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Siriluck Suppakitiporn

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Original article

Anxiety of students with visual impairment in school for visually impaired students in Thailand

Penphitcha Leksaranyaphong^a, Siriluck Suppapitiporn^{b,*}

^aProgram in Mental Health, Department of Psychiatry, Faculty of Medicine, Chulalongkorn University

^bDepartment of Psychiatry, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

Background: Anxiety is a prominent cause of mental health issues in students. Studies on this in the visual impairment are limited and none has been conducted in Thailand. The researcher finds that mental health in visually impaired students is significant and the study should be conducted so the data can be used as a tool to plan prevention and help visually impaired students in the future.

Objectives: To study anxiety and related factors in visually impaired students.

Methods: A cross-sectional descriptive study was conducted in 77 visually impaired students by having them take 2 questionnaires in Braille; basic personal information and the Thai State-Trait Anxiety Inventory for children-Revised (STAIC-R). The data were analyzed for associations via the Chi-square test and logistic regressions to determine predictors of anxiety in the visually impaired students.

Results: In all, 33.8% and 45.5% of visually impaired students are shown to have state and trait anxiety, respectively. The significant psycho-social factors related to state anxiety were educational, friend, finance, environmental, and familial factors. The basic factor related to trait anxiety was being a female. The psycho-social factors related to trait anxiety were educational and familial factors.

Conclusion: They found that the significantly related psycho-social factors are education, friends, finance, environmental, and familial factors; for this reason, more concerning about psycho-social related factor in this group of people should help protect those who are susceptible to mental health issues, and promote better mental health in schools for the visually impaired.

Keywords: Anxiety, students, visual impairment.

Anxiety is a feeling of fear towards an unknown, unclear, internal dangerous threat. It may spark internal conflict⁽¹⁾, which is a normal human response when faced with stress. People with anxiety may experience an array of symptoms including confusion, stress, worry, stimulation, and unhappiness coupled with somatic symptoms such as, trembling, excessive urination, digestive agitations, chest compressions, frantic behaviors.⁽²⁾ These symptoms effect many areas of life, which is different from situational anxiety.⁽³⁾ In excess, it can cause mental health issues later on.

According to data from the Department of Mental Health in 2017 (2560 BE), patients who sought

help were affected with anxiety were one of the most prevalent groups in Thailand and in each province.⁽⁴⁾ This indicates that anxiety is a vital factor with direct effect on Thai people's mental health, and the number of people who suffer from it seems to be on the rise.

Internationally, a study conducted on anxiety in visually impaired adolescents in Turkey found that there is a significantly higher level of anxiety in those who are visually impaired in comparison to those who are not.⁽⁵⁾ This coincides with a study conducted on behavioral issues in visually impaired children and adolescents in Germany which found a higher prevalence of mental health issues in those who are visually impaired than those who are not.⁽⁶⁾

In Thailand, there has also been a study conducted on the prevalence of anxiety and related factors in students grade 5 of an elementary school in Bangkok. The study found that 32.9% and 33.5% of state and trait of the 5th graders, respectively, are anxious. It also found living with parents is a significant predicting factor of anxiety, in those who do not live

*Correspondence to: Siriluck Suppapitiporn, Department of Psychiatry, Faculty of Medicine, Chulalongkorn University, Bangkok 10330, Thailand.

E-mail: siriluckspp@gmail.com

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with their families are 2.415 times more likely to have anxiety compared to those who do so. Furthermore, this study found the highest prevalence of anxiety than any other study.⁽⁷⁾

According to prior studies, there have been a number of studies conducted on the subject of anxiety and the prevalence of anxiety in the general population, but those conducted on the subject in the visually impaired are very limited, and are none existent in Thailand. The researchers realized the importance of mental health issue prevention and mental health promotion in the visually impaired; thus, we decided to explore the subject of anxiety, related factors, as well as other mental health issues that may arise in students of this particular group, in order to use the data as a key part in further implementing plans for mental health prevention and promotion in visually impaired students.

Materials and methods

The study is a cross-sectional descriptive research. Data collection was done between December of 2018 (2561 BE) and January of 2019 (2562 BE) The sample population were chosen through cluster sampling from 10 schools for the blind across Thailand; 2 schools were chosen from provincial areas; Khon Kaen school for the visually impaired under Saints Foundation for The Blind Thailand under the royal patronage in the province of Khon Kaen and Phra Mahatai Pattaya School for the blind under the royal patronage of Her Royal Highness Princess Maha Chakri Sirindhorn in the province of Chonburi, and 1 school was selected in Bangkok; the Bangkok school for the visually impaired. In all, 77 subjects who fit in with the inclusion criteria answered the surveys. Inclusion criteria are: male and female, visually impaired students who are able to read and write in Braille, and are willing to subject in the study. Exclusion criteria is having any state of physical illness or discomfort that obstructs the participation in the study.

The study has been approved by the Institutional Review Board (IRB) of the Faculty of Medicine, Chulalongkorn University (IRB no. 311/61). Subjects' consent was obtained by the researcher through explanation of the research methodology the benefit the study will have, and also answering any questions of concerns from the subjects and their guardians. Once the subjects and their guardians have understood

they are asked to sign their consent form. The questionnaire consists of 2 parts.

Part 1: Personal information questionnaire contains; 14 items asking for information on gender, age, number of people in the family, disability in the family, disability type, class of education, illnesses, parents' occupation, the students' living conditions, and sources of financial support. The questionnaire takes the subjects 15 - 20 minutes to complete, and the researchers conducted the interview in person.

Part 2: Thai State-Trait Anxiety Inventory for children-Revised (STAIC-R) in Braille This consists of 2 segments: 1) State Subscale, to assess anxiety caused by specific events that cause discontentment, 19 items each with 3 choices. The cut-off point is at 31, the higher the score the more the anxiety; 2) Trait Subscale, to assess background personalities of each subject based on how threatening they find each event that is presented to them, with 20 items each with 3 choices. The cut-off point is at 39, the higher the score the more anxious. This questionnaire was translated into Thai by Chaiyawat W, *et al.*⁽⁸⁾ The questionnaire was originally created by Spielberger CD, *et al.*⁽⁹⁾ This was then developed into Braille by the researchers, and the braille version was evaluated and validated by Thailand's Association of the Blind, so that the visually impaired subjects are able to take the questionnaires by themselves. This questionnaire takes the subjects 30 - 40 minutes to complete. A teacher for students with special needs finally translated permission the answers from Braille to Thai. The tools accuracy was validated with a 0.83 Cronbach's Alpha Coefficient for the State questionnaire and 0.80 for the Trait questionnaire.

Moreover, the researcher conducted interviews with 10 more students on the psycho-social factors related to anxiety after they had completed the questionnaires.

Statistical analysis

The data were analyzed with SPSS Version 24. The data were expressed as mean \pm standard deviation (SD). The data on the dependent factor (anxiety) are presented in proportions and percentage. The data concerning the independent factors were analyzed using the chi-square test, then logistic regression to single out predicting factors of anxiety with statistical significance of less than 0.05 ($P < 0.05$).

Results

Of the 77 subjects, 55.8% were female. Most subjects were born blind at 70.1%; 89.6% did not disabled family members. Most are studying in primary school at 67.5%; 88.3% had no illness. Most subjects

had fathers who were employees at 44.2%; 35.1% had mothers who employees. Most students lived at the school dormitory at 85.7%. Most parents were still living together at 49.4%; 80.5% had their mothers as their main supportive person (Table 1).

Table 1. Basic personal information of subjects.

Factors	Quantity (n = 77)	Percentage
Gender		
Female	43	55.8
Male	34	44.2
School		
Bangkok school for the visually impaired	42	54.5
Khon Kaen school for the visually impaired	18	23.4
Phra Mahatai Pattaya school for the blind	17	22.1
Family members with disability		
No	69	89.6
Yes	8	10.4
Type of disability		
At birth	54	70.1
After birth	23	29.9
Class		
Primary school	52	67.5
High school	25	32.5
Illnesses		
No	68	88.3
Yes	9	11.7
Father's occupation		
Employee	34	44.2
Business owner	13	16.9
Agriculture	9	11.7
Government official	3	3.9
Others	18	23.4
Mother's occupation		
Employee	27	35.1
Business owner	11	14.3
Agriculture	18	23.4
Government official	1	1.3
Others	20	26.0
Student's living conditions		
At the school dormitory	66	85.7
At home	11	14.3
Parents' marital status		
Living together	38	49.4
Separated	27	35.1
Others	12	15.5
Supportive person*		
Parent	62	80.5
Friend	45	36.4
Teacher	28	58.4
Relative	16	20.8
Others (themselves, personal assistant, a senior, partner)	4	5.2

*Subjects may choose more than 1 choice.

The results found that 26 students or 33.8% of the visually impaired students have State anxiety (anxiety or discontentment caused by a specific event) and 35 students or 45.5% of the visually impaired students have trait anxiety (anxiety as personal background trait, assessed through the level of threat they felt when faced with each event) (Table 2).

The results from studying basic information and psycho-social factors in relation to state anxiety found that factors significantly contributing to state anxiety are psycho-social factors include education, friends, finance, and environmental related factors (Table 3).

The results from studying basic information and psycho-social factors in relation to trait anxiety found that basic factors significantly contributing to trait anxiety are being female, and psycho-social factors are educational factors, and psycho-social factors are education related factors and family (Table 4).

Results show that predicting factors of anxiety in visually impaired students analyzed with Multiple Linear Regression Analysis are as follows: factors predicting state anxiety are education, friends, finance, and environment (Table 5); factors predicting trait anxiety are female, education and family (Table 6).

Table 2. Anxiety in visually impaired students.

Anxiety	Quantity (n = 77)	Percentage
State anxiety (Mean = 30.0, SD = 5.3, Min = 20.0, Max = 48.0)		
Subjects without anxiety	51	66.2
Subjects with anxiety	26	33.8
Trait anxiety (Mean = 37.9, SD = 6.4, Min = 21.0, Max = 56.0)		
Subjects without anxiety	42	54.5
Subjects with anxiety	35	45.5

Table 3. Factors concerning visually impaired students' state anxiety.

Factors (n = 77)	Subjects without anxiety state (n = 51)		Subjects with anxiety state (n = 26)		X ²	P - value
	Quantity	Percentage	Quantity	Percentage		
Education						
No	28	54.9	8	30.8	4.029	0.045*
Yes	23	45.1	18	69.2		
Health						
No	44	86.3	20	76.9	-	0.344 ^a
Yes	7	13.7	6	23.1		
Friend						
No	39	76.5	13	50.0	5.503	0.019*
Yes	12	23.5	13	50.0		
Family						
No	36	70.6	13	50.0	3.154	0.076
Yes	15	29.4	13	50.0		
Finance						
No	39	76.5	13	50.0	5.503	0.019*
Yes	12	23.5	13	50.0		
Environment						
No	47	92.2	19	73.1	-	0.037*
Yes	4	7.9	7	26.9		

* $P < 0.05$, ^a Fisher's exact

Table 4. Factors concerning visually impaired students' trait anxiety.

Factors (n = 77)	Subjects without anxiety trait (n = 42)		Subjects with anxiety trait (n = 35)		X ²	P - value
	Quantity	Percentage	Quantity	Percentage		
Gender						
Female	18	42.9	25	71.4	6.320	0.012*
Male	24	57.1	10	28.6		
Type of disability						
At birth	29	69.1	25	71.4	0.052	0.820
After birth	13	31.0	10	28.6		
Illnesses						
No	38	90.5	30	85.7	-	0.724 ^a
Yes	4	9.5	5	14.3		
Education						
No	24	57.1	12	34.3	4.007	0.045*
Yes	18	42.9	23	65.7		
Family						
No	32	76.2	20	57.1	6.293	0.012*
Yes	10	23.8	15	42.9		

* $P < 0.05$, ^a Fisher's exact

Table 5. Factors that predict state anxiety in visually impaired students.

Factors	B	SE	P - value	Adjusted OR	95% CI
Psycho-social					
Education	1.008	0.510	0.048*	2.739	1.009 - 7.438
Friends	0.295	0.128	0.021*	1.343	1.044 - 1.726
Finance	0.074	0.032	0.021*	1.076	1.011 - 1.146
Environment	0.046	0.021	0.032*	1.047	1.004 - 1.092

* $P < 0.05$

Table 6. Factors related to trait anxiety of visually impaired students.

Factors	B	SE	P - value	Adjusted OR	95% CI
Basic personal					
Female	1.204	0.487	0.013*	3.333	1.283 - 8.659
Psycho-social					
Education	0.938	0.473	0.047*	2.556	1.011 - 6.462
Family	0.153	0.062	0.014*	1.165	1.032 - 1.315

* $P < 0.05$

After additional interviews of 10 students, the results indicate that educational factor has a significant effect on their anxiety. Most students were anxious about completing and handing in assignments on time, not having assistance to complete assignments, not having enough special needs teachers, availability of educational tools, understanding of their disability, and higher education after high school.

Interviews on friend - related factors reveal that the most trusted people are friends, nanny teachers, or class teachers. These people can effect their anxiety at one time or another because they play significant roles in the students' daily life. Due to the fact that most students take residence at the school dormitory, their daily life is most intertwined with friends, similarly the problem found to be most prevalent is arguments

with friends. Furthermore, those who have significant people outside the school scene have anxiety tied to those people too.

Interviews on financial factors reveal that most students who are anxious come from a financially unstable household due to insufficient income. This is more prevalent in high schoolers than primary schoolers, and the content of their worries are that it might effect their educational opportunities in the long run.

Interviews on the environmental factors revealed that anxiety in this area originated mostly from family environment, notably relationships in the family that affected life, and also school environment played a significant role in fostering anxiety.

Discussion

The study found that 33.8% and 45.5% of the visually impaired students are found to have state and trait anxiety, respectively. This is similar to the study conducted on the prevalence of anxiety and related factors in elementary school grade 5 students in Bangkok which found that 32.9% and 33.5% of state and trait in the 5th graders, respectively, were anxious. ⁽⁷⁾ This shows that those who are visually impaired can be as anxious as normal students, especially with trait anxiety, from which visually impaired students are found to suffer more, although this depends on each students' personal trait.

Basic personal factor that are significantly connected to trait anxiety include female. The study found that females often have a higher risk of anxiety than males, this agrees with a past research in which depression was studied in visually impaired students in schools for the blind in Thailand. The study found that females have higher average scores of depression than males. ⁽⁸⁾ The reason for this occurrence may be the difference in character in emotional portrayal of males and females, females are more likely than males to be anxious about relationships with loved ones such as friends or trusted people in their lives. This is why teachers are a significant person in helping and counselling the students.

Psychosocial factors that are significantly connected to state anxiety include education, friends, finance, and environment, with an emphasis on education as one of the main causes of anxiety in visually impaired students. Prior studies on education equality in Thailand revealed an interesting piece of information: lack of educational media is a significant

factor in education inequality for disabled children, lack of specialized personnel presents itself as incomprehension of learning disabilities in these children of special needs, ⁽¹⁰⁾ their learning limitations, and problems presenting their works to the class. ⁽¹¹⁾ For this reason, being able to learn, use tools that aid the learning process, build skills, build connection with teachers and caregivers, stimulating them to become aware of their own potentials will help decrease their anxiety. ⁽¹²⁾ Furthermore, sending them off to school when they are mentally and physically ready to learn will enable them to graduate at a higher level than they would otherwise. ⁽¹³⁾ Education is thus a vital factor that needs urgent attention in order to find ways of learning to better accommodate their physical limitations.

Friends and relationships with close loved ones play a significant role in forming their emotional and behavioral issues. Prior studies have indicated that 1 in 4 visually impaired students seek mental health counselling, such as being able to talk to someone when stressed or anxious. ⁽⁸⁾ This study has shown that the first people the students would go to for advice are their parents and their friends, then their teachers. An interesting point is that most of them live at the school dorm, other than their friends, there are only teachers who they frequent on a daily basis, yet they place teachers on the lower part of the list of people from whom they seek guidance. This information might be used to stimulate schools to promote better relationships between teachers and students.

The roots of financial factors that contribute to anxiety in this group consists of: insufficient income, parents' occupation, and parents passing ways. The financial baggage each family has to bare, especially those with a single parents, causes anxiety in the students. The study reveals that it occurs more in high schoolers than primary schoolers. The way in helping these individuals maybe to inform the school, and the teachers in order to find activities that might allow them to earn some income, give guidance on occupations they might be able to have, teach them about family planning, give counselling when they seek it, promote a stronger bond between students and their parents, have them set goals for and with their children ⁽¹⁴⁾, in order to create positive motivation for future carriers.

Environmental factors coincide with familial factors which has a significant effect on child development and behavior via nurture and

environment; good relationships and suitable environment to decrease the child's behavioral problems. ⁽¹⁵⁾ Studies have been conducted in Thailand and worldwide on the assessment of home development stimulating environment. They reveal that some areas aren't significantly different. Only three areas have some significant effect which are child's play, environmental systems in the house, development promoting activities, and parents' participation in their child's daily activities. Thai households rank significantly lower than those of western countries. ⁽¹⁶⁾ Thus, other than just members of the family, quality of the living space, safety, and relationship with people living in the house is vital for child development, especially disabled children.

This study, as well as other prior studies conducted on the visually impaired found that the State-Trait Anxiety Inventory for children-Revised in Braille is an efficient way of obtaining information on the children's states of anxiety in order to then pass the information onto the teachers and board of the school as they will be able to provide assistance later on. The study also found that the State-Trait Anxiety Inventory for children-Revised's accuracy are as follows. The State Cronbach's Alpha Coefficient = 0.83 and Trait = 0.80 which is similar to a prior study conducted on the accuracy of the Anxiety Inventory for Children conducted found that the State Cronbach's Alpha Coefficient = 0.87 and Trait = 0.88 the Correlation between factor loadings and item response theory (IRT) is between 0.95 and 0.98 which is considered good. All the items are able to clearly distinguish those with anxiety from those without. ⁽¹⁷⁾ The results are also similar to a study conducted on the accuracy of The State Trait Anxiety Inventory for Children conducted in children of 7 - 12 years old in China. ⁽¹⁸⁾ However, this version in Braille can only differentiate those who are anxious from those who are not, but cannot distinguish the types of anxiety disorders. Furthermore, information can yet to be obtained if geographical differences have an affect on the students' level of anxiety, meaning, visually impaired students living in Bangkok and those who live in provincial areas have different living conditions, and it is unknown if the level of anxiety has been affected by the difference in lifestyle, which needs to be studied in the future.

Moreover, promotion of mental health in schools and in communities is vital to mental health development in Thailand as a whole. The results from

this study can be used to further development plans for schools, and communities in all provinces for stronger mental health nationwide. ⁽¹⁹⁾

Conclusion

In all 33.8% and 45.5% of visually impaired students are found to have State and Trait anxiety respectively. The significant basic factor that correlates to anxiety is female. The psycho-social factors that correlates to anxiety are educational, friend, finance, environmental, and familial factors are anxious is an important issue that needs to be looked out for in order to help with prevention in those at risk and promote better mental health in the schools.

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Conflict of interest

The authors, hereby, declare no conflict of interest.

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