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Murray State University Honors College

HONORS THESIS

Certificate of Approval

Suicide Risk and School Related Stressors in Veterinary Students

Deanna Arnold
May 2021

Approved to fulfill the
requirements of HON 437

Dr. Laura Ken Hoffman, Professor
Veterinary Technology/Pre-Veterinary Medicine

Approved to fulfill the
Honors Thesis requirement
of the Murray State Honors
Diploma

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Suicide Risk and School Related Stressors in Veterinary Students

Submitted in partial fulfillment
of the requirements
for the Murray State University Honors Diploma

Deanna Arnold

May 2021

Thesis Abstract

Compared to the general population of the United States, veterinarians are at an increasingly higher risk for suicide. This is commonly associated with stressful work environments, long work hours, poor work-life balance, client demands and complaints, and large amounts of euthanasia procedures. While many studies have been performed to confirm the above statements, few to no studies have been done on students currently enrolled in veterinary school to assess their mental health. This study will survey graduate school students in this field and will evaluate their mental health state and risk factors towards suicide. Through comparing the results of this survey to previous studies on the mental health and suicide risk of licensed veterinarians, I am hoping to pinpoint when the increased risk starts. By pinpointing the trend beginning, programs will be able to target help and treatment options better suited for decreasing the rate of suicide among individuals in the field of veterinary medicine.

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Introduction

Entering a career that can have both mental and physical effects on oneself is not an easy task. Adding the knowledge of an increased suicide risk may even deter some aspiring veterinarians from the field completely. Today, veterinarians in multiple countries have been declared to have a higher risk for suicide than the general countries' population. In a study of United States' veterinarians from 1979 to 2015, "male veterinarians were 2.1 times and female veterinarians were 3.5 times as likely as the general US population to die by suicide" (Tomasi et al.,107).

Depression and job burnout has been largely established as a risk factor for suicide. Often, veterinarians experience both physical and emotional turmoil due to the long work hours, workload, and work environment that they encounter on a daily basis. For some veterinarians, help is deemed to be unavailable, or there is a stigma surrounding getting help that deters them from seeking it out. Since multiple sources have reported their results proving that the suicide rate in veterinarians is larger than the general countries' populations, more research has been done to find what factors may be leading towards this and what field related stressors are contributing to the increase. However, studies targeted towards current veterinary students to evaluate their risk for suicide are scarce. An article in the *Journal of the American Veterinary Medical Association*, JAVMA, stated that, "during the 2014-2015 academic year, women represented 79.6% of veterinary students enrolled in the United States and that there is a growing body of evidence that veterinary students are experiencing increased stress, anxiety, and depression, according to the *Association of American Veterinary Medical Colleges*" (Larkin, 709).

The purpose of this reported study was to assess current veterinary students, their mental health status and risk towards suicide, and the school related stressors that they encounter that contribute to this growing body of evidence. The research question for this study was “Do veterinary students suffer from the same increased suicide risk as current practicing veterinarians do, and are there certain school related stressors that are contributing to this?”. This data is needed to further identify the potential reasons why veterinarians are at such an increased risk for suicide and to pinpoint where the increased risk starts, whether it be during veterinary school or five years after starting clinical work in the field.

Literary Analysis:

Continuous research has proven that individuals in the veterinary profession have an increased risk for suicide and that this trend is not improving. In fact, it is getting worse as the years progress. The proportionate mortality ratio for suicide, also known as the PMR, was 1.7 times higher than that of the general US population in white male veterinarians from 1947 to 1977 (Nett et al., 945). A newer study that was published in 2019 proved that male veterinarians were 2.1 times more likely than the general US population to commit suicide from the years 1979 to 2015 (Tomasi et al., 107). This is a 23.5% increase in a thirty-eight-year span. Females are now at an even more increased risk than males. According to the same study in 2019, females are 3.5 times more likely to die by suicide than the general US population. Unfortunately, a previous study from the 1900s that included research on female veterinarians' suicide rates was not found because the field was still so predominately male dominated at that time. Therefore, a comparison could not be made to find the percentage increase of the

suicide risk over the years for female veterinarians. Dr. Nett, a career epidemiology field officer for the CDC, told one of the *Journal of the American Veterinary Medical Association's* writers that "because females experience depression and suicidal thoughts more often than males, relatively speaking, you'll likely have a higher proportion of veterinarians who are experiencing these risk factors for suicide, compared with other similar occupations" (Larkin, 709). This is supported in the 2019 survey's male to female ratio of increased suicide risk, 2.1:3.5. For this reason and the fact that the veterinary field is continuously becoming more female dominated, the urgency to determine the cause and proper treatment options for the increased risk is heightened.

In the Nett et al survey, a table was included to show the results of their survey of United States' veterinarian respondents who were reporting current serious psychological distress, previous depressive episodes since leaving veterinary school, previous treatment for depression, previous suicidal ideations, and/or previous suicide attempts. This table compared those findings to some of the demographic and general information questions and answers, and it can be found in Table 1 on the following page. From this table, it is found that all factors (psychological distress, depressive episodes, suicidal ideations, and suicide attempt) had a steady percentage increase in veterinarians from the age of twenty to forty-nine years old. Then, from the age of fifty and up, the percentages for all four previously described factors began to decrease again. One potential reason for this trend could be that individuals past the age of fifty are beginning to retire or decrease the hours spent at work each week. This idea favors

the theory that the increased rate of suicide and mental health issues are partially caused by work-related stressors.

Variable	No.*	Male	Current serious psychological distress	Previous depressive episodes	Previous treatment for depression	Previous suicidal ideation	Previous suicide attempt
		No. (%)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
All respondents	11,627	3,628 (31)	9.3 (8.7–9.8)	31.4 (30.6–32.3)	22.0 (21.3–22.8)	16.8 (16.1–17.5)	1.4 (1.2–1.6)
Sex							
Male	3,628	—	6.4 (5.6–7.2)	24.0 (22.7–25.5)	16.2 (15.0–17.4)	14.1 (13.0–15.3)	1.1 (0.8–1.5)
Female	7,642	—	11.0 (10.4–11.8)†	36.4 (35.3–37.5)†	25.8 (24.8–26.8)†	18.9 (18.0–19.8)†	1.5 (1.3–1.8)
Age (y)							
20–29	1,079	141 (13)	11.7 (9.9–13.7)†	20.5 (18.2–23.0)	10.1 (8.4–12.0)	9.0 (7.4–10.8)	0.6 (0.2–1.2)
30–39	3,133	513 (16)	12.2 (11.1–13.3)†	33.8 (32.2–35.5)	21.0 (19.6–22.5)	18.6 (17.2–20.0)	1.1 (0.8–1.5)
40–49	2,505	597 (24)	11.6 (10.4–12.9)†	38.1 (36.2–40.0)†	28.5 (26.8–30.3)†	19.9 (18.4–21.5)†	1.8 (1.4–2.4)
50–59	2,627	996 (38)	8.3 (7.3–9.4)	36.0 (34.2–37.9)†	27.3 (25.6–29.0)†	19.1 (17.6–20.7)†	1.8 (1.4–2.4)
60–69	1,504	1,000 (66)	3.9 (3.0–4.9)	27.9 (25.7–30.2)	21.5 (19.5–23.6)	16.4 (14.6–18.4)	1.3 (0.8–2.0)
≥ 70	422	379 (90)	1.2 (0.4–2.6)	12.3 (9.4–15.7)	8.5 (6.1–11.5)	5.9 (4.0–8.5)	0.7 (0.2–1.9)
Marital status							
Legally married or in a committed relationship	8,469	3,114 (37)	8.1 (7.6–8.7)	30.0 (29.0–30.9)	21.0 (20.1–21.9)	15.2 (14.5–16.0)	1.1 (0.9–1.3)
Separated or divorced	934	257 (28)	13.8 (11.7–16.1)†	47.9 (44.7–51.1)†	36.2 (33.2–39.3)†	30.3 (27.4–33.3)†	4.3 (3.1–5.7)†
Widowed	119	46 (39)	8.4 (4.3–14.5)	35.3 (27.1–44.2)	24.4 (17.3–32.7)	26.1 (18.8–34.5)†	5.0 (2.1–10.2)†
Never married	1,746	210 (12)	14.3 (12.7–16.0)†	35.9 (33.7–38.2)†	23.5 (21.6–25.6)	20.0 (18.2–21.9)†	1.2 (0.8–1.8)
Children							
None	4,783	688 (14)	13.0 (12.1–14.0)†	36.2 (34.9–37.6)†	23.8 (22.6–25.1)	20.3 (19.2–21.5)†	1.6 (1.3–2.0)
≥ 1	6,468	2,932 (45)	7.0 (6.4–7.6)	29.6 (28.5–30.8)	21.9 (20.9–22.9)	15.1 (14.3–16.0)	1.2 (1.0–1.5)
Currently employed as veterinarian							
Yes	10,319	3,238 (31)	9.6 (9.0–10.2)	32.8 (31.9–33.7)	22.8 (22.0–23.6)	17.7 (16.9–18.4)	1.3 (1.1–1.6)
No	790	355 (45)	10.9 (8.9–13.2)	33.8 (30.6–37.2)	26.1 (23.1–29.2)†	16.5 (14.0–19.2)	2.5 (1.6–3.8)
Practice type							
Small animal	7,460	2,093 (28)	10.3 (9.6–11.0)	35.6 (34.8–37.0)†	25.7 (24.8–26.7)†	19.0 (18.1–19.9)†	1.6 (1.4–1.9)
Mixed animal	1,238	591 (48)	7.4 (6.0–8.9)	22.6 (20.4–25.0)	13.8 (12.0–15.8)	12.2 (10.5–14.1)	0.8 (0.4–1.4)
Academia	505	179 (35)	10.9 (8.4–13.8)	34.5 (30.4–38.7)	21.6 (18.2–25.3)	16.6 (13.6–20.1)	0.8 (0.3–1.9)
Equine	321	132 (41)	8.7 (6.0–12.2)	27.7 (23.0–32.8)	15.6 (11.9–19.9)	15.0 (11.4–19.2)	0.6 (0.1–2.0)
Large animal	261	167 (64)	5.4 (3.1–8.6)	15.7 (11.7–20.5)	9.2 (6.1–13.2)	10.0 (6.8–14.1)	0.8 (0.1–2.5)
Government	215	96 (45)	7.9 (4.8–12.1)	20.5 (15.5–26.3)	14.9 (10.6–20.1)	13.5 (9.4–18.6)	0.5 (0.0–2.3)
Shelter	158	17 (11)	17.7 (12.4–24.3)†	48.1 (40.4–55.9)†	35.4 (28.3–43.1)†	30.4 (23.6–37.9)†	1.3 (0.2–4.1)
Laboratory animal	136	46 (34)	9.6 (5.4–15.4)	35.3 (27.6–43.6)	24.3 (17.6–32.0)†	18.4 (12.5–25.6)	2.9 (0.9–6.9)
Regulatory	84	47 (56)	4.8 (1.5–11.1)	30.9 (21.8–41.4)	25.0 (16.6–35.1)†	13.1 (7.1–21.6)	1.2 (0.1–5.7)
Research	68	34 (50)	5.9 (1.9–13.6)	26.5 (17.0–37.9)	20.6 (12.2–31.4)	8.8 (3.7–17.5)	0 (0.0–4.3)
Zoo	45	10 (22)	6.7 (1.7–17.1)	22.2 (11.9–36.1)	15.6 (7.1–28.4)	6.7 (1.7–17.1)	0 (0.0–6.4)
Exotics	42	18 (43)	14.3 (6.0–27.4)	42.9 (28.6–58.1)	23.8 (12.8–38.4)†	38.1 (24.4–53.4)†	7.1 (1.8–18.2)†
Other	442	146 (33)	6.1 (4.1–8.6)	30.3 (26.1–34.7)	21.9 (18.3–26.0)	16.5 (13.3–20.2)	1.4 (0.6–2.8)
Practice role							
Associate	4,811	767 (16)	11.1 (10.3–12.1)†	35.2 (33.9–36.6)†	24.1 (22.9–25.4)†	17.8 (16.7–18.9)	1.4 (1.1–1.7)
Owner	4,224	2,165 (51)	7.5 (6.7–8.3)	29.9 (28.5–31.3)	21.2 (20.0–22.4)	16.9 (15.8–18.1)	1.3 (1.0–1.6)
Relief	489	120 (25)	11.2 (8.7–14.3)	44.4 (40.0–48.8)†	34.4 (30.2–38.7)†	24.3 (20.7–28.3)†	3.9 (2.4–5.9)†
Other	1,061	344 (32)	12.1 (10.2–14.1)	32.6 (29.8–35.5)	22.6 (20.2–25.2)	18.0 (15.8–20.4)	1.4 (0.8–2.3)
Practice of veterinary medicine (y)							
1–4	1,899	261 (14)	13.3 (11.8–14.9)†	28.1 (26.1–30.2)	14.4 (12.9–16.1)	13.0 (11.5–14.5)	0.6 (0.3–1.1)
5–9	1,769	272 (15)	12.2 (10.7–13.7)†	35.2 (33.0–37.5)†	23.2 (21.3–25.2)	18.9 (17.1–20.8)	1.5 (1.0–2.2)
10–19	2,638	625 (24)	12.1 (10.9–13.4)†	39.4 (37.6–41.3)†	29.1 (27.4–30.8)†	21.9 (20.4–23.6)†	1.8 (1.3–2.3)
20–29	2,330	822 (35)	7.9 (6.8–9.0)	35.5 (33.6–37.5)†	27.2 (25.4–29.0)†	18.0 (16.5–19.6)	1.9 (1.4–2.5)
≥ 30	2,333	1,590 (68)	3.8 (3.1–4.7)	26.3 (24.6–28.2)	19.9 (18.4–21.6)	15.5 (14.1–17.0)	1.1 (0.7–1.6)
Works with other veterinarians§							
Yes	8,375	2,484 (30)	9.6 (9.0–10.3)	32.4 (31.4–33.4)	22.6 (21.7–23.5)	17.1 (16.3–17.9)	1.3 (1.1–1.5)
No	1,872	732 (39)	9.3 (8.0–10.7)	34.8 (32.6–37.0)†	23.9 (22.0–25.9)	20.0 (18.2–21.8)†	1.4 (1.0–2.1)
Member of a veterinary medical association							
Yes	10,544	3,439 (33)	9.3 (8.8–9.9)	32.6 (31.7–33.5)	22.8 (22.0–23.6)	17.4 (16.7–18.1)	1.3 (1.1–1.6)
No	548	152 (28)	17.5 (14.5–20.9)†	39.2 (35.2–43.4)†	27.2 (23.6–31.0)†	21.5 (18.2–25.1)†	2.9 (1.7–4.6)†

†Within a variable, values may not sum to 11,627 because of missing responses.

*Includes missing responses in the denominator. †Numerator includes only respondents who indicated a previous depressive episode since leaving veterinary school. ‡Within a column, value differs significantly ($P < 0.05$) from the value for the overall response. §Among those currently employed as a veterinarian.

Table 1 (Nett et al, 949). Results for United States' veterinarian respondents reporting current serious psychological distress, previous depressive episodes, previous treatment for depression, previous suicidal ideations, and previous suicide attempt, all since leaving veterinary school, compared to various characteristics.

It is also important to note that the table shows that veterinarians who were either legally married/in a committed relationship or working alongside other veterinarians were at a decreased risk for psychological distress, depressive episodes, suicidal ideations, and suicide attempts. This helps support the well-known theory that a strong support group can positively affect one's mental health.

Another important figure to mention that was highlighted in the same survey was figure 1 below. It shows how both the male and female responses to the listed factors were consistently much higher than the general US population in all categories except previous suicide attempt(s). According to an additional study, researchers found that the most common reasoning for veterinarians to be at a lower percentage for previous suicidal attempts compared to the general US population is because veterinarians have an increased knowledge about and access to lethal means, so it is more common for them to be successful during their first suicide attempt (Witte et al., 606).

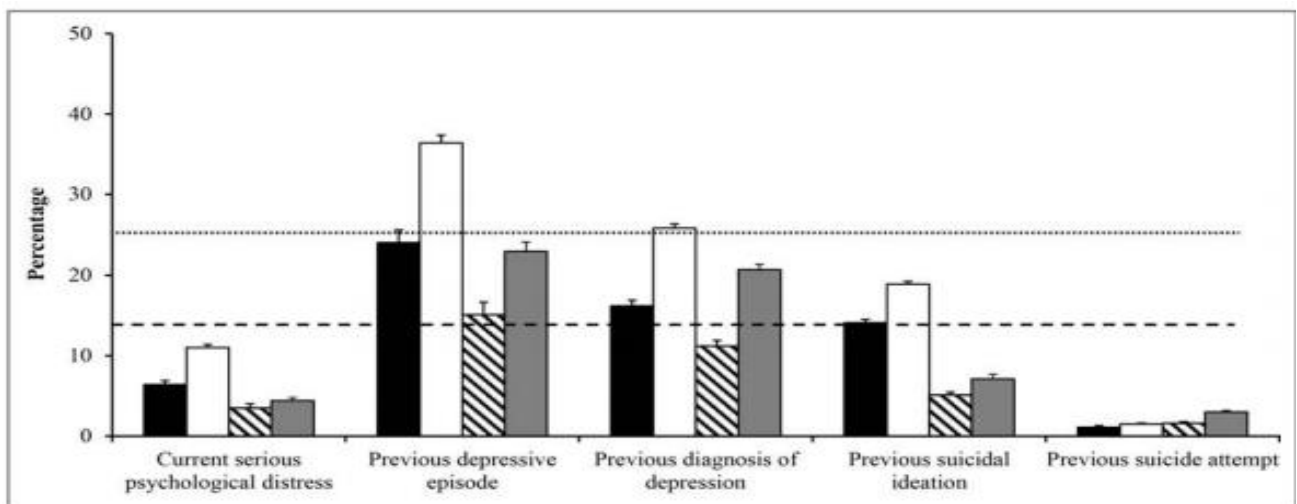


Figure 1 (Nett et al, 950). Percentage of veterinarians (male, black bars, and female, white bars) reporting current serious psychological distress, previous depressive episodes, previous diagnosis of depression, previous suicidal ideation, and previous suicide attempt compared to the results of the United States general population (male, striped bars, and female, grey bars) for the same categories.

This consistent increase of the proportionate mortality ratios also calls into question what part(s) of the profession are driving the practicing veterinarians towards suicide. These studies, along with others, have described multiple factors as the driving reasons including a history of previous mental illnesses, occupational stressors, job burnout, and an overall negative attitude towards mental illnesses and getting the necessary help.

History of Previous Illnesses

People who seek out a career in the veterinary field often have similar reasoning for being drawn to the career: an animal has impacted their life at one point in time, and they want to be able to give back to the animals that continue to provide unconditional love each day. Many have reported that an animal helped give them comfort and emotional support during a time where they experienced extreme anxiety, depression, or lack of self-worth. Dr. Matthew Krecic, in a letter to the editor of the *Journal of the American Veterinary Medical Association*, stated that as a child he suffered from obsessive compulsiveness, disordered eating, and depression, as well as was a target of constant bullying by his peers. No matter where he went, he said an animal would always find him and lay at his feet or on his lap. The animal's calming presence assuaged his fears and ultimately led him to pursue a career in the field of veterinary medicine (478). A study also stated how this history of previous illness can have an impact on the risk for suicide among veterinarians. It stated that veterinarians who have a history of previous illness and are then exposed to unmanaged occupational stressors may be at an increased risk for developing serious psychological distress, depression, and suicidal ideations (Tomasi et al, 110).

Occupational Stressors

As a veterinarian, an individual is often put under a lot of stress throughout the workday. It may even carry over into their home life at times. These stressors can range from long working hours, client demands/expectations, frequent euthanasia, financial issues, and more. In regard to practice demands, practice owners reported practice management responsibilities and competition with other veterinary practices as stressful factors, whereas associate and relief veterinarians reported that professional mistakes, educational debt, unclear management and work roles, and lack of participation in decision making were stressful factors (Nett et al, 951). A further breakdown of the percentages of veterinarians who identified these most stressful factors is shown below in figure 2. This figure originated from the same survey by Dr. Nett and colleagues.

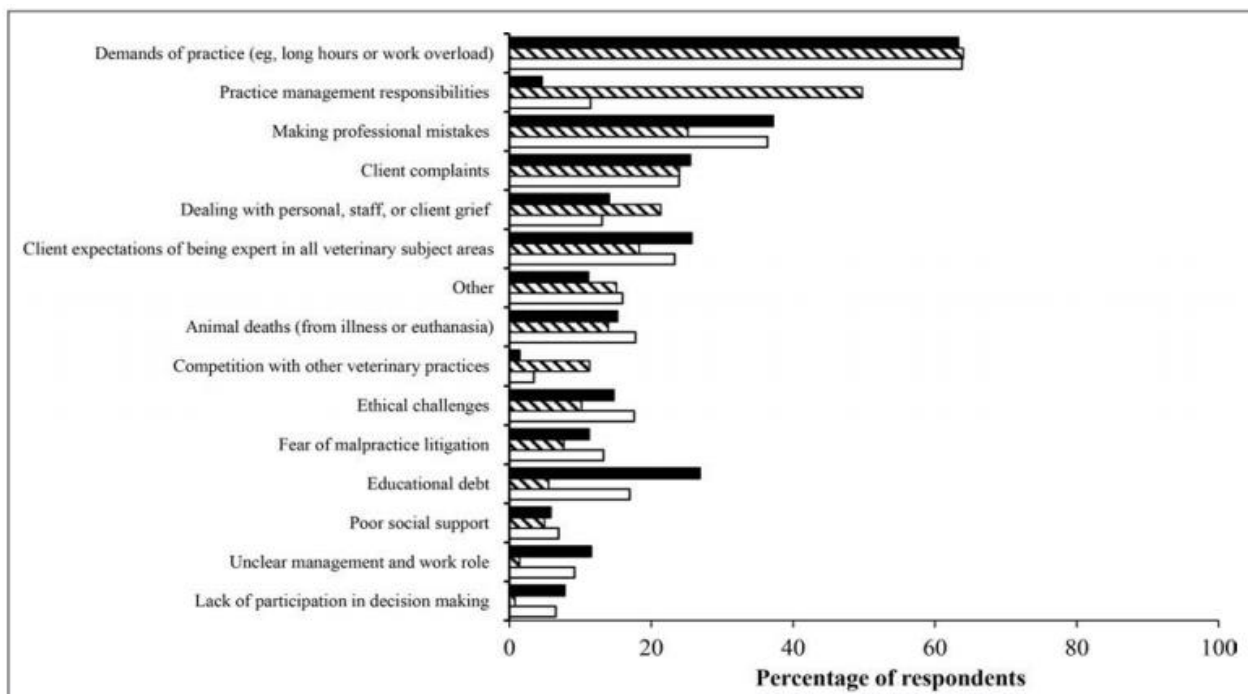


Figure 2 (Nett et al, 951). Most stressful factors identified by practicing veterinarians who were practice associates (black bars), practice owners (striped bars), or relief veterinarians (white bars).

Job Burnout

Job burnout is often said to come from an overwhelming dissatisfaction with various aspects of the work and benefits or lack thereof. “In a study conducted in the USA, 87% of veterinarians found their job stressful and 67% demonstrated symptoms of the beginnings of burnout syndrome” (Platt et al, 224). In a systematic review, three high quality studies found that veterinarians are known to work forty-four to fifty-four hours per week on average (Platt et al, 233). Additionally, in the study performed by Merck, it was found that 19.6% of veterinarians worked over sixty hours per week (Volk et al, 5). These increased work hours are a major source of stress on veterinarians as it takes away time from their family and themselves. Additionally, it lowers the ability to have an effective work-life balance. Another factor that contributes to job burnout is a lack of known appreciation. Veterinarians are often put under a lot of stress and yet continue to try to do the best thing for their patient and client; however, it is not always reciprocated with kindness. A large number of clients with high expectations and complaints can cause a large amount of stress on a veterinarian (Tomasi et al, 109). Job burnout, if not addressed, can lead to professionals having suicidal thoughts or to their decision to leave the veterinary profession and seek work elsewhere.

Overall Negative Attitude

A study published in the *Journal of the American Veterinary Medical Association* by Dr. Kassem, Dr. Witte, Dr. Nett, and Dr. Carter explored the significance of negative attitudes toward mental illness among veterinarians. This negative attitude was defined as slight or strong disagreement with two statements: “Treatment can help people with mental illness lead normal lives” and “People are generally caring and sympathetic to

people with mental illness”. The first statement is evaluating their attitude toward treatment effectiveness while the second is evaluating their attitude towards social support. This study found that 3.1% of respondents had a negative attitude toward treatment effectiveness and 47.3% had a negative attitude toward social support (Kassem et al, 983). This negative attitude toward social support and treatment effectiveness may be the reason that veterinarians decide to not seek out help and ultimately ends up being another step in the wrong direction towards suicide.

Methods and Procedures:

For this experiment, the mental health of current veterinary students was explored, and the results were compared to similar experiments evaluating the mental health of practicing veterinarians that were obtained through literary research. To do so, a virtual survey was created in the format of a google form. This virtual survey allowed students from all over the country to respond, reduced face-to-face interactions which, in turn, reduced the chance of spreading COVID-19, and helped to maintain participant confidentiality.

The survey was created to be a short, three to five minutes, easy access questionnaire that allowed veterinary students to participate without burdening their busy schedules. It was approved by Murray State University’s Institutional Review Board as a level one human study before being dispersed. A consent form and list of instructions were also attached at the beginning of the survey and can be found in the appendices. All participants were made aware that the survey was completely voluntary and confidential and that if they had any questions, they could contact the primary investigator or the Institutional Review Board through email. At the end of the form, the

suicide hotline number was included to provide support if needed after participating in a survey over a very difficult topic.

The chosen subject group was current veterinary students. In hopes of getting a large number of responses, the survey was dispersed multiple ways. First, the survey was distributed via social media and the *American Pre-Veterinary Medical Association*, APVMA, social media group. Next, a short description of the survey's intentions along with the survey link was emailed to the dean or associate dean of student affairs of every *American Veterinary Medical Association*, AVMA, accredited veterinary school in the United States. They then dispersed the survey to their students at their own discretion.

The survey contained seven demographic questions, ten multiple choice questions regarding the student's past and current mental health status, and two open response questions related to their attitude towards mental health treatment accessibility and their current school related stressors. A copy of the survey and consent form is shown in the appendix.

Once the survey was approved by the Institutional Review Board on February 24, 2021, it was dispersed, and responses were recorded. The survey was then closed two weeks later on March 11, 2021, and data was analyzed by the primary investigator.

Results:

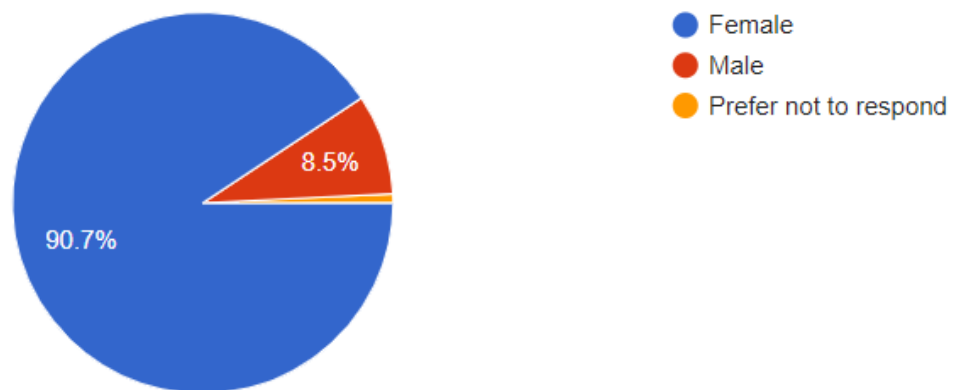
The survey received one hundred and twenty-nine participants and their responses at the time it was pulled. There are currently 13,952 Doctorate of Veterinary Medicine, DVM, students in the United States. Therefore, the survey received a

response rate of 0.01% at the time it was pulled. Although the response rate was overall very low, it provides a general and diverse look into current veterinary students' mental health. To ensure a wide variety of students participated, they were also asked to provide the name of the school that they are attending and their original state of residence. Respondents from twenty-one different AVMA accredited schools participated, and these participants originated from thirty-two different states in the United States of America.

Out of one hundred and twenty-nine participants, one hundred and seventeen respondents were female, eleven were male, and one respondent preferred not to identify their gender. This meant that 8.5% of respondents were male and 90.7% of respondents were female. Regarding their current year in school, 50.4% of participants were in their first year of veterinary school, 28.7% were in their second year, and 7.8% and 13.2% were in their third and fourth year of veterinary school, respectively. These two values can be seen in the pie charts in figure 3.

Please select your sex:

129 responses



What is your current year in school?

129 responses

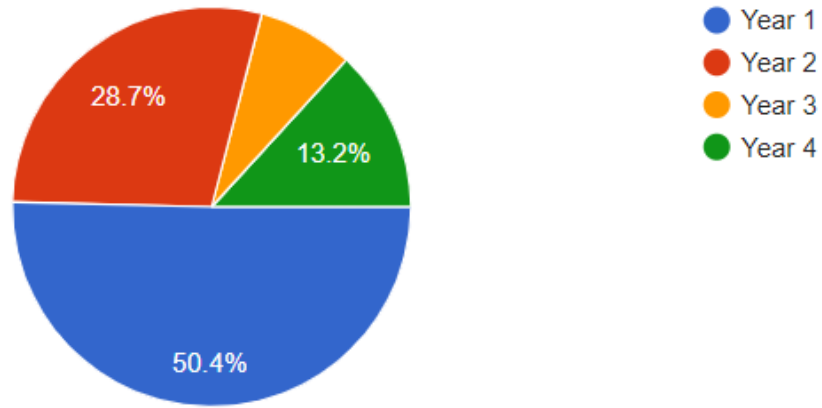


Figure 3. Pie charts reporting the respondents' answers to the demographic questions regarding their gender and current year in veterinary school.

A suicidal ideation, also commonly referred to as a suicidal thought, refers to when one is thinking about or planning suicide. The severity of a suicidal ideation can range from a fleeting thought to a well-developed, thorough plan. It does not, however, include any attempts at following through on the suicidal plans. A suicidal attempt is defined by the *American Center for Disease Control and Prevention*, CDC, as a time when "someone harms themselves with any intent to end their life, but they do not die as a result of their actions" ("Fast Facts"). These attempts may result in injury but do not always do so. Of the one hundred and twenty-nine participants, twenty-seven (20.9%) reported that they had previously experienced suicidal ideations and eight (6.2%) reported that they had previously attempted suicide. For the previously experienced suicidal ideations, the male to female ratio was 1:26. The ratio of male to female attempted suicide was 1:4, respectively.

Depression is defined by the *American Psychiatric Association*, APA, as “a common and serious illness that negatively affects how a person feels, the way he/she thinks, and how he/she acts. It causes feelings of sadness and/or a loss of interest in activities that one once enjoyed” (Torres). In the survey’s findings, forty-four out of one hundred and twenty-nine respondents were currently experiencing depressive episodes, and of the remaining eighty-five respondents, forty-nine reported that they had previously dealt with depressive episodes. The percentages of these are 34.1% and 38%, respectively. This totals to 72.1% of respondents experiencing depression at some point during their lifetime and 27.9% of respondents reporting no depressive episodes in their lifetime.

The respondents’ answers to the survey’s questions regarding the treatment of depression found that twenty-six individuals (20.2%) reported that they are currently being treated by a professional for depression, while nineteen of the remaining one hundred and three respondents (14.7%) reported that they previously underwent treatment for depression. All in all, 34.9% of all the respondents are currently or have previously been treated for depression.

The male to female ratios for current depressive episodes as well as previous depressive episodes were 3:40 and 4:45, consecutively. One individual who reported to be currently experiencing depressive episodes preferred to not respond on their gender. Likewise, for current and previous depression treatment, the male to female ratios were 1:12 and 2:17, respectively.

Serious psychological distress is, in addition, defined by the CDC as a condition which “includes mental health problems severe enough to cause moderate-to-serious

impairment in social, occupational, or school functioning and to require treatment” (“Fast Facts”). Adults who experience this serious psychological distress are also more likely to have chronic health side effects such as heart disease, diabetes, etc. In the survey, fifteen students (11.6%) reported having current serious psychological distress. Of these fifteen individuals, the male to female ratio was found to be 1:14.

In table 2 on the following page, the respondents’ reports of current serious psychological distress, current/previous depressive episodes, current/previous treatment for depression, previous suicidal ideations, and previous suicidal attempts are further broken down and compared to his or her age, marital status, and current year in school.

Variable	Number*	Current Serious Psychological Distress	Current Depressive Episodes	Previous Depressive Episodes**	Current Treatment for Depression	Previous Treatment for Depression**	Previous Suicidal Ideation	Previous Suicide Attempt
Total Number of Respondents	129	15 (11.6)	44 (34.1)	49 (38)	26 (20.2)	19 (14.7)	27 (20.9)	8 (6.2)
Sex								
Male	11 (8.5)	1 (9.1)	3 (27.3)	4 (36.4)	2 (18.2)	2 (18.2)	1 (9.1)	2 (18.2)
Female	117 (90.7)	14 (12)	40 (34.2)	45 (38.5)	24 (20.5)	17 (14.5)	26 (22.2)	6 (5.1)
Prefer Not to Respond	1 (0.8)	0	1 (100)	0	0	0	0	0
Age (year)								
20-22	21 (16.3)	1 (4.8)	5 (23.8)	10 (47.6)	2 (9.5)	2 (9.5)	2 (9.5)	0
23-25	70 (54.3)	11 (15.7)	24 (34.3)	27 (38.6)	14 (20)	8 (11.4)	18 (25.7)	5 (7.1)
26-28	28 (21.7)	1 (3.6)	12 (42.9)	8 (28.6)	6 (21.4)	7 (25)	7 (25)	3 (10.7)
29-31	5 (3.9)	1 (20)	0	3 (60)	0	2 (40)	0	0
32+	4 (3.1)	1 (25)	2 (50)	1 (25)	3 (75)	0	0	0
Marital Status								
Single, Never Married	110 (85.3)	12 (10.9)	40 (36.4)	41 (37.3)	23 (20.9)	16 (14.5)	24 (21.8)	8 (7.3)
Married	18 (14)	2 (11.1)	3 (16.7)	8 (44.4)	2 (11.1)	3 (16.7)	3 (16.7)	0
Separated or Divorced	1 (0.8)	1 (100)	1 (100)	0	1 (100)	0	0	0
Widowed	0	-	-	-	-	-	-	-
Year in School								
1	65 (50.4)	7 (10.8)	19 (29.2)	23 (35.4)	14 (21.5)	6 (9.2)	4 (6.2)	3 (4.6)
2	37 (28.7)	6 (16.2)	15 (40.5)	14 (37.8)	5 (13.5)	9 (24.3)	11 (29.7)	2 (5.4)
3	10 (7.8)	0	2 (20)	6 (60)	3 (30)	0	4 (40)	1 (10)
4	17 (13.2)	2 (11.8)	8 (47)	6 (35.3)	4 (23.5)	4 (23.5)	8 (47)	2 (11.8)
*Within a variable, values may not sum up to 129 because of missing responses.								
**These values do not include responses where the participant had already indicated that they are either currently experiencing depressive episodes or are currently being treated for depression.								

Table 2. Results for US veterinary student respondents reporting current serious psychological distress, current or previous depressive episodes, current or previous treatment for depression, previous suicidal ideations, and/or a previous suicide attempt. These results are compared to various variables on the left-hand side. The number of reported answers is shown, followed by the percentage of the corresponding variable in parenthesis.

When asked about their biggest school related stressors, two responses seemed to contribute the most: the workload/exams given and the pressure to do well in school/imposter syndrome. The imposter syndrome is defined as when someone doubts his or her own abilities and often feels undeserving of what they have accomplished. They are worried about being viewed as a fraud. Thirty-two people (24.8%) reported this to be one of their largest stressors. Moreover, forty-seven individuals (36.4%) reported the workload and exams to be one of their largest stressors. The struggle to create a good work/life balance (16.3%), the large amount of debt in loans hanging over their heads (14.7%), the pressure to maintain good grades (13.2%), the struggle that adapting to online learning presented (10.1%), and the feeling that they must compete with all of the other veterinary students (6.2%) were also found to be large stressors on the students. The graph in figure 4 provides a look at these numbers as well.

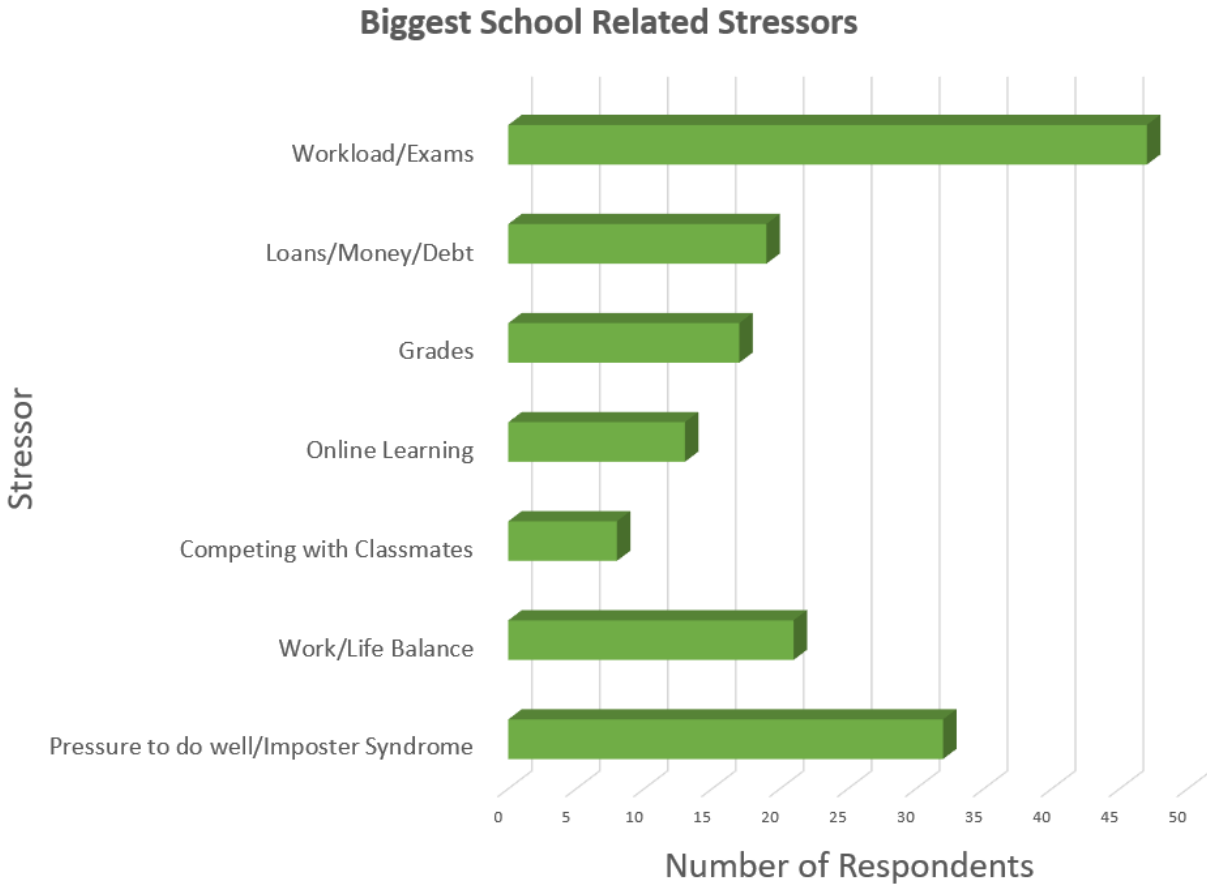


Figure 4. Bar Graph representing the students' reported biggest school related stressors. The x-axis represents the number of respondents who listed the corresponding stressor on the y-axis. Some students listed multiple stressors; therefore, the total number of provided stressors is larger than the number of participants.

In addition to evaluating the participants' current mental health, the survey also evaluated their opinions on accessing health and their feelings toward starting a career in a field with a higher suicide risk than the general United States population. When asked if they had ever sought out help for stress and/or depression, fifty-two (40.3%) respondents said yes, for both, twenty-nine (22.5%) said yes, for stress only, five (3.9%) said yes, for depression only, and forty-three (33.3%) said they had not sought out help for either. In regard to whether or not they believed help was easily accessible, seventy

students (57.9%) responded that it was, twenty-four (19.8%) said that it was not, and twenty-seven (22.3%) said they believed it was somewhat accessible. Some students chose not to respond to this question; therefore, the numbers may not add up to one hundred and twenty-nine. In figure 5 below, a breakdown of the most common responses as to why the respondent chose to label help as easily acceptable or not can be found.

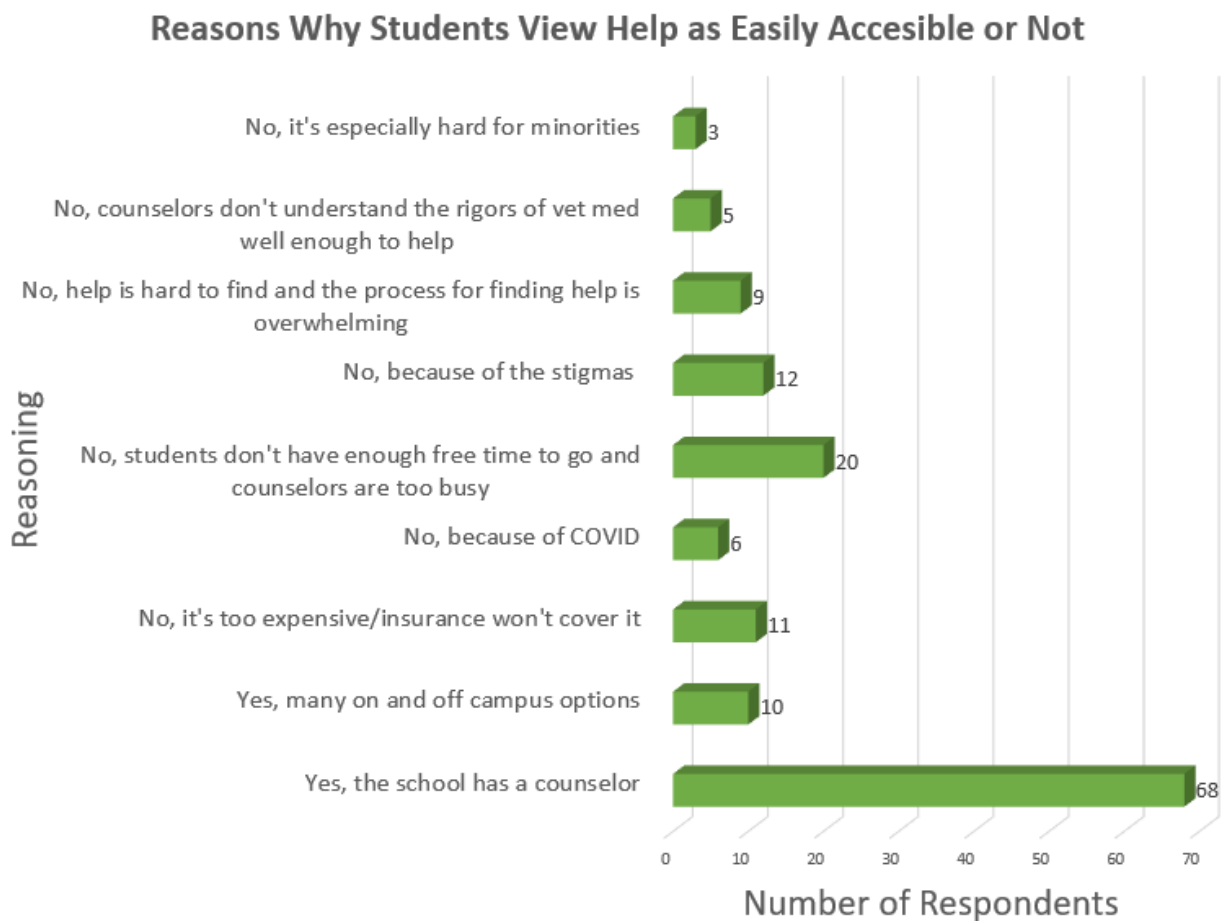


Figure 5. Bar Graph representing the students' reasoning as to why they find help easily accessible or not. The numbers represent the number of respondents who provided that reasoning. Some students provided multiple reasons; therefore, the total number of provided reasonings is larger than the number of participants.

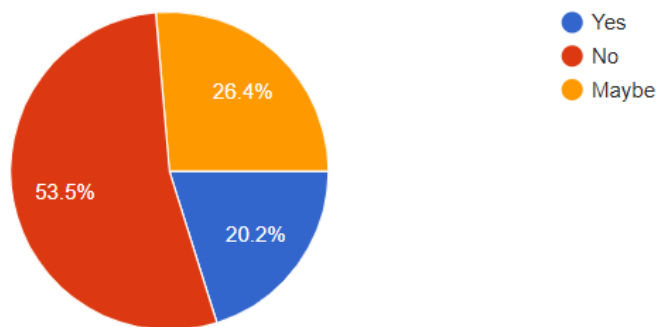
As seen in the graph, sixty-six total students gave reasonings as to why help was not easily accessible in their opinions. On the other hand, seventy-eight students gave reasonings as to why they believed help was easily accessible. The most common response on the positive side was that the veterinary school that the student attends has a counselor/psychiatrist on staff who only treats the school's veterinary students. This reasoning accounted for 87.2% of the positive responses. The remaining 12.8% was made up of responses regarding how the student felt that there was a large amount of off campus resources (both on and offline) that they believed to be easily accessible to them.

Regarding the responses supporting the idea that help is not easily accessible, 30.3% of the responses said that they did not have enough free time in their schedule to dedicate to counseling. These responses also stated that when they did have availability in their schedules, the counselors would be out of the office or would have a booked schedule due to a high demand for services and only one person on staff equipped to provide the correct services. The other two most abundant reasonings that students gave were that the cost of services was too high and not provided for under their insurance plans (16.7% of responses) and that the stigma surrounding getting help was too hard to overcome (18.2%). Additional reasonings included the opinions that the COVID-19 pandemic made getting help more inaccessible, the process for finding help is too overwhelming, the counselors are not adequately prepared to counsel students pursuing a career in the veterinary field, and the help is harder to access when the student is a minority or non-traditional student.

Finally, the survey asked the participants two questions that took a look at how they felt about entering a career that was known to have such an increased risk for suicide. When asked, “Knowing that veterinarians are at an increased risk for suicide, do you feel uncomfortable starting this career?”, sixty-nine participants (53.5%) said that they did not feel uncomfortable, thirty-four (26.4%) said that they may feel uncomfortable, and twenty-six (20.2%) said that they were uncomfortable about starting a career in this field. A follow up question asking whether or not students would feel better going into this career if more support groups and regulatory guidelines for clinical drug storage were in place showed that 34.1% of participants would feel better, 11.6% would not feel any better with these changes, and 54.3% felt that it did not apply to them because they are not currently feeling uncomfortable about these issues. A breakdown of these answers can be seen in figure 6.

Knowing that veterinarians are at an increased risk for suicide, do you feel uncomfortable starting this career?

129 responses



If more support groups and regulatory guidelines for clinical storage of drugs were in place, would you feel better going into this career?

129 responses

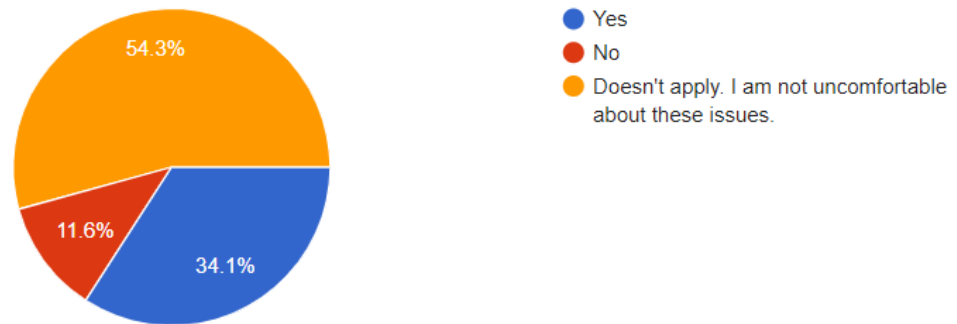


Figure 6. Two pie charts reporting the students' answers to questions regarding their current feelings towards starting a career in the field of veterinary medicine knowing it has a higher risk for suicide than the general US population.

Discussion and Analysis:

The survey was originally planned to close on March 14, 2021; however, after the unfortunate loss of three more lives in the veterinary profession during the week of March 5, 2021, the *Association of American Veterinary Medical Colleges (AAVMC)* asked that it be closed on March 11, 2021. This was due to the increased risk of suicide contagion in advancing the study. Data was collected and analyzed starting March 12, 2021. This caused a decreased number of results. If the survey were able to be open longer, it most likely would have gotten a larger pool of participants and would be a more accurate look into the chosen topic. Even so, the results published in this report are, to the author's knowledge, a good and diverse representation of current veterinary students due to the variety in their backgrounds and current school standings.

When analyzing veterinary students' risk towards suicide, depression, and serious psychological distress, the first measure taken was to compare the survey's results to those in a previous study targeting practicing veterinarians as well as the general United States population. In figure 7 below, it is found that veterinary students do, in fact, suffer from the same increased risk as current practicing veterinarians. Veterinary students and practicing veterinarians have a higher rate of serious psychological distress, depressive episodes, and suicidal ideations than the general population. This was found to be true for both genders. This shows that the increased risk is also present during veterinary school and may have specific relations to the stress of the veterinary field/material. Further research into undergraduate pre-veterinary medicine students may be needed to find whether or not the increased risk begins with veterinary school specifically, or if it is present in all college students.

Another important finding from the graph below is that veterinary students suffer from a higher percentage of attempted suicide than the general United States population; however, the current practicing veterinarians do not suffer from a higher percentage of suicidal attempts compared to the general population. Previous studies have hypothesized that the reason veterinarians do not have a higher percentage of attempted suicide is because these individuals are more knowledgeable on calculating lethal doses of fatal drugs, such as Pentobarbital, and have a greater access to the drugs, thus, leading them to be more successful with their suicide attempts. This could also explain why veterinary students do show an increased risk for attempted suicide. Since they are still gaining the knowledge about lethal drugs and dosages, and they do not have ready access to the drugs, they are not as likely to use the same means for

suicide as practicing veterinarians. More detailed research regarding the means students choose to attempt suicide would be needed to confirm this theory.

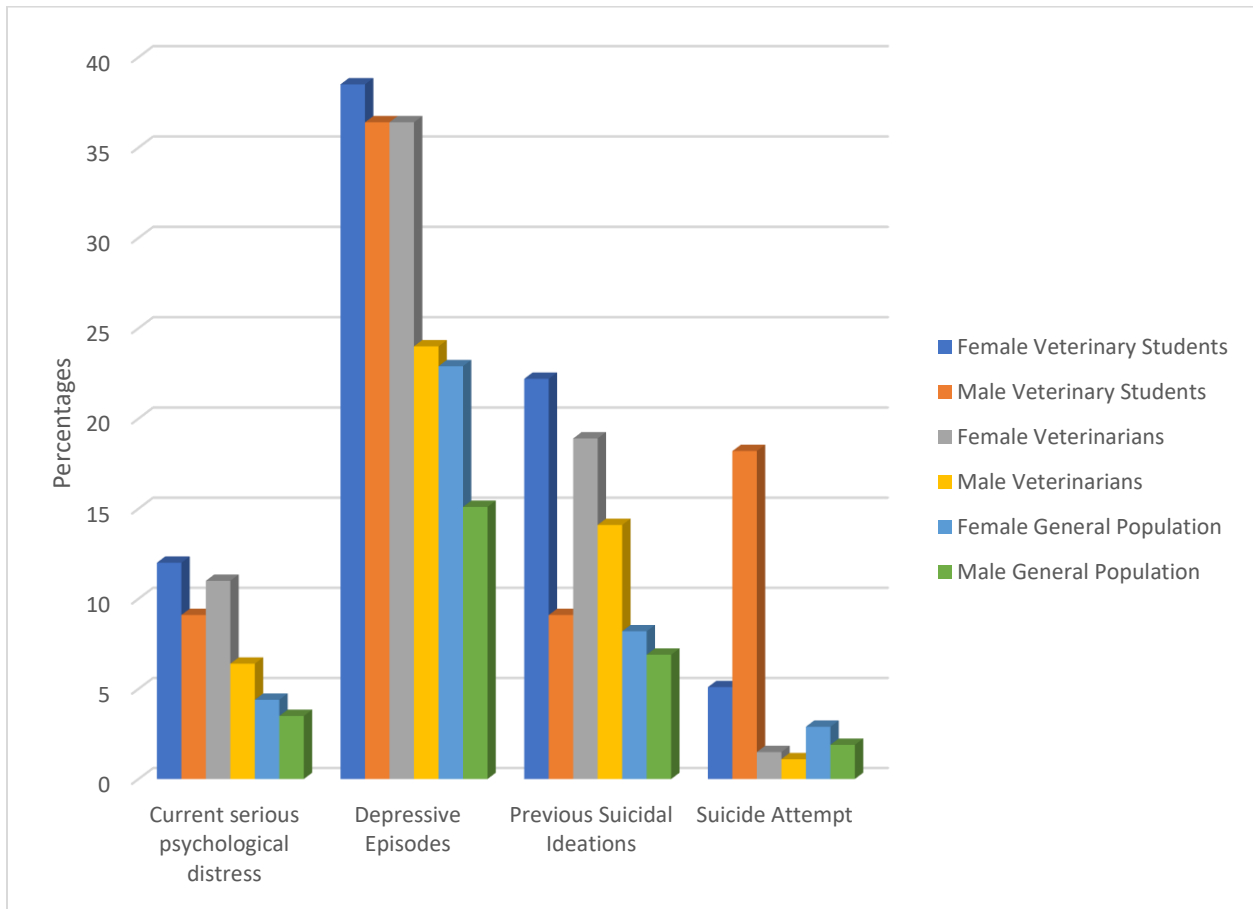


Figure 7. Percentage of veterinary students reporting current serious psychological distress, depressive episodes, previous suicidal ideations, and/or previous suicide attempt(s) compared with results from practicing veterinarians (Nett et al, 949) and the general United States’ population reporting current serious psychological distress (Reeves et al, 20), depressive episodes, (Kessler et al, 12), previous suicidal ideations (Baca-Garcia et al), and/or previous suicide attempts (Baca-Garcia et al).

From table 2, it can be concluded that the student’s current year in school has a significant effect on their risk towards suicidal ideations and suicide attempts. The table showed a continuous increase in both these categories. In response to the question regarding having had previous suicidal ideations, 6.2% of students in their first year,

29.7% of second years, 40% of third years, and 47% of fourth years said yes. That is almost a 41% increase from the time that the student first enters the school to the time that they are about to graduate and begin practicing. Responses to the question documenting a previous suicide attempt yielded a similar increase with 4.6% of first years, 5.4% of second years, 10% of third years, and 11.8% of fourth years having attempted suicide in the past. That is almost a 7% increase from the first to fourth year of veterinary school. When considering these steady increases, it can be inferred that veterinary school and its related stressors are potentially negatively impacting the students. No conclusions could be made to describe a trend between the year in school and students' current serious psychological distress, current and past depressive episodes, or current and past treatment for depression.

Additionally, when comparing the marital status of students in table 2 to their reports of current serious psychological distress, current and past depressive episodes, and current and past treatment for depression, it was found that students who reported being single and never married had a much higher chance, almost double, for experiencing current depressive episodes (36.4% single students:16.7% married students), current treatment for depression (20.9%:11.1%), previous suicidal ideations (21.8%:16.7%), and previous suicidal attempts (7.3%:0) than the students who reported being married. Both single and married respondents experienced current serious psychological distress, previous depressive episodes, and previous treatment for depression at a similar percentage. From this data, it is concluded that students who have a strong relationship and support group, such as a marriage, are less likely to experience such things as depression and suicidal thoughts.

No conclusions could be made with the data comparing a student's age to their likelihood of experiencing current serious psychological distress, current and previous depressive episodes, current and previous treatment for depression, previous suicidal ideations, and previous suicide attempts.

In regard to the school related stressors that were reported by the respondents, a large quantity of students agreed that the workload and pressure put on them caused the largest amount of stress. Students in veterinary school are going through a professional program and seeking a higher education degree (doctorate), so a heavy workload is to be assumed; however, access to coping mechanisms and resources is necessary to decrease these numbers. The stress caused by grades and the feeling of the need to compete with classmates also go hand in hand with the stressors listed above. Previous studies have reported that students pursuing a career in the veterinary field often declare themselves to be perfectionists. As a result of this characteristic, they often strive to achieve a flawless excellence in everything they do. Any low grade or lack of knowledge is viewed as a failure. This is also why many students will say they have experienced the imposter syndrome. Furthermore, perfectionism has been found to lead to depression, anxiety, stress, and self-deprecating thoughts because a student may inflict an unrealistic desire to be perfect on him or herself. For these reasons, students need to be educated in a more detailed manner on how to properly handle the workload and create a strong work/life balance.

In addition to the stressors listed above, online learning was also reported by many students to be a major cause of their stress. Schools shifted to an online format when the COVID-19 pandemic hit the United States. As the United States' population is

beginning to become vaccinated and movements are being made to return the country to a more “normal” level of living, this stressor should be decreased or even eliminated. Veterinary schools predominantly teach their students in an in-person format, so this should not be a consistent issue for students in the future as the pandemic comes to an end. In the case that it does become necessary to switch back to an online learning format in the future, schools will be better equipped with the knowledge on how to make online learning the most effective and accessible to its students.

On another note, some of the stressors observed in the veterinary students polled by this survey were found in practicing veterinarians also. In figure 2, shown in the literary analysis section, approximately 65% of all practicing veterinarians reported that the demands of the practice (work overload) were their most stressful factor. When comparing this result to the 36.4% of current veterinary students who reported the workload in school to be their largest stressor, it is shown that the percentage of people affected by this type of stressor almost doubles as the progression from student to practicing doctor is made. It can be reasonably concluded that the individuals did not properly learn or get the necessary help on how to deal with and combat this stressor. Additionally, in figure 2, it is shown that 18-20% of practicing veterinarians, excluding current practice owners, reported that educational debt was their most stressful factor. An increase was also observed in this category when compared to the 14.7% of students that reported the loans to be one of their largest school related stressors. Although students know before entering veterinary school that the cost that will accumulate over the following four years is large, they often do not have a strong enough knowledge of how to handle finances and debt. This decreased level of

knowledge can be a cause of stress on the individuals as well. Then, once the student graduates and is starting to work towards paying off his/her large amount of loans, it can become very daunting and stressful. Financial sessions and money management courses may be necessary for prospective students, current students, and practicing veterinarians in order to help decrease these numbers.

When assessing the attitude towards the accessibility of mental health help, a trend could not be interpreted between the students who participated in this survey and a previously published survey of practicing veterinarians. 57.9% of respondents reported that help was easily accessible. 22.3% reported that help is somewhat accessible. 19.8% of respondents reported that help is not accessible. For practicing veterinarians evaluated by Merck, 59.7% of respondents reported that help was accessible, 24.5% reported that they were neutral (it may/may not be accessible), and 15.7% reported that they felt help was not easily accessible (Volk et al,1243). These numbers are all consistent with one another meaning that the attitude towards the accessibility of help does not change as a person goes through the transition of student to graduate. No data for the United States' general population could be found to compare these percentages to. However, the percentage of individuals who does not believe help is easily accessible still seems large. If students or veterinarians do not believe that help is easily accessible, they may not try to seek it out, even when they know they need it.

Knowing this, the survey in this study asked participants to write down the reasons they classified help as accessible or not so a deeper look could be taken. For those who classified help as easily accessible, they said that their college of veterinary

medicine has counselor(s) on staff to counsel only the veterinary students. A few complaints were discussed saying that counselors were too busy or did not understand the rigors of veterinary medicine well enough to help. Other respondents who viewed help as inaccessible reported that it was due to stigmas, COVID, and/or expense. To combat these reasons and make help more easily accessible for all students, each vet school should try to hire at least 2 counselors or psychologists for their students to have access to. Additionally, these counselors should have varying hours. Students are normally in class from 8:00 am to 5:00 pm Monday through Friday; therefore, counseling sessions offered before class, after class, or during lunch could be very valuable to the students. Students should also be made aware of the general services offered to the public which allow for sessions to take place over text or phone call at all hours of the day and night. A list of these services could be compiled and provided to the students at the start of each school year. To help combat the stigma that surrounds getting help for mental illnesses, an information session could be given to all incoming students each fall during orientation. This would allow all students to be educated on the importance of mental illnesses and getting help and could serve as another way to inform students of the various resources available to them.

This study also surveyed students on how comfortable they were entering a career in veterinary medicine knowing that practicing veterinarians are at an increased risk for suicide when compared to the general United States' population. Almost half of the students (46.6%) reported "yes, they are uncomfortable" or "they may be uncomfortable). Of this percentage, 34.1% of the students stated that if more support groups or regulatory guidelines for clinical storage of drugs were in place, they would

feel better about entering this career. Another study targeting current veterinarians may be necessary to look deeper into what kind of support groups and regulatory guidelines would be the most helpful. One example of a protective measure would be increased storage security of euthanasia solutions since veterinarians and their staff have the knowledge on how to calculate lethal doses. This, as well as other measures promoting a protective environment for veterinary staff, are critical factors in lowering the risks for suicide and lowering the percentage of students who are worried about entering the field.

Conclusion:

“People who survive a suicide attempt often report spending little time, less than ten minutes, contemplating their decision” (Nett et al, 1322). For this reason, it is very important that all possible measures are taken to ensure that individuals pursuing or actively partaking in a career in the veterinary field are given the tools and help that they need and deserve to combat any suicidal ideations or stressors.

Analysis of this survey found that students currently enrolled in veterinary school do, in fact, suffer from the same increased risk of suicide that practicing veterinarians do when compared to the general United States’ population. Veterinary students were also found to suffer from an increased risk of serious psychological distress and depressive episodes. Further research may be needed to get a larger number of respondents and more accurate percentages.

Additionally, it was concluded that the two biggest school related stressors reported by veterinary students are the workload and the pressure to do well/imposter

syndrome. Students need to be made aware of coping methods and study habits that will help lower the amount of stress caused by the workload and pressures of veterinary school and will help them find a strong work/life balance.

Finally, it was deduced that counselors hired directly by the veterinary school for their students helped aid in making help more accessible to students. Even though this previous statement is true, this survey also proved that the veterinary school counselors limited hours of availability made it hard to schedule sessions with them; therefore, counselors may need to expand their hours or schools may need to look into adding more counselors to their staff.

After taking a detailed look at the findings of this survey, the next step is to begin implementing programs for current veterinary students to help decrease the percentage of students who suffer from serious psychological distress, depressive episodes, suicidal ideations, and suicide attempts. These programs should be targeted towards incoming veterinary students to hopefully lessen or stop the increased risk from continuing with each student throughout their veterinary school journey. Further studies will be needed to determine what programs and measures will be the most effective.

Works Cited

Baca-Garcia, E, et al. "Suicidal Ideation and Suicide Attempts in the United States: 1991–1992 and 2001–2002." *Nature News*, Nature Publishing Group, 9 Sept. 2008, www.nature.com/articles/mp200898#citeas.

"Fast Facts." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 23 Mar. 2021, www.cdc.gov/suicide/facts/index.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fviolenceprevention%2Fsucide%2Ffastfact.html#:~:text=Suicide%20is%20death%20caused%20by,a%20result%20of%20their%20actions.

Kassem, Ahmed M., et al. "Characteristics Associated with Negative Attitudes toward Mental Illness among US Veterinarians." *Journal of the American Veterinary Medical Association*, vol. 254, no. 8, 15 Apr. 2019, pp. 979–985., doi:10.2460/javma.254.8.979.

Kessler, R C et al. "Age differences in major depression: results from the National Comorbidity Survey Replication (NCS-R)." *Psychological medicine* vol. 40,2 (2010): 1-18. doi:10.1017/S0033291709990213

Krecic, Matthew. "Mental Illness Can Predate Veterinary School." Received by Editor, *Journal of the American Veterinary Medical Association*, 5th ed., vol. 257, 2020, pp. 477–478.

Larkin, Malinda. "Study: 1 in 6 veterinarians have considered suicide." *Journal of the American Veterinary Medical Association News*, 1 Apr. 2015, pp. 707-709.

Nett, Randall J., et al. "Risk Factors for Suicide, Attitudes toward Mental Illness, and Practice-Related Stressors among US Veterinarians." *Journal of the American Veterinary Medical Association*, vol. 247, no. 8, 15 Oct. 2015, pp. 945–955., doi:10.2460/javma.247.8.945.

Nett, Randall J., et al. "Storage of Euthanasia Solution as a Factor in Addressing Veterinarian Suicides." *Journal of the American Veterinary Medical Association*, vol. 256, no. 12, 15 June 2020, pp. 1321–1322., doi:10.2460/javma.256.12.1321.

Platt, Belinda, et al. "Suicidal Behaviour and Psychosocial Problems in Veterinary Surgeons: a Systematic Review." *Social Psychiatry and Psychiatric Epidemiology*, vol. 47, no. 2, 23 Dec. 2010, pp. 223–240., doi:10.1007/s00127-010-0328-6.

Reeves, William C et al. "Mental illness surveillance among adults in the United States." *MMWR supplements*, vol. 60,3 (2011): 1-29.

Tomasi, Suzanne E, et al. "Suicide among Veterinarians in the United States from 1979 through 2015." *Journal of the American Veterinary Medical Association*, Edited by Ethan D Fetcher-Leggett, vol. 254, no. 1, 1 Jan. 2019, pp. 104–112., doi:10.2460/javma.254.1.104.

Torres, Felix. "What Is Depression?" *Psychiatry*, American Psychiatric Association, Oct. 2020, www.psychiatry.org/patients-families/depression/what-is-depression.

Volk, John O., et al. "Executive Summary of the Merck Animal Health Veterinarian Wellbeing Study II." *Journal of the American Veterinary Medical Association*, vol. 256, no. 11, 2020, pp. 1237–1244., doi:10.2460/javma.256.11.1237.

Witte, Tracy K., et al. "Suicides and Deaths of Undetermined Intent among Veterinary Professionals from 2003 through 2014." *Journal of the American Veterinary Medical Association*, vol. 255, no. 5, 1 Sept. 2019, pp. 595–608., doi:10.2460/javma.255.5.595.

Appendix A

Consent Form

Hello, my name is Deanna Arnold, and I am a current undergraduate student at Murray State University. Compared to the general population of the United States, veterinarians are at an increasingly higher risk for suicide. While many studies have been performed to confirm the above statement, few studies have been done on students currently enrolled in veterinary school to assess their mental health. This study will survey graduate school students in this field and will evaluate their mental health state and risk factors towards suicide. Through comparing the results of this survey to previous studies on the mental health and suicide risk of licensed veterinarians, I am hoping to pinpoint when the increased risk starts. By pinpointing the trend beginning, programs will be able to target help and treatment options better suited for decreasing the rate of suicide among individuals in the field of veterinary medicine.

Your participation in this survey is completely voluntary and no identifying information will be taken. This survey should take approximately 3-5 minutes to complete. Some of these questions will ask about topics that are hard to discuss. You have the right to withdraw from the survey at any time prior to completion. Simply just abandon the survey and do not hit "submit". Once you hit the "submit" button, your answers will be included in the research.

If you have any questions about the research being done either before you take the survey or after, please feel free to contact the primary investigator, Deanna Arnold at the email provided: darnold4@murraystate.edu.

If you are currently experiencing serious depression/suicidal thoughts, please reach out for help or call the Suicide Hotline Number: 1-800-273-8255.

This project has been reviewed and approved by the Murray State University Institutional Review Board (IRB) for the Protection of Human Subjects. If you have any questions about your rights as a research participant, you should contact the MSU IRB Coordinator at (270) 809-2916 or msu.irb@murraystate.edu.

Appendix B

Survey Questions

1. Please select your race:
 1. Caucasian
 2. African American
 3. American Indian or Alaska Native
 4. Asian or Pacific Islander
 5. Prefer not to respond
 6. Other...

2. Please select your sex:
 - a. Female
 - b. Male
 - c. Prefer not to respond

3. Please enter your age:

4. Please select your marital status:
 - a. Single, Never Married
 - b. Married
 - c. Separated or Divorced
 - d. Widowed

5. Please list the veterinary school that you currently attend:

6. What is your current year in school?
 - a. Year 1
 - b. Year 2
 - c. Year 3
 - d. Year 4

7. What was your original state of residence?

8. Do you currently feel like you are in serious psychological distress?
 - a. Yes
 - b. No
 - c. Maybe

9. Are you currently being affected by depressive episodes?
 - a. Yes

- b. No
10. If not currently, have you been affected by depressive episodes in the past?
- a. Yes, within the past year
 - b. Yes, within the past 5 years
 - c. Yes, but it was longer than 5 years ago
 - d. No
11. Are you currently being treated for depression?
- a. Yes
 - b. No
12. If not currently, have you been treated for depression in the past?
- a. Yes, within the past year
 - b. Yes, within the past five years
 - c. Yes, but it was longer than five years ago
 - d. No
13. Have you had suicidal ideations since being accepted into veterinary school?
- a. Yes
 - b. No
14. Have you previously attempted suicide?
- a. Yes
 - b. No
15. What are your biggest school related stressors?
- _____
16. Have you ever sought out help for stress/depression?
- a. Yes, for stress
 - b. Yes, for depression
 - c. Yes, for both
 - d. No
17. Do you think help is easily accessible? Why or Why not?
- _____
18. Knowing that veterinarians are at an increased risk for suicide, do you feel uncomfortable starting this career?
- a. Yes
 - b. No
 - c. Maybe
19. If more support groups and regulatory guidelines for clinical storage of drugs were in place, would you feel better going into this career?
- a. Yes

- b. No
- c. Does not apply. I am not uncomfortable about these issues.

Thank you for completing this survey. If you are in need of assistance because of distress, you should immediately contact your school's counseling or psychological center. Further, if you need help after-hours, or if it is an emergency, you can call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255).

Appendix C

IRB Approval Letter



Institutional Review Board

328 Wells Hall
Murray, KY 42071-3318
270-809-2916 • msu.irb@murraystate.edu

TO: Laura Hoffman, Hutson School of Agriculture
FROM: Jonathan Baskin, IRB Coordinator JB
DATE: 2/24/2021
RE: Human Subjects Protocol I.D. – IRB # 21-112

The IRB has completed its review of your student's Level 1 protocol entitled *Suicide Risk and School Related Stressors in Veterinary Students*. After review and consideration, the IRB has determined that the research, as described in the protocol form, will be conducted in compliance with Murray State University guidelines for the protection of human participants.

The forms and materials that have been approved for use in this research study are attached to the email containing this letter. These are the forms and materials that must be presented to the subjects. Use of any process or forms other than those approved by the IRB will be considered misconduct in research as stated in the MSU IRB Procedures and Guidelines section 20.3.

Your stated data collection period is from 2/24/2021 to 4/23/2021.

If data collection extends beyond this period, please submit an Amendment to an Approved Protocol form detailing the new data collection period and the reason for the change.

This Level 1 approval is valid until 2/23/2022.

If data collection and analysis extends beyond this date, the research project must be reviewed as a continuation project by the IRB prior to the end of the approval period, 2/23/2022. You must reapply for IRB approval by submitting a Project Update and Closure form (available at murraystate.edu/irb). You must allow ample time for IRB processing and decision prior to your expiration date, or your research must stop until such time that IRB approval is received. If the research project is completed by the end of the approval period, then a Project Update and Closure form must be submitted for IRB review so that your protocol may be closed. It is your responsibility to submit the appropriate paperwork in a timely manner.

The protocol is approved. You may begin data collection now.

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Equal education and employment opportunities: MSU. All employees, Murray State University supports a diverse and healthy campus. Please refrain from personal tobacco use.