critically important to help youth overcome one of the barriers to navigating an under-resourced mental health system. Promisingly, attitudes towards help seeking were generally positive among adolescents, and included support for seeking help from both professional and informal supports.

Summary

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Results indicate that, similar to those in Western countries, recognition of mental health conditions, and especially anxiety and OCDs among adolescents from El Salvador is limited, although around one third of adolescents are able to recognize depression in a peer. Adolescents are only somewhat willing to be affiliated with someone experiencing a mental health problem, and findings suggested that exposure to mental health problems helped to reduce associated stigma. Recognition of mental health problems and stigma tended to be slightly better among girls than boys, although age was only associated with stigma. These findings suggest that increasing MHL among adolescents may be a potential avenue towards increasing help-seeking.

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Table 1. Student-rated problem for mental health vignettes based on open response.

	GAD	SocAD	OCD – contaminati on	OCD – harm obsessions	Trichotilloma nia	BDD	MDD	Bereavement
	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>
Anxiety/Fear	44 (11.8)	102 (27.3)	31 (8.5)	100 (34.2)	98 (29.1)	10 (3.2)	5 (1.4)	1 (.3)
Worry/ Overthinking	112 (30.1)	6 (1.6)	30 (8.2)	44 (15.1)	8 (2.1)	39 (12.5)	3 (.8)	3 (.9)
Stress	54 (14.5)	-	-	6 (2.1)	176 (52.2)	5 (1.6)	1 (.3)	-
Low self-esteem/Lack of confidence	15 (4.0)	66 (17.6)	-	17 (5.8)	-	78 (24.9)	57 (15.4)	-
Depression/ Sadness	24 (6.5)	2 (.5)	-	3 (1.0)	8 (2.4)	1 (.3)	133 (36.0)	164 (47.1)
Lack of support	25 (6.7)	8 (2.1)	-	-	4 (1.2)	1 (.3)	13 (3.4)	-
Family Stress	24 (6.5)	2 (.5)	-	-	4 (1.2)	1 (.3)	25 (6.8)	99 (28.4)
Exaggerating/ Over reacting	1 (.3)	4 (1.1)	23 (6.3)	2 (.7)	4 (1.2)	4 (1.3)	3 (.8)	-
Weird/Crazy	1 (.3)	6 (1.6)	20 (5.5)	21 (7.2)	21 (6.2)	9 (2.9)	2 (.5)	-
Paranoid	3 (.8)	-	12 (3.3)	12 (4.1)	-	3 (.8)	-	-
Mental Health Issue	4 (1.1)	1 (.3)	15 (4.1)	11 (3.8)	4 (1.2)	-	9 (2.4)	2 (.6)
Obsessive	-	-	67 (18.3)	3 (1.0)	-	6 (1.9)	-	-
Shy/Timid	1 (.3)	140 (37.4)	-	-	-	1 (.3)	-	-

Note. GAD = Generalized Anxiety Disorder; MDD = Major Depressive Disorder; SocAD = Social Anxiety Disorder; OCD = Obsessive Compulsive Disorder; BDD = Body Dysmorphic Disorder

Table 2. Accuracy of student-rated problem for mental health vignettes based on open response – number and percent.

	Correct - specific and pathological	Specific – not pathological	Pathological – not specific	Not specific – not pathological	Incorrect
GAD	-	95 (25.5)	43 (11.6)	85 (22.8)	149 (40.1)
SocAD	28 (7.5)	47 (12.6)	60 (16.0)	114 (30.5)	125 (33.4)
OCD – contamination	47 (12.8)	84 (23.0)	66 (18.0)	61 (16.7)	108 (29.5)
OCD – harm	4 (1.4)	26 (8.9)	57 (19.6)	84 (28.9)	120 (41.2)
Trichotillomania	3 (.9)	12 (3.6)	87 (25.8)	154 (45.7)	81 (24.0)
BDD	2 (.6)	77 (24.6)	7 (2.2)	95 (30.4)	132 (42.2)
MDD	111 (30.1)	26 (7.0)	8 (2.1)	48 (13.0)	176 (47.7)
Bereavement	28 (8.0)	195 (56.0)	-	31 (8.1)	94 (27.0)

Note. GAD = Generalized Anxiety Disorder; MDD = Major Depressive Disorder; SocAD = Social Anxiety Disorder; OCD = Obsessive Compulsive Disorder; BDD = Body Dysmorphic Disorder

Table 3. *Student-rated exposure to mental health difficulties and recognition of mental health vignettes.*

Analysis	Nagelkerke R ²	B (SE)	<i>p</i>	Odds Ratio	95% CI Odds Ratios
GAD	.02		.048		
Exposure		-.29 (.21)	.152	.75	[.50, 1.11]
Age		.04 (.05)	.464	1.04	[.94, 1.15]
Gender		-.46 (.19)	.017	.63	[.43, .92]
SocAD	.04		.007		
Exposure		.32 (.20)	.111	1.38	[.93, 2.06]
Age		.07 (.05)	.188	1.07	[.97, 1.18]
Gender		-.52 (.19)	.008	.60	[.41, .87]
OCD – contamination	.06		<.001		
Exposure		.53 (.28)	.059	1.70	[.98, 2.93]
Age		.01 (.05)	.882	1.01	[.91, 1.11]
Gender		-.74 (.20)	<.001	.48	[.33, .70]
OCD – harm	.00		.924		
Exposure		-.14 (.30)	.644	.87	[.48, 1.58]
Age		.03 (.06)	.660	1.03	[.92, 1.15]
Gender		.01 (.22)	.962	1.01	[.66, 1.55]
Trichotillomania	.07		<.001		
Exposure		.57 (.28)	.040	1.76	[1.03, 3.02]
Age		-.10 (.06)	.058	.90	[.81, 1.01]
Gender		-.82 (.21)	<.001	.44	[.29, .67]
BDD	.00		.955		
Exposure		-.00 (.23)	.988	1.00	[.64, 1.57]
Age		.03 (.06)	.605	1.03	[.92, 1.16]
Gender		-.04 (.22)	.850	.96	[.63, 1.47]
MDD	.00		.771		
Exposure		.12 (.20)	.564	1.12	[.76, 1.67]
Age		-.04 (.05)	.408	.96	[.86, 1.06]
Gender		.05 (.20)	.801	1.05	[.71, 1.56]
Bereavement	.01		.298		
Exposure		.36 (.32)	.249	1.44	[.78, 2.67]
Age		-.02 (.06)	.689	.98	[.88, 1.09]
Gender		-.31 (.21)	.150	.74	[.48, 1.12]

Table 4. *Recommendations for help-seeking by vignette type.*

Vignette type	Recommended help seeking	Psychologist/ Therapist/ Counsellor	Friend	Family member	Teacher
	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>	<i>n (%)</i>
GAD	342 (91.4)	144 (42.4)	81 (23.8)	120 (35.3)	26 (7.6)
SocAD	260 (70.7)	62 (23.0)	102 (37.9)	78 (29.0)	37 (13.8)
OCD – contamination	235 (65.3)	102 (40.8)	30 (12.0)	51 (20.4)	9 (3.6)
OCD – harm	214 (73.0)	96 (44.0)	39 (17.9)	79 (36.2)	2 (.9)
Trichotillomania	292 (86.1)	147 (50.5)	36 (12.4)	72 (24.7)	11 (3.8)
BDD	193 (62.7)	71 (35.3)	66 (32.8)	69 (34.3)	4 (2.0)
MDD	310 (82.7)	92 (28.8)	124 (38.9)	145 (45.5)	11 (3.4)
Bereavement	226 (64.9)	25 (10.6)	97 (41.3)	159 (67.7)	4 (1.7)

Note. GAD = Generalized Anxiety Disorder; MDD = Major Depressive Disorder; SocAD = Social Anxiety Disorder; OCD = Obsessive Compulsive Disorder; BDD = Body Dysmorphic Disorder

Table 5. *Stigma based on exposure, gender, age, and recognition by vignette.*

Vignette	M (SD)	B (SE)	<i>t</i>	<i>p</i>
GAD	1.75 (1.12)			
Exposure		-.34 (.12)	-2.80	.005
Age		.11 (.03)	3.58	<.001
Gender		.32 (.11)	2.75	.006
Recognition		-.07 (.05)	-1.47	.142
SocAD	2.16 (1.28)			
Exposure		-.51 (.14)	-3.70	<.001
Age		.07 (.03)	2.08	.038
Gender		.52 (.13)	4.03	<.001
Recognition		.04 (.05)	.79	.432
OCD – contamination	2.97 (1.05)			
Exposure		-.53 (.16)	-3.29	.001
Age		.07 (.03)	2.29	.023
Gender		.28 (.11)	2.50	.013
Recognition		-.13 (.04)	-3.24	.001
OCD – harm	2.42 (1.33)			
Exposure		-.71 (.22)	-3.24	.001
Age		.12 (.04)	2.81	.005
Gender		.59 (.16)	3.80	<.001
Recognition		-.30 (.07)	-4.08	<.001
Trichotillomania	2.41 (1.37)			
Exposure		-.85 (.20)	-4.35	<.001
Age		.09 (.04)	2.40	.017
Gender		.66 (.15)	4.44	<.001
Recognition		-.17 (.09)	-1.87	.063
BDD	2.56 (1.31)			
Exposure		-.23 (.16)	-1.41	.085
Age		.09 (.04)	2.26	.025
Gender		.52 (.16)	3.36	.001
Recognition		-.04 (.06)	-.63	.530
MDD	1.69 (1.26)			
Exposure		-.46 (.13)	-3.59	<.001
Age		.08 (.03)	2.29	.023
Gender		.68 (.13)	5.30	<.001
Recognition		-.12 (.04)	-3.40	.001
Bereavement	1.57 (1.22)			
Exposure		-.54 (.20)	-2.75	.006
Age		.17 (.03)	5.02	<.001
Gender		.29 (.13)	2.28	.023
Recognition		-.01 (.05)	-.27	.788

Appendix A. Disorder Vignettes

Disorder	Vignette
Generalized Anxiety Disorder	Leo is a 14 year-old boy, who worries all the time. He is constantly worried about his schoolwork, whether his classmates at school like him, his health (such as whether he will catch a cold or whether his headaches are signs of a more serious illness), the health of his grandfather— who is a smoker— and family issues (whether his family has enough money to pay the bills and if his parents might get a divorce). Leo cannot seem to stop worrying about these things, no matter how hard he tries. When Leo is worried, he becomes very restless, has a hard time getting to sleep, and has difficulty concentrating on things.
Depression	Amelia is in Year 12. She and her friend, Mariana, have been planning to go away together during school break with a group of other girls and boys from their local area. Mariana and Amelia had been planning their trip for a while now, ever since Amelia’s older sister had gone on a similar trip. Lately, however, Mariana has noticed that Amelia hasn’t been so excited about the trip—in fact, she has noticed that over the past month— maybe longer— Amelia hasn’t really been very interested in anything very much, has lost her characteristic spark and energy, and has regularly appeared to be sad and tearful. To make matters worse, Amelia has forgotten to call the travel agent on the allocated day to confirm their tickets, and has cost them both an extra \$50 in failed ‘confirmation fees’. Amelia has been very apologetic to Mariana, but nothing Mariana has said has seemed to cheer Amelia up. Amelia just keeps saying that she is ‘useless’ and ‘good for nothing’, and that ‘she might as well just not go because no-one would care if she wasn’t there’.
Social Anxiety Disorder	Sophia is a 12-year old girl, who has always felt nervous in social situations and when she has to perform in front of others. She feels uncomfortable talking to new kids and speaking to adults. She often avoids making eye contact when talking to others and speaks with a soft voice in short sentences. Sophia becomes very nervous when teachers in school call on her to answer questions in class, because she fears that she will give the wrong answer and other students will laugh at her. She is often absent on days where she is expected to read in front of the class or give an oral report. Sophia is very shy and only has a few friends even though she wants to have more. She does not belong to any school clubs or does not participate in any team sports. Sophia used to take piano lessons after-school, but stopped going because she was expected to perform in recitals and was too afraid of “messing up” and being embarrassed.
OCD - Contamination	José is a 13-year old boy, who is constantly worried about dirt and germs. He is particularly concerned about getting an illness or getting sick. He washes his hands multiple times throughout the day, and has very elaborate bathroom/cleaning routines that he must follow each time, or else he’ll feel very nervous and will have to start the routine all over again.

	<p>José will often refuse to do things like play basketball because he does not want to touch anything he thinks is dirty. José’s worries about getting germs on him make him avoid lots of activities that he otherwise would enjoy doing.</p>
Bereavement	<p>Nicholas and Sara have been friends for over 3 years and would often meet at the train station after school for a coffee and a chat. When Nicholas didn’t turn up one day, Sara decided to call him at home. Nicholas sounded upset, so Sara asked him what was wrong. Nicholas explained that his grandmother had just passed away, and then he burst into tears. After a long silence, Nicholas explained that his grandmother had moved back to Greece about 5 years ago, and had been diagnosed with cancer a year ago. Nicholas’s father received a phone call in the middle of the night last night, and told Nicholas the news first thing that morning. Although he hadn’t seen his grandmother very much in the last 5 years, Nicholas still felt really upset and felt he couldn’t cope with going to school that day. He spent the day lying in bed and looking through some old family photo albums that had pictures of him and his grandmother on a family beach holiday when he was 9.</p>
Trichotillomania	<p>Marisol is a 15-year old girl who pulls the hair out from the top of her head and arms on a daily basis. She began pulling about a year ago, first starting on her head and eventually moving to her eyebrows and eyelashes. Marisol is dealing with a lot of stress in her family and at school, and she pulls her hair as a way to get rid of her anxiety and/or stress. When she feels the urge to pull, she has to immediately give in to that urge and does not stop until it “feels right”. After she stops pulling, her anxiety/stress is relieved for a short time; however, she is left feeling shameful, guilty, and embarrassed. The spots where Marisol pulls are visible and she now has to wear her hair a certain way or put on makeup to cover up the bald patches. Additionally, she is reluctant to engage in social activities because she is worried someone may notice.</p>
Body Dysmorphic Disorder	<p>Santiago is a 16-year old male who is bothered by the way his nose and complexion look. Even though he looks normal compared to others and people tell him he has nothing to worry about, he constantly worries about his appearance and feels that he looks ugly. Santiago tends to keep his head down when around others people in order to hide what he calls “flaws” and tries to wear a hat whenever possible. More often than not, every time he looks at his facial complexion, he tends to pick at it to remove blemishes. He carries a mirror around with him at school to constantly check if he looks ok – if he sees something that he thinks looks off, he will stop and try to fix it by picking. Santiago’s worries about his appearance make it difficult for him to concentrate at school and at work. On occasions, he has even pretended to be sick because he thinks his skin looks really bad. Despite reassurance from others saying that he looks fine, Santiago has difficulty believing them.</p>
OCD - Harm	<p>Maria is a 17-year old girl, who has thoughts of accidentally running someone over with her car even though she is a very safe driver and</p>

	<p>doesn't want to harm anyone. These thoughts are causing her a lot of anxiety and she tries to get rid of them whenever she has the thought. In her mind, Maria keeps visualizing the situation of harming someone with her car over and over again. Even though she doesn't want to have them, she has a really hard time getting rid of these thoughts and is so overwhelmed with the anxiety of maybe hurting someone that she has stopped driving completely. Her parents now have to drive her everywhere, while she sits in the back seat. Maria is no longer able to do things like pick up her little sister from soccer practice or go hang out with her friends.</p>
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