An analytical cross-sectional study on the association between animal companionship and anxiety among students of a private medical school in Quezon City

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Abstract

Introduction Constant stress predisposes medical students to anxiety. The study aimed to determine the association between animal companionship and anxiety among medical students at UERMMMCI.
Methods The study utilized an analytical cross-sectional design via an online form with the anxiety portion of the HADS questionnaire. Participants included first to third year medical students of a private medical school.
Results A total of 161 responses were recorded. Sex and year-level exhibited significant association with anxiety. Those with anxiety were 2.71 times more likely to be females (p = 0.007). Stratification showed that those with anxiety were 1.72 times less likely to be females with pets (p = 0.37) while, in contrast, those with anxiety were 3.64 times more likely (p = 0.02) to be males with pets. Those with anxiety were likely to belong to first and second-years (p = 0.01 and p = 0.06), respectively and pet owners, though, not statistically significant (p = 0.357).
Conclusion An association between sex and year-level with anxiety was noted. Those with anxiety were likely to be females, first-years, and males with animal companionship. Although they did not reach statistical significance.

Key words: Anxiety, companionship, animals, medical student, hospital anxiety and depression scale

Approximately 1 in 3 medical students worldwide suffer from anxiety.[1] This rate is significantly higher compared to that observed in the general population which is 3-4% of the total population as of 2017.[2] While there are numerous risk factors predisposing an individual to the development of anxiety, constant stress and increased academic workload may render medical students more vulnerable to anxiety.[3]

There were multiple health programs developed to mediate the effects of anxiety and stress like the utilization of animals such as trained therapy dogs to decrease anxiety levels among medical students.[4] Interaction with personal pets as opposed to trained animals as a way to mediate anxiety have not been thoroughly evaluated, particularly in the case of medical students. Animal companionship has shown

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positive impacts on both the physical and psychological well-being of humans. It has been observed that not only can animals help an individual navigate through trying times, they also reduce the levels of anxiety, depression, and loneliness, which has a similar effect as a relaxing activity (e.g., quiet reading) on a person's psychological well-being.[5,6] In addition to this, college students who grew up as pet owners had higher social support but also had greater internalizing symptoms (sadness, anxiety, and loneliness) throughout their college stay.[7] Mental health is currently a relevant topic among Filipinos. While multiple resources are available regarding the status of other mental health disorders such as depression, scarce data exist regarding the true prevalence of anxiety among Filipinos. In Asia, Filipinos are recognized to have the highest rate of pet ownership.[8] However, few published studies have assessed the possible significance of animal companionship with regards to the psychological well-being of Filipinos as most studies on the benefits of animals on human health are focused on college students and certain vulnerable groups such as children, elderly, and individuals with chronic illnesses and disabilities.

This study addressed that gap in information and provides insight into the current prevalence of anxiety among Filipino medical students. It aimed to determine the association between animal companionship and anxiety among medical students in a private medical school in the Philippines. Specifically, the researchers sought to determine and compare the prevalence of anxiety among medical students in terms of sex, year level, and type of pet.

Methods

An analytical cross-sectional study was conducted via online survey with first-, second-, and third-year medical students at a private medical school as the study participants. This research was approved by the UERMMMCI Ethics Review Committee. The sample size was determined using the sampling size formula of difference of two proportions, utilizing results from a cross-sectional study on the possible influence of pet ownership on the psychological well-being of Chinese people.[9] The final sample size was 161.

Participants were recruited via convenience sampling. The subjects included in this study were individuals who are either a first-, second-, or third-year medical student and were enrolled during the first semester of the academic year 2022-2023 in the College of Medicine.

The Hospital Anxiety and Depression Scale (HADS) questionnaire was used for the detection of anxiety and depression disorders. It is composed of 7 questions each for anxiety and depression by which participants were asked to rate its applicability based on their experiences through a 4-point Likert scale. Total score for HADS range from 0-42.. One study which assessed the validity of HADS among medical students concluded HADS was a good tool for identifying medical students that had depression or anxiety based on the area under the curve (AUC) value of 0.936 for the depression subscale and 0.948 for the anxiety subscale.[10] The scoring of HADS would be 0-7 as normal, 8-10 as borderline anxiety, while 11-21 would be considered a clear case of anxiety.[11] A cut-off score of 8 or higher had a 0.80 sensitivity and specificity for detecting the presence of anxiety and depression.[12] Therefore, in this study, participants identified as "borderline anxiety" or "abnormal" were considered as "with Anxiety".

Subjects who participated in the study were divided into two groups: with animal companion and without animal companion. Individuals with animal companions must spend at least 10 minutes per day with their pets to be classified as "with animal companion", as this was the minimum amount of time spent with pets identified to cause a decrease in the self-reported level of anxiety among university students.[13] Prevalence odds ratio (POR) was used to determine the association between animal companionship and the prevalence of anxiety. Chi-square test was used to determine statistical significance. To address the possible effects of confounding variables such as sex, year-level, and type of pet, association of these variables with anxiety were also determined using POR. For the bivariate analyses that showed significant association, logistic regression and stratified analysis was done to compute the adjusted ratio.

Results

A total of 161 participants answered the questionnaire and their baseline characteristics are shown in Table 1. There were more females (65.8%) than males and almost half were third year medical students (47.8%). Most had an animal companion (70.8%) with dogs as the most common type of pet (64.6%).

Table 1. Sociodemographic characteristics of the participants (n=161).

Characteristics	n (%)
Sex	
Male	55 (34.2)
Female	106 (65.8)
Year-Level	
1st	42 (26.1)
2nd	42 (26.1)
3rd	77 (47.8)
Animal Companion	
With Animal Companion	114 (70.8)
Without Animal Companion	47 (29.2)
Type of Pet	
Dog	104 (64.6)
Cat	25 (15.5)
Fish	7 (4.3)
Others (Bird, Guinea Pig, Turtle)	5 (3.1)
Overall Prevalence	
Normal	53 (32.9)
With Anxiety	108 (67.1)
Borderline Abnormal	48 (29.8)
Abnormal	60 (37.3)

Table 2 shows that among the factors included, only sex and year-level were found to be significantly associated with anxiety. Among those with anxiety, they were 2.97 times more likely to be females (p = 0.002, 95% CI 1.49, 5.91) and were more likely to be first years and second years (POR= 3.36, p = 0.01, 95% CI 1.38, 8.20 and POR=2.23)respectively. These findings however did not reach statistical significance. Lastly, those with anxiety were 1.82 times most likely those with animal companions, however, this association was not significant (p = 0.095, 95% CI 0.90, 3.68).

The adjusted ratios of these three factors all showed a positive association with anxiety, but only sex and year-level were found to be significantly associated. These were being females, being second and third years and with animal companions.

Stratified analysis on the effect of gender on animal companionship and anxiety is shown in Table 3. Among those who were anxious, they were less likely to be females, but, were likely to be males.

As shown in Table 4, the type of pet also did not yield a significant association with anxiety. Compared to those with "other" types of pets, which included birds, guinea pigs, and turtles, those with anxiety were more likely to be dog owners, cat owners and fish owners.

Table 2. Factors associated with anxiety.

	With Anxiety (n = 108)	Without Anxiety (n = 53)	POR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Animal Companion						
With Animal Companion	81 (71.1)	33 (28.9)	1.82 (0.90, 3.68)	0.095	1.43 (0.67, 3.05)	0.357
Without Animal Companion	27 (57.4)	20 (42.6)				
Sex						
Female	80 (75.5)	26 (24.5)	2.97 (1.49, 5.91)	0.002	2.71 (1.31, 5.59)	0.007
Male	28 (50.9)	27 (49.1)				
Year-Level						
First	34 (81)	8 (19)	3.36 (1.38, 8.20)	0.01	3.2 (1.28, 8.02)	0.01
Second	31 (73.8)	11 (26.2)	2.23 (0.98, 5.07)	0.06	2.26 (0.97, 5.29)	0.06
Third	43 (55.8)	34 (44.2)	1.00 (ref)		1.00 (ref)	

Table 3. Stratified analysis on the effect of gender on animal companionship and anxiety.

		With Anxiety (n = 80)	Without Anxiety (n = 26)	OR (95% CI)	p-value
Female	With Animal Companion	61 (73.5)	22 (26.5)	0.58 (0.18, 1.91)	0.37
	Without Animal Companion	19 (82.6)	4 (17.4)		

		With Anxiety (n = 28)	Without Anxiety (n = 27)	OR (95% CI)	p-value
Male	With Animal Companion	20 (64.5)	11 (35.5)	3.64 (1.18, 11.18)	0.02
	Without Animal Companion	8 (33.3)	16 (66.7)		

Table 4. Logistic regression for type of pets.

Type of Pets	With Anxiety (n = 101)	Without Anxiety (n = 40)	POR (95% CI)	p-value
Dog	73 (70.2)	31 (29.8)	1.57 (0.25, 9.86)	0.63
Cat	19 (76)	6 (24)	2.11 (0.28, 15.77)	0.46
Fish	6 (85.7)	1 (14.3)	4 (0.25, 63.95)	0.33
Others	3 (60)	2 (40)	1.00 (ref)	

Discussion

The study showed that presence of anxiety is 1.43 times more likely to be experienced by medical students with animal companions than those without, although, this was not statistically significant. Studies in the past have shown the positive effects of animal companionship on reducing anxiety, but recent studies are emerging that show that the effects of pet ownership on mental health are much more varied. Studies suggest that the relationship between pet ownership and mental health is complicated and at times negative.[14,15] The belief that pets are good for mental health may cause pet owners to rely more on their pets rather than human support, and dependence on pets has been linked to higher mental health burdens due to decreased comfort in depending on or trusting people and a greater anxiety of being rejected or unloved by other people.[15,16] One study found that pet owners had poorer mental health and were more anxious compared to non-pet owners, but when confounders were considered, they found that there were no significant associations between pet ownership and mental health.[17]

Examining the association between types of pets and anxiety revealed that the probability of anxiety was 4 times higher in fish owners than owners of "other" pets. The probability of anxiety among cat owners and dog owners over "other" pet owners were 2.11 times greater and 1.57 times greater, respectively. However, these results were not significant, which may be attributed to a small sample size or limited respondents from fish owners and "other" pet owners. Additionally, they discovered that among the two groups, dog owners reported higher levels of perceived social support, companionship, and unconditional love from their pets, whereas cat owners reported greater interaction and lower associated costs with their pets.[18]

Another study found that while pet owners, dog owners specifically, were able to receive great support and companionship from their pets, they were also more likely to have poorer mental health. They were unsure if poorer mental health prompted people to acquire dogs or if taking care of dogs resulted in poorer mental health. However, they theorized that

anticipatory grief over loss of a dog and concern regarding the burden of responsibility and being unable to meet their dog's needs may participate in the development of depression and anxiety in dog owners.[19] This may explain why dog owners have an increased probability of anxiety over "other pets" despite the greater social support and interaction they receive from their dogs, and may possibly explain why cat owners, who also receive great social support and interaction from their cats, have an increased probability of anxiety over "other pets."

In a study that induced anxiety in students through a public speaking task, some students (experimental group) were presented with interventions in the form of a dog, fish, or plant, while no intervention was provided to other students (control group). After 5 minutes, anxiety measures were collected, revealing reduced anxiety levels in all experimental groups. However, there was no statistical difference observed among the experimental groups, suggesting that the type of pet may not significantly impact the prevalence of anxiety in students.[20] An examination on the association between sex and anxiety revealed that there was an association between female sex and anxiety. This is consistent with other studies that also reported that there is a significant difference on the prevalence of anxiety across sex or gender, with females exhibiting higher scores on the Generalized Anxiety Disorder 7 (GAD-7) Questionnaire as well as higher rates of anxiety, depression, and high stress levels compared to males.[21,22,23,24] One study attributed this to a number of factors such as biological influences, behavioral and cognitive factors, as well as environmental factors.[25]

A stratified analysis was done to examine the association of animal companionship among females and males and anxiety. Results demonstrated that for females, there was an inverse relationship between anxiety and animal companionship, which could point to the possibility that animal companionship was beneficial in lowering the prevalence of anxiety among the group. As for the males results showed positive relationship to anxiety. It may be inferred that the relationship is not beneficial in that having an animal companion poses a higher risk of anxiety for males.

With regards to year-level, other studies showed conflicting results, with one reporting no significant difference in the prevalence of anxiety across year-levels while another found that the prevalence of anxiety was highest among second year medical students, followed by first years and lastly, third years.[1,26]

One of the limitations of this current study is that participants with pre-existing anxiety were not excluded, potentially impacting the study results. For future research, it is recommended to identify factors that could contribute to anxiety so as not to affect the results.

In conclusion, more than half of the participants of this study screened positive for anxiety. This study found a significant positive association between sex and anxiety, with female medical students more likely to have anxiety than males. Upon stratified analysis, a significant positive association was found between males with animal companions and anxiety. For females, a negative association was observed between animal companionship and anxiety, but this was not significant. A significant positive association was also observed between year-levels and anxiety, with first year medical students more likely to have anxiety compared to those in the upper years. On the other hand, a positive association with anxiety was observed for both animal companionship and type of pet, but these associations were not statistically significant.

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