

THE CO-OCCURRENCE OF DISRUPTIVE BEHAVIOR AND DEPRESSION AMONG DISRUPTIVE ADOLESCENTS

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ABSTRACT:

Disruptive behavior and depression are two of the most common mental health and psychiatric problems found in Thai adolescents today. Prior research has established that adolescents who engage in disruptive behavior are more likely to be depressed than adolescents who do not. Therefore, research on the co-occurrence of disruptive behavior and depression among disruptive adolescents within a Thai context is needed as a priority. The purpose of this study was to examine the relationship between disruptive behavior and depression in a sample of disruptive adolescents. This study used a cross-sectional research design. Two hundred and fifty-three adolescents with disruptive behavior, aged between 13 and 17 years old participated in this study. A multi-stage sampling procedure was used to randomly select the participants from the Child and Adolescent Psychiatric Outpatient Departments/Services of seven hospitals/institutes from four regions in the Kingdom of Thailand. The adolescents completed a relevant questionnaire that incorporated the Thai version of the Center for Epidemiologic Studies-Depression Scale (CES-D). The participants' parents completed a questionnaire that incorporated the Thai version of the Child and Adolescent Disruptive Behavior Inventory (CADBI). The results of Pearson correlation analysis showed that disruptive behavior is positively associated with depression in disruptive adolescents ($r = .23, p < .01$). The prevalence of concurrent disruptive behavior and depression was 45.5% (when using a CES-D cut off score of 16). The results of this clinical research reveal that in this sample of disruptive adolescents, disruptive behavior is associated with depression. Assessment for other symptoms and problems should be considered when assessing behavioral problems in adolescents.

Keywords: Disruptive, Adolescents, Depression, Disruptive behavior, Co-occurrence

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INTRODUCTION

Mental health and psychiatric problems among adolescents are a prevalent and complex phenomena of considerable relevance to public health [1]. Absence from education and involvement in criminal activities are examples of the consequences of adolescent mental health and psychiatric problems that impact on public health and society at a cost [2]. Among these mental health and psychiatric problems, disruptive behavior and depression are two of the most common mental health and psychiatric problems found in adolescents [3-5], including Thai adolescents [6-8]. Prior studies have

established that disruptive adolescents are more at risk of depression than normal adolescents are. For example, adolescents with ODD are 17 times more likely to experience depression than those without ODD [9]. In this study on the occurrence of disruptive behavior and depression, disruptive adolescents are prioritized as the population of interest.

For the purposes of this research, disruptive behavior refers to problem adolescent behavior, which is characterized by inattentiveness, hyperactivity and impulsiveness (the symptoms of Attention Deficit Hyperactivity Disorder or ADHD), negative, defiant, and/or hostile behavior toward authority figures and sometimes peers to a degree that is not developmentally appropriate

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(the symptoms of Oppositional Defiant Disorder or ODD), aggression to people and/or animals, destruction of property, deceitfulness or theft, and violations of rules (the symptoms of Conduct Disorder or CD). This definition of disruptive behavior is based on the symptoms of ADHD, ODD, and CD, it can be found in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders, (DSM-IV) [10]. Depression refers to depressive symptoms including depressed mood, feelings of guilt and worthlessness, feelings of helplessness and hopelessness, psychomotor retardation, loss of appetite, and sleep disturbance [11].

The co-occurrence of disruptive behavior and depression refers to the presence of disruptive behavior and depression found in adolescents, this is assessed by considering disruptive behavior and depression scores where higher scores indicate more frequent co-occurrence of disruptive behavior and depression symptoms.

Prior research from countries outside Thailand has found that the prevalence of co-occurred disruptive behavior and depression in adolescents ranged from 15% to 83% [12-14]. In addition, several studies on the co-occurrence of disruptive behavior and depression among adolescents have found that disruptive behavior is positively associated with depression. The correlation between disruptive behavior and depression ranged from 0.30 to 0.42 [14-17]. However, no research on the co-occurrence of these problems within a Thai context was found.

According to Wolff & Ollendick's [18] review of the co-occurrence of disruptive behavior and depression in children and adolescents, the co-occurrence of disruptive behavior and depression exists because one problem causes or puts an individual at risk for the other. Regarding this possible explanation, the hypothesis that disruptive behavior is presumed to have a positive association with depression should be tested on Thai adolescents.

The interpersonal theory of psychiatry is useful for making sense of this phenomenon. Sullivan, an American psychiatrist, placed great emphasis on interpersonal experiences to understand psychiatric problems [19]. Mental health and psychiatric problems are influenced by interpersonal relationships and interactions with significant others in the individual's life [20]. Adolescents with disruptive behavior usually have negative interactions with others that could make them think they are bad. Adolescents who view themselves as the "bad me" may have feelings of guilt and

worthlessness. Often, others may judge their behavior to be bad and more feelings of helplessness and hopelessness may emerge. This may lead to the co-occurrence of depression in adolescents who exhibit disruptive behavior. Furthermore, symptoms of depression such as hopelessness may increase levels of disruptive behavior by reducing concern for the consequences of the behavior and increasing interpersonal conflict [17].

The co-occurrence of disruptive behavior and depression in disruptive adolescents can be diagnosed at clinics or hospitals. The early recognition and treatment of these conditions is by far the best way to prevent future behavioral problems. However, mental health problems such as depression may be overlooked resulting in the delay of treatment. In nursing, assessment of other mental illnesses using questionnaires may help increase detection rates. Therefore, further research on the co-occurrence of disruptive behavior and depression is needed.

As no research was found on the co-occurrence of disruptive behavior and depression among Thai adolescents, research in a sample of disruptive adolescents within a Thai context should be considered a priority. The relationship between disruptive behavior and depression is tested in this research to give a better understanding of co-occurring mental health and behavioral problems. Understanding more about co-occurring issues will lead to better health care for adolescents with mental health issues. Hypothesis of this study is that disruptive behavior is presumed to be positively associated with depression in the sample of disruptive adolescents.

MATERIALS AND METHODS

This study follows a cross-sectional descriptive correlational research framework. The purpose of the study is to examine the relationship between disruptive behavior and depression in disruptive adolescents.

The participants were 253 adolescents with disruptive behavior. A multi-stage sampling procedure was used to randomly select the participants. Based on data from the Child and Adolescent Psychiatric Society of Thailand [21], The Central region has 24 public hospitals/ institutes that offer Child and Adolescent Psychiatric Outpatient Department/Services. Whereas, the Northern, Northeastern, and Southern regions have 6, 7, and 6 public hospitals/institutes, respectively, that offers Child and Adolescent Psychiatric Outpatient Department/Services. Simple random

Table 1 Demographic characteristics of participants (n = 253)

Characteristics	n	%
Age (years)		
13	100	39.5
14	41	16.2
15	36	14.2
16	38	15.0
17	38	15.0
School achievement (GPA)		
Less than 2.00	96	37.9
2.00-2.49	68	26.9
2.50-2.99	44	17.4
More than or equal to 3	38	15.0
Did not answer	7	2.8
Education		
<i>Studying at</i>		
Elementary school	24	9.5
Secondary school	187	73.9
Vocational school	18	7.1
<i>Not studying and had finished</i>		
Elementary school	8	3.2
Secondary school	15	5.9
Vocational school	1	0.4
<i>Parental relationship to the adolescent</i>		
Father	71	28.0
Mother	177	70.0
Father in law/ Mother in law	5	2.0

sampling was used to select seven hospitals/institutes from four regions in the Kingdom of Thailand using a ratio of 6:1. Four hospitals/institutes were selected from 24 hospitals/institutes in the Central region, one from six hospitals/institutes in the Northern region, one from seven hospitals/institutes in the Northeastern region, and one from six hospitals/institutes in Southern region. All the participants were recruited from Child and Adolescent Psychiatric Outpatient Departments. A list of adolescents with disruptive behavior was obtained from psychiatrists/nurses. Participants were selected based on the following inclusion criteria: adolescent aged between 13 and 17 years old, able to communicate in Thai, willing to participate in the study, living with parents, parents allow him/her to participate in the study and parents are willing to provide information about their parenting behavior and the adolescent's behavior. The sample was obtained by systematic random sampling from the list of adolescents. The process of obtaining parental consent for adolescent participation and adolescent assent was performed at the time of data collection. The participants' names were not noted on the questionnaires and they are not reported in this research. A code number was used to ensure confidentiality.

The Ethical Review Committee for Research Involving Human Research Subjects, Health Sciences Group, Chulalongkorn University (ECCU) (COA No.207/2013) and Ethics by the IRB have approved this study.

Two hundred and fifty three adolescents with disruptive behavior participated in this research. Most of them were male (83.0%), aged 13 years old (39.5%) (age mean = 14.54, SD = 1.50). Most of them had been diagnosed with ADHD (82.2 %), and CD and ODD had been diagnosed at 9.9% and 2%, respectively. In addition, 5.9% of the participants had been diagnosed with ADHD and CD and/or ODD. Most of the parents were mothers (70.0%). Details of the participants' demographic characteristics are shown in Table 1.

The research instrument was a questionnaire, which was used to measure major variables. The questionnaire consisted of two parts, part one was for adolescents and part two was for parents to complete. The adolescents' questionnaire consisted of a demographic questionnaire and the Center for Epidemiologic Studies-Depression Scale. The parents' questionnaire consisted of a demographic questionnaire and the Child and Adolescent Disruptive Behavior Inventory.

The Center for Epidemiologic Studies-Depression Scale (CES-D)

The Center for Epidemiologic Studies-Depression Scale (CES-D) [11] translated into Thai by Trangkasombat et al. [22] was used to assess depression in the adolescents. The CES-D has 20-items, which represent the major components of depression. Components include depressed mood, feelings of worthlessness, and feelings of hopelessness, loss of appetite, poor concentration, and sleep disturbance [11]. The response options are none of the time, a little of the time, most of the time, and all of the time. Negative items are given a score out of 4 points ranging from 0 to 3 (0 = none of the time, to 3 = all of the time). Positive items are also given a score out of 4 points ranging from 3 to 0 (3 = none of the time, to 0 = all of the time). CES-D summated scores range from 0 to 60. According to Radloff [11], higher scores indicate greater depressive symptom severity. Scores at or above 16 are indicative of clinically significant depression symptomatology [23]. This study uses CES-D summated scores, where higher scores indicate more severe depressive symptoms.

The psychometric properties of the CES-D Thai version were tested on Thai adolescents, and psychiatrists who were blind to the results evaluated the instruments. The Thai version

Table 2 Possible range, actual range, mean, SD of depression and disruptive behavior (n= 253)

Variables	Possible range	Actual range	Mean	SD
Depression	0-60	0-49	15.40	7.69
Disruptive Behavior	37- 296	37-228	79.87	36.31
ODD	8-64	8-60	19.43	11.13
ADHD-HI	9-72	9-72	21.38	12.86
ADHD-IN	9-72	9-72	25.49	14.06
CD	11-88	11-37	13.57	3.99

showed a sensitivity of 72%, a specificity of 85%, and was accurate to 82% [22]. Seven experts confirmed the CES-D Thai version for content validity. The experts were one nursing instructor experienced in instrument development from the adolescent mental health field, two child psychiatric Advance Practice Nurses (APNs), two child and adolescent psychiatrists, one child and adolescent psychiatrist experienced in instrument development, and one psychiatrist experienced in instrument development. These experts were asked to evaluate the content validity of the instruments by rating the level of relevancy between the items and the definitions of the concepts. The result of content validity index, the Scale-CVI of the CES-D was .97. The item-CVI were .86 – 1.00. In addition, the internal consistency reliability, Conbrach's alpha of the CES-D was .84 (n = 253).

The child and adolescent disruptive behavior inventory

Disruptive behavior has been assessed using the Thai version of the Child and Adolescent Disruptive Behavior Inventory (CADI) [24-26]. The CADI has been developed to assess parental perception of the occurrence of the symptoms of oppositional defiant disorder (ODD), attention deficit hyperactivity disorder (ADHD) and conduct disorder (CD) based on the DSM-IV [10]. The ADHD symptoms are divided into ADHD- Inattention (ADHD-IN) and ADHD-Hyperactive/Impulsivity (ADHD-H/I) symptoms. In this study, the Thai version of CADI consists of ODD, ADHD-HI, ADHD-IN, and CD symptom dimensions (items 8, 9, 9, and 11, respectively). All of the items from the original scale were used. The ODD, ADHD-HI, and ADHD-IN symptom dimensions were translated into Thai by Burns et al. [25, 26] through forward and backward translation [27]. The CD symptom dimensions [24] were translated into Thai by the researcher. The parents were asked to rate each adolescent's symptoms on an 8-point frequency of occurrence scale for the past one month (1= never in the past month, 2 = once or twice in the past month, 3= three or four times in the past month, 4= two to six times per week, 5 = once per day, 6 = two to five

times per day, 7= six to nine times per day, and 8 = ten or more times per day). The summated score of each symptom's dimension was calculated and the summated score of four symptom dimensions were used to represent disruptive behavior. Higher CADI scores indicate frequent occurrences of disruptive behavior.

A panel of experts confirmed the content validity for this research. The experts were one nursing instructor experienced in instrument development from the adolescent mental health field, two child mental health Advance Practice Nurses (APNs) from the psychiatric nursing field, two child and adolescent psychiatrists, one child and adolescent psychiatrist experienced in instrument development and disruptive behavior in children and adolescents, and one psychiatrist experienced in disruptive behavior instrument development. The Scale-CVI of CADI was 1.00. The Item-CVI was 1.00. The construct validity was tested by confirmatory factor analysis on 253 adolescents with disruptive behavior. The results indicate that the measurement model for disruptive behavior fits the data at an acceptable level ($\chi^2 = 5.44$, df = 2, $\chi^2/df = 2.72$, p-value = .066, RMSEA = .083, GFI = .99, AGFI = .95). The factor loadings for disruptive behavior ranged from 0.59 to 0.86 (p < .001). In addition, the internal consistency reliability, Cronbach's Alpha of CADI was .96 (n = 253).

Descriptive statistics including frequency, mean, and standard deviation were used to interpret the demographic data and to examine the distribution of demographic and major variables. Pearson's Product Moment correlation was used to test for bivariate relationships among pairs of variables. All the data were analyzed using SPSS 17 for Windows (licensed to Chulalongkorn University).

RESULTS

Characteristics of the study variables

Two major variables in the current analysis include disruptive behavior and depression. The depression scores ranged from 0 to 49 with a mean

of 15.40 (SD = 7.69). Whereas, the disruptive behavior scores ranged from 37 to 228 with a mean of 79.87 (SD = 36.31). To show the characteristics of each symptom dimension of disruptive behavior, four symptom dimensions are presented in Table 2.

Correlation

The Bivariate Pearson correlation was used to evaluate the relationships between disruptive behavior and depression in the sample of disruptive adolescents. The results show that disruptive behavior has a positive association with depression among the adolescents ($r = .23$, $p = .000$).

The prevalence of co-occurrence disruptive behavior and depression

As the participants had previously been diagnosed with disruptive behavior, the prevalence of co-occurred disruptive behavior and depression among the adolescents was found by analyzing the co-occurrence of depression in the participants. The prevalence of co-occurred depression among adolescents with disruptive behavior was 45.5% (115 participants) when using a CES-D cut off score of 16.

DISCUSSION

The results reveal that in the sample of disruptive adolescents, a level of disruptive behavior was associated with a level of depression. Although the findings show a low-level relationship regarding statistical significance ($r = .23$, $p < .01$), clinical significance should also be considered. The results are consistent with prior studies on the co-occurrence of disruptive behavior and depression in adolescents as disruptive behavior has previously been positively associated with depression [14-17]. For example, it was found that disruptive behavior and depression were positively correlated with $r = .30$ ($p < .01$) for male and female adolescents [15]. These findings support the scenario of disruptive behavior and depression co-occurring. The findings have important implications for clinical research and may help nurses, psychiatrists, and public health professionals to design preventive programs. Although the participants were hospital patients, most of them were also studying at secondary school. Therefore, a preventive program should be considered for adolescents who attend school.

Prior research from countries outside Thailand has found that the prevalence of co-occurrence of disruptive behavior and depression in adolescents ranged from 15% to 83% [12-14]. The results of this research show that the prevalence of co-occurred depression among adolescents with

disruptive behavior was 45.5%, when using a CES-D cut-off score of 16. In depressive symptom screening, a cut-off score of 16 has shown high sensitivity ranging from 86% to 100%, and it has been determined to be a valid cut-off score for detecting depressive symptoms among a variety of populations across cultures [23]. A cut-off score of 16 has been used for research in the field of depressive symptoms in adolescents [28], including Thai adolescents [6, 29]. However, depression has not been studied in disruptive adolescents within a Thai context.

In Thailand, prior studies were found on the prevalence of depression among adolescents: however, the co-occurrence of disruptive behavior was not considered [6,29]. In comparison to prior studies within a Thai context, this study found that the prevalence of depression among adolescents with disruptive behavior was slightly higher in adolescents who were identified as having disruptive behavior. Research has been conducted at provincial Thai schools, Charoensuk surveyed 792 adolescents/students, aged from 14 to 19 years old (mean = 16.22, SD = .10), from eight public high schools in Chonburi, Thailand. The study found that the prevalence of depression in adolescents was 43% when using a CES-D cut-off score of 16 [6]. Vatanasin et al. [29] surveyed 800 adolescents, aged from 14 to 19 years old (mean age= 16.71, SD = .96), from four public high schools in Chiang Mai, Thailand. The study found that the prevalence of depression in adolescents was 42% when using a CES-D cut-off score of 16. Therefore, the findings of this research confirm the clinical significance of co-occurred depression and disruptive behavior in disruptive adolescents.

There are two main approaches, which are widely used to determine the co-occurrence of disruptive behavior and depression [14]. They are diagnostic measures (or the categorical approach) and dimensional measures (or the continuous approach). Dimensional measures have been considered more reflective of actual symptoms and are practical for identifying problem patterns in participants. In addition, analyses with continuous measures has allowed researchers to investigate relationships across entire samples [14, 30]. This study was designed to measure disruptive behavior and depression as symptoms because this is a practical way to assess the relationship between these problems. Furthermore, it was designed to be used with adolescents who had already been diagnosed with disruptive behavior to examine the prevalence of co-occurred depression. Accordingly, both approaches were applied in this research.

Using the parents' perception to assess disruptive behavior was both a strength and a limitation. In real situations, parents are often the most significant people concerned about their adolescents' behavioral problems. Sometimes, parents may be unaware of their children's behaviour, especially, behavior such as fighting. Further studies could assess behavior with more informants.

In addition, Wolff & Ollendick [18] reviewed the co-occurrence of disruptive behavior and depression in children and adolescents. They state that one important possible explanation for the co-occurrence of disruptive behavior and depression is that one problem causes or puts an individual at risk for the other. Regarding this possible explanation, this study only tested whether the co-occurrence of disruptive behavior and depression existed. Further longitudinal research may be useful to gain a better understanding of the co-occurrence of disruptive behavior and depression.

CONCLUSION

The results from this clinical sample reveal that disruptive behavior is positively associated with depression among disruptive adolescents in Thailand. Therefore, assessment for co-occurring mental health problems should be considered during the treatment of disruptive adolescents.

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