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**Development of stress and anxiety
during the veterinary medicine education**

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Abstract

The field of veterinary medicine is accompanied by ongoing discoveries and an ever-growing knowledge which not many other fields possess. These unique qualities ensure that veterinary studies will always present unique challenges however in some cases, these obstacles may impact negatively on the mental health of students.

Aspiring veterinarians face a demanding curriculum, emotionally charged clinical experiences, and the responsibility of making critical decisions for animal welfare. This thesis aims to explore the factors contributing to the development of stress and anxiety in veterinary students and investigate the potential consequences of these mental health issues. By understanding the challenges faced by veterinary students and implementing supportive measures, we can foster a healthier and more resilient generation of veterinarians.

By delving into the current research that has been undertaken in veterinary colleges across the globe, certain stressors appear as a recurring theme. It is more than evident that due to the multifactorial aspect of veterinary medicine education, students often struggle to cope with the transition to college and from then on, the stressors accumulate as students progress through the years.

There are different elements of the college landscape that can be altered in order to alleviate but not eradicate certain stressors that veterinary students experience in college. By implementing changes to the veterinary education curriculum and culture, it is anticipated that colleges can cultivate veterinarians who are more resilient, experience reduced stress, and possess greater confidence.

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1. Introduction

1.1. Background and Problem Statement

Due to the comprehensive knowledge, technical skills and level of compassion required, the veterinary medicine education is a rigorous and extremely demanding pursuit. Veterinary school students often struggle to balance the various demands placed on them-personal, intrapersonal, interpersonal, and academic pressures, while also trying to obtain an ethical balance between human and animal interests. However, the process of acquiring this level of expertise directly exposes students to various stressors which can lead to the development of stress and anxiety. These stressful stimuli generate stressed reactions that can have a detrimental effect on psychological, emotional, and physical well-being and even academic performance[1]. According to a survey by Gallagher, this elevating pressure has led to the increase of college students experiencing psychological difficulties and most worryingly, the severity of these issues is increasing.[2]

1.2. Research Objectives

This thesis examines the factors causing anxiety and stress in veterinary students and explores the limited coping mechanisms utilised by students. An extensive literature review identifies key contributors to anxiety and stress in veterinary students. An exhaustive list of contributing factors could be compiled however the predominating factors include academic pressure, intensive workload, performance, familial expectations, challenging clinical experiences, extensive college timetable, high pressure, and a significant lack of effective coping mechanisms. This study examines the emotional, physical, and psychological consequences of prolonged stress and anxiety, with an emphasis on their potential impact on the overall well-being and academic performance of veterinary students.

1.3. Significance of the Study

This study recognises the importance of raising awareness and the elimination of stigma surrounding mental health issues in veterinary medicine education. This thesis ultimately assists in a better understanding of the development of stress and anxiety in veterinary medicine education. By prioritizing the well-being of veterinary medicine students, the findings of this study aim to foster a healthier and more resilient generation of veterinary professionals, enhancing their ability to provide high-quality care to animals while maintaining their own well-being.

2. Definition of Stress and Anxiety

2.1. Stress

Stress is a universal phenomenon, affecting individuals irrespective of gender, age, race, ethnicity, health, occupation, or socioeconomic status. On average, people encounter the stress response 50 times daily[3]. Stress is an inherent and natural aspect of life[4]. The stress response originally termed the ‘flight or fight response’ by Cannon[5], refers to the physiological and emotional alterations induced by stress hormones like adrenaline, noradrenaline, and cortisol in reaction to specific situational or event based stressors[3]. Stress can manifest in both positive and negative ways. The onset of stress is an adaptive temporary biological response (e.g., Increased breathing, heart rate, glycogen), however the failure to reach a state of homeostasis again can induce elevated hormone levels and lead to chronic stress[6]. The dangers of chronic stress include exacerbating physical and mental illnesses and can deplete the body’s immune system.[7]. Stress linked to positive events, known as ‘eustress’ enables us to respond effectively during regular circumstances. In contrast ‘distress’ tends to hinder our performance, generate health issues, elevate anxiety and depression levels, and diminish optimal efficiency[8]. Excessive stress can also contribute to or exacerbate various anxiety disorders. The DSM-IV-TR, a manual for diagnosing and treating mental disorders,[9] identifies 11 types of anxiety disorders, with some triggered by stress and others worsened by it[4].

Nonetheless, in scientific literature, anxiety and stress are frequently employed interchangeably, and a precise definition of stress remains elusive[10–13]. The concept of stress is essentially intricate, stemming from a mismatch between perceived demands and the perceived ability to cope[14]. Numerous research studies have demonstrated that a modest level of stress, often referred ‘arousal’ can enhance the learning process[15–20]. Conversely, elevated levels of stress or anxiety tend to diminish motivation and negatively affect memory and cognitive functions, as supported by several investigations[21–24].

Stress is multifaceted, encompassing emotions, behaviours, and physical manifestations that emerge from the interaction between an individual and their surroundings. It emerges when there is a disparity between perceived expectations and the perceived ability to manage them[25]. Stress can sometimes yield positive effects, enhancing students’ ability to respond effectively to challenges. However, when stress persists over an extended period, it can lead

to exhaustion, which invariably results in negative consequences. Consequently, it is crucial to identify stress-inducing factors during transitional phases, such as the commencement of university studies [26].

In the context of this study, a stressor is characterised as a life event or alteration that could potentially trigger or be linked to a mental disorder, such as an anxiety disorder or a depressive disorder[27].To illustrate, the loss of a loved one serves as an example of a stressor that could lead to an individual experiencing a major depressive episode. Depression, for the purpose of this study, is described as a state marked by diminished interest or pleasure in daily activities and may encompass alterations in appetite or weight, reduced energy levels, changes in sleep patterns, difficulty concentrating, and contemplation of suicide or self-harm[27].

2.2. Stress Triggers

The likelihood of experiencing a stress response is linked to various psychosocial triggers including significant life alterations [28], personal loss [29], inherent personality traits[30, 31]and lifestyle choices[32, 33].Additionally, exposure to trauma can elevate the potential for a stress response[34].Personal encounters with traumatic events, such as sexual assault or childhood abuse, can contribute to the development of post-traumatic stress disorder (PTSD)[35].Symptoms associated with PTSD encompass heightened vigilance, exaggerated responses to specific stimuli, and increased irritability[35].

2.3. Anxiety

Dorland's Illustrated Medical Dictionary defines anxiety as a complex emotional state characterized by feelings of unease, apprehension, or fear concerning future events. Alongside the subjective emotional aspect, individuals often experience physical symptoms stemming from muscular tension and the autonomic nervous system. These physical manifestations may encompass shortness of breath, sweating, dizziness, insomnia, palpitations, and loss of appetite[36]. This definition aligns closely with the descriptions of emotions like anxiety, which encompass various interrelated processes[35,36]. Among these, the most prominent are affective (feeling tense), physiologic (experiencing palpitations), cognitive(worrying), and motivational (desiring escape) processes. As a result, anxiety involves both physiological and psychological components.

Furthermore, a distinction exists between an individual's general predisposition to anxiety (referred to as trait anxiety) and the anxiety experienced in a specific, immediate situation

(referred to as state anxiety)[36–40]. The measurement of anxiety is not straightforward, and numerous questionnaires have been developed to capture its psychological or physiological aspects. Various physiological measurements have also been employed in attempts to gauge anxiety,[41–46] though no definitive marker has been identified. To comprehensively assess both the physiological and psychological facets of anxiety, a combination of methods is often utilized. For instance, Spielberger’s State-Trait Anxiety Inventory (STAI) is a well-established tool for evaluating the psychological aspect of anxiety, while the Cox and Kenardy Performance Anxiety Questionnaire (PAQ) focuses on physiological parameters[40, 47]. By integrating these questionnaires with a physiological indicator, such as heart rate, a more comprehensive understanding of anxiety can be obtained[48].

Several personal attributes contribute to the persistence of anxiety once it has emerged because of a stress response. These traits encompass avoidance behaviour, irrational beliefs concerning stress, anxious self-dialogue, a deficiency in self-care skills, and the inclination to interpret stress sources in a negative light (for example, viewing getting fired as a professional failure rather than an opportunity to secure a better job.)[49]. On the other hand, some individuals are adept at effectively managing stress, rendering them less susceptible to its adverse effects[30]. Stress-resilient individuals commonly exhibit traits such as a strong self-commitment, a sense of purpose, and an internal locus of control (an internal sense of control over their lives)[4].

3. The Veterinary Medicine Education Landscape

The veterinary medicine college education is a time of copious stresses and intensive training with a combination of heavy workload and a scarcity of free time[25]. Many studies have stated that stress in various forms in veterinary school is a common experience amongst students[25, 50–54]. This is predominantly due to how intense the curriculum is, however, academic pressure including examinations and the wait for exam results is also a major stressor while also the transition to less instructive and supportive teaching methods[55]. According to students in their first year, issues regarding the curriculum were ranked as the most important stress factor, the amount of lectures, the variation in assessments and the course requirements were all considered contributing factors[56]. Students who struggle to adapt their learning styles or fail to discover how to self-regulate[56,57] often become exhausted during the modules later on or lose motivation for their remaining studies.

It is claimed that, in particular, students of veterinary medicine, are susceptible to stress due to an overload of information, with a focus on the need for rote learning, and so students are at risk of burn-out as they grapple with the various expectations placed on them[59, 60]. Many studies have commented on the constant pressure on veterinary students due to enormous workloads and growing expectations, and the difficulties in dealing with the “human side” or emotional element of the veterinary profession[61]. Attempting to meet a balance between human and animal interests is an extra burden for veterinarians when compared to other professions[62].

In the context of time-related challenges observed in other studies[1, 63] it’s possible that the intensive nature of veterinary medical education, characterized by the need to accomplish a significant amount within a limited timeframe and reduced opportunities to spend time with family and friends, may lead veterinary students to resort to procrastination as a coping mechanism. Existing research indicates that as academic deadlines draw nearer, students who engage in procrastination tend to experience elevated stress levels and poorer overall health compared to those who effectively manage their time[64].

Assessing both the culture and the climate of the veterinary colleges is imperative when discussing the topic of stress in veterinary students due to three main issues[54]. First of all, veterinary education doesn’t occur merely in lecture halls or in the clinic or in labs; it happens also in college during the interactions among other students, staff, and other faculty every day[65]. Secondly, there is more of an emphasis on veterinary colleges to prepare

future veterinarians for the changing and diverse demands and requirements of the profession[66]. Finally due to the emotional element of the vet profession, evidence exists that veterinarians who feel more confident and comfortable displaying their “emotional” skills were students who previously discussed topics of emotional matter with their veterinary medical professors[67]. Therefore, curating a college climate that embraces and accepts stress as an inevitable factor of the veterinary medicine profession, instead of denying it, is of utmost importance when preparing students by validating, teaching, and imparting advice and lifelong resilience skills to stress[54].

New veterinary students encounter significant hurdles, which include grappling with unfamiliar subject matter, experiencing a temporary sense of not fitting in, and encountering friction or incongruity between their preferred learning methods and the perceived demands of their new educational setting[57, 68, 69]. These factors often lead to a disparity between students’ ideas of effective learning and the expectations embedded in veterinary education. The majority of veterinary students exhibit strong motivation, competitive spirits, and a tendency toward independent learning[68, 70, 71]. They typically appreciate educational approaches where instructors guide their learning, emphasize regular content recall assessments, and facilitate the acquisition of extensive and intricate knowledge[68]. In essence, students arrive at the university with a range of prior knowledge and study skills, presenting a challenge for higher education. It has been demonstrated that disparities in prior knowledge significantly impact the quality of learning and student accomplishments[72].

Veterinary education is an intensive professional training program that involves an extensive volume of knowledge derived from rapidly advancing and diversifying scientific research. Unlike their prior academic studies, which often focus on subjects like chemistry and physics required for entry exams, veterinary students encounter a distinct learning environment within the faculty[73]. Many veterinary courses take place in dissection or hospital facilities, exposing students to occasionally unpleasant sights, smells, and emotions. Consequently, some veterinary students may find themselves unprepared for certain aspects of their first-year courses which adds to the educational challenges they face[50]. Moreover, transitions into this demanding educational context can pose a risk to student’ self-esteem and overall well-being[58]. Recurrent stress is a common occurrence during the initial years of medical and veterinary training due to the sheer volume of information students are expected to absorb[74, 75]. Veterinary students are typically admitted based on their outstanding academic achievements, suggesting that they should be well-equipped to handle a rigorous

academic curriculum. Nevertheless, this assumption does not always hold true, as the program's challenges, combined with the pressure to excel, often create significant stress for a substantial number of students[56].

3.1. Stressors unique to veterinary students

Although stress is a universal phenomenon, students of veterinary medicine have alternative stressors varying from physical, emotional, social, or cognitive, temporary, or permanent or situational. Through understanding that stress is a common factor amongst veterinary students, professionals involved in the veterinary education can improve on recognizing the warning signs of distress and give better help to students to cope, or secure treatment for them to relieve their symptoms of stress[4]. Overload amongst students is common not only due to the surmounting material they're required to learn and remember, but also the pace at which this is expected. Veterinary students must learn about treatment and diagnosis of animals of many species, however, having little free time after class to absorb, read and reflect on notes taken or even for undertaking their own research or extra reading[4]. According to a study at Oregon State University students often classify struggling with time management and having deficits in their study skills, are major contributing factors to their stress[4]. Often students didn't realise these deficits existed until entering veterinary school, most likely because now the material is more demanding and ultimately, they have less time in their busy schedules to compensated for those deficits in their studying ability.

To learn how to diagnose animals involves the learning of how to detect, evaluate and further treat animal suffering. Like every skill in life this inevitably creates a major stress until the skills become refined, and students grow in confidence in their ability to address and treat animal pain[76]. Although the number has decreased, some colleges still use animals such as rabbits, chickens, and canines as experimental animals. Research has shown that this causes an increase in stress in both student and veterinarians[77]. The added burden of the animal right movement becomes another source of stress for students. Nowadays many animal rights activists are calling for the abolishment of research on all animals including animals used in the veterinary curriculum[78]. In the last 30 years society has altered their views on animals[79, 80] the pressures and need for animal rights are growing and cause an additional stress for veterinary students. After considering the degree of anthropomorphism reflected in these animal issues, students often considered it a higher stressor[81, 82]. The personal view of the student regarding the ethics surrounding the use of animals for teaching and research determine the level of stress experienced. In a survey of veterinary students, they

all reported experiencing distress and upset at reports of cruelty to animals[77, 83]. There is a considerable amount of variation in how veterinarians define 'abuse' and at what degree of abuse they would feel it necessary to intervene at, especially with regards to situations in which family violence may be involved [83]. According to these practicing veterinarians there is also a lack of resources to help prevent animal abuse amongst clients[83]. Until students have reached a sufficient level of understanding behind both the legal issues and ethical responsibilities regarding animal cruelty, they will likely experience an increased stress in response to these issues.

One of the unique and most challenging stressors amongst medical professions is dealing with death, veterinary students must learn to cope with the loss of pets. Distress is most common amongst women in this area[4].The cause of the death, whether it's by an illness or euthanasia, leads to common distress[84]. The ethical dilemma when euthanizing an animal absolutely exacerbates stress, while also the suffering inflicted on animals due to unnecessary procedures which is a matter regarding their social definition, shape their thoughts, opinions, and ambivalence about euthanasia in veterinary practice[85]. Delivering unfavourable news to clients emerges as one of the most particularly daunting challenge for these students. A study revealed that veterinarians, when surveyed, expressed that adhering to recommendations found in medical and veterinary literature made conveying bad news even more challenging. There were varying degrees of stress experienced when imparting such bad news, with differences evident in how each client reacts[86]. Moreover, students must also be adept at counselling and managing community issues that surface in veterinary practice[87].Until students become more capable of these skills, they are likely to experience heightened stress while dealing with these issues.

Veterinarians often find themselves navigating conflicting interests in the realm of veterinary medical ethics, as they strive to balance the welfare of animals with the concerns of humans [62]. It is not merely about addressing the overall needs of the animals; they also must adapt to the diverse expectations of their clients[88].Each pet owner has a unique perception of what role their pet has in the family unit[89].

4. Factors Contributing to Stress and Anxiety

4.1. Stressors

The journey of acquiring a veterinary medical education introduces various possible sources of stress for veterinary students, encompassing emotional, cognitive, physical, developmental, and interpersonal challenges[4]. Health science students face a range of specific stress factors that can be categorized into various areas. Within the academic domain, these stressors encompass a heavy workload, the necessity to acquire new study techniques, and the requirement to master unfamiliar skills like business management, client communication and advanced clinical skills[4, 90–93]. On a personal level, stressors may involve relocating and adjusting to new living arrangements, experiencing a loss of personal support networks and shifts in personal relationships, struggling with sleep deprivation, lacking emotional intelligence which in turn hampers the ability to manage personal conflict or crises effectively, feelings of homesickness and financial worries[4, 74, 93, 94].

Stressors can be classified based on various dimensions, such as their duration (acute, chronic, or intermittent), origin (single or multifactorial), temporal frame (past, present, or future), and intensity (mild, moderate, or severe)[95]. These dimensions significantly influence an individual's reactions and the level of stress they experience. Interestingly, research has shown that minor ongoing stressors or daily hassles can often lead to more psychological stress than life events[96].

According to McLennan et al. ongoing stress factors tended to impact most students [56]. These stressors can be classified into 4 groups: 1) Issues relating to the veterinary program (academic issues) 2) Issues relating to lifestyle/socializing 3) Issues relating to finances and work commitments 4) Other issues. While these stressors can be categorized into different groups there is noticeable overlap. For instance, the program's time demands, including frequent group presentations and assessments, often encroached on student's social lives. Additionally, many veterinary students hold part-time jobs to support their university expenses, which further strained their social life[56].

4.2. Academic pressure & workload

Academic stressors encompass factors like overwhelming course loads[97], unclear academic expectations[98], anxiety related to assessments and the need to acquire proficiency in various new skills[4], and ethical concerns regarding the use of animals in teaching[4]. Non-academic stressors may stem from past life experiences or trauma[4], unsatisfactory family or personal relationships, grief[51], concerns about personal health or

health of a family member [25], imposter syndrome (a phenomenon experienced by high achievers who struggle to recognize their own accomplishments and fear being exposed as frauds among their peers), [99] and personality traits or pre-existing mental health issues [4]. Furthermore, many veterinary students have previously excelled in their academic endeavours but when they enter a program with equally accomplished peers, they may not consistently achieve top grades which can contribute to stress [25]. These stressors often overlap, and their cumulative impact can have adverse effects on mental health.

According to a study of Murdoch University veterinary students, veterinary students indicated that academic stressors were significantly more frequently associated with feelings of stress compared to any other type of stressor [100]. Work-related stressors, while more common than environmental stressors, did not cause stress significantly more often than intrapersonal, interpersonal, or professional sources [100].

Kelman [1] stated that veterinary students at Colorado State University reported that time pressures on academic tasks, academic testing requirements, and the limited time available for social and recreational activities as the most stress-inducing aspects of their veterinary medicine education. It's worth noting that many veterinary students reported experiencing only moderate levels of stress. Factors that helped students manage stress included their social relationships with family, fellow vet students and faculty members. These factors were considered 'Protective Factors' [101]. The key contributors to high stress levels were a desire for personal autonomy and being in the second or third year of the academic program [1]. Kelman [1] also observed that students with "culturally conforming" and "highly sociable" personality traits tended to experience lower levels of stress. Elevated stress levels were associated with two types of students: those who, despite significant academic effort, still fell short in their academic performance, and those who, despite moderate effort, excelled academically but displayed anxiety as a predisposing personality trait [54].

In a study undertaken by Weston et. Al students overwhelmingly identified academic workload and assessments as the top stressors [101]. Workload issues encompassed factors like the substantial time spent in classes and the additional hours needing for practical sessions, reading, revision and lecture preparation. The vast amount of study material across various species posed a challenge, especially when students were uncertain about what constituted essential knowledge versus supplementary information. Extended hours posed a particular risk for fifth year students, who had added responsibilities related to patient care

and clinical rotations. While workload and assessments ranked highest among stress factors, concerns related to the academic program elicited diverse and specific responses[101]. Examples included, disjointed content in different courses, poorly organized courses, unclear learning objectives, assessment delays, inadequate feedback, lack of coordination among faculty members, unprepared teachers, and an excessive focus on mental health issues within the veterinary curriculum. Additionally, many student experiences with animals were seen as negative, such as the use of cadavers and non-recovery surgery practical classes[101].

The way teaching and assessment are structured can have a significant impact on students' motivation and mindset[102]. In a study published in 2010, which reviewed 128 papers investigating the influence of teaching and assessment methods on how students respond to setbacks and approach challenges, it was found that a strong emphasis on outperforming others resulted in "helpless" responses to setbacks[103]. Conversely, an emphasis on goal-driven learning led to "mastery" responses, particularly in school-aged children[103]. Performance-oriented assessment tend to foster a fixed mindset, while goal-oriented assessment promotes a growth mindset related to intelligence[104]. Some individuals believe they possess a fixed amount of intelligence (referred to as "fixed mindset"), and research has shown that people with fixed mindset tend to select activities that showcase their existing intelligence.

Some students also struggle with their time management skills. They find it challenging to allocate sufficient time for comprehensive study, reading materials and encompassing lecture notes[4]. Moreover, they encounter difficulties in reserving time for self-care activities that boost their energy like engaging in physical exercise, getting enough sleep, participating in social interactions, and maintaining a healthy diet[4]. The act of prioritizing and balancing their various roles as veterinary students also poses a significant challenge. When they neglect certain roles, such as student, employee, friend, parent, partner/spouse, volunteer or home maintenance provider (e.g., cooking, cleaning), their stress levels tend to rise in the areas they are neglecting[105]. Recognizing the importance of multi-role planning is crucial in time management workshops for veterinary students, as it can help reduce stress levels throughout their veterinary education journey.

4.3. Rising Perfectionism

According to a study by Curran and Hill perfectionism is rising over time[106].The study suggests that recent generations of college students seem to be imposing more rigorous and unrealistic standards on those around them compared to previous generations. Increases in narcissism, dismissive attachment and assertiveness have also been noted over a similar time frame[107–109]. In light of this data, and other meta-analytic evidence[106, 110, 111],the observed rise in perfectionism may contribute to the increase in mental health problems. Perfectionism is a core vulnerability factor associated with various disorders, symptoms, and syndromes[112]. This is partly because perfectionists have an excessive need for approval from others, yet they often feel socially disconnected, which makes them susceptible to significant psychological distress[113].Overall, this study found that different types of perfectionism such as self-oriented perfectionism, socially prescribed perfectionism and other -oriented perfectionism have all increased over the past 27 years[106]. This increase may be attributed to the overall shift towards more individualistic, socially competitive cultures and more individualistic cultures in Britain, Canada, and America. Young people today are facing unrealistic expectations, more competitive environments, and more controlling and anxiety-inducing parenting compared to previous generations[106].

4.4. Transitional stress

Veterinary medical school represents a crucial period of transformation and development, which can be quite demanding for students[114]. For some students, gaining greater independence from their parents intensifies the challenges of securing financial or housing support. Navigating these changes requires students to establish new support networks, which, while serving as a welcome distraction from stress, can also consume valuable study time[4].Consequently, for some students, robust support systems are linked to diminished academic performance. In contrast those lacking such support find themselves less resilient in the face of stress[4]. Tutton[115]suggests that educators should aid at-risk students in honing their time management skills to effectively balance their roles as friends, partners and students. Interestingly regarding first year students, homesickness and apprehensions regarding academic performance are prominent factors that foretell a student's early semester struggle[116]. When considering first-semester stressors as the sole predictors of academic challenges, students who express homesickness or exhibit concerns about their academic performance, are almost three times more likely to be classified as struggling compared to their counterparts who do not share these concerns[116].

4.5. Different Learning Styles

Our individual personality traits play a pivotal role in shaping both our approaches to learning and our workplace behaviour patterns[4]. One tool, known as the Myers-Briggs Type Indicator (MTBI)[117] assesses how we process, evaluate, gather, prioritise and decide on information. Each veterinary student possesses a unique personality style, which comes with its own set of strengths and weaknesses when it comes to clinical scenarios, various learning methods, and teaching styles. The complexity of learning styles is further compounded by the fact that the distinct teaching styles of veterinary educators are influenced by their personalities. The interplay between diverse student learning styles and faculty teaching styles can contribute to heightened student stress levels[4]. According to a study at Oregon State University[4], students encounter challenges with their study techniques upon entering the veterinary medical program. Common issues described by students include difficulty distinguishing between major and minor points, struggles with taking clear lecture notes that require minimal revisions, slow reading pace, and a lack of strategies for retaining important content[4].

4.6. Financial Pressure

Concerns about financial pressures often overlapped with worries about heavy workloads. Many students found it challenging to secure short-term employment during semester breaks due to practical work placements[101]. These students were particularly troubled by the costs associated with veterinary education, especially when weighted against the expected starting salary. Additionally, they didn't anticipate certain incidental expenses, such as those related to maintaining a more professional appearance during clinical rotations. Some risk factors unique to individual students financial habits included personality traits like perfectionism, low self-confidence, or competitiveness[101]. Strand et al. found that the percentage of a student's annual income derived from loans was linked to their sense of role definition and levels of hostility[54].

4.7. Relationship Strain

In a study conducted by Kogan et. Al [53], participants were surveyed regarding the influence of relationship difficulties on their academic performance over the past 12 months. Among them, 116 students (50.7%) indicated that relationship issues had not affected their academic performance. A total of 79 students (34.5%) reported experiencing relationship difficulties but stated that it had no impact on their academics. Additionally, 26 students (11.4%) mentioned receiving a lower grade on an assignment due to relationship issues,

while 7 students (3.1%) reported receiving a lower grade in a class, and one student (0.4%) mentioned having to take an incomplete or drop a course because of such difficulties. Gender and program year did not yield any statistically significant differences in these responses [53]. The study also assessed concerns about friends and family and how these concerns affected academic performance. A minority of students 63 (27.3%) reported not having concerns in this regard, while 133 students (57.6%) expressed concerns about family and friends but believed that these concerns did not impact their academic performance. Conversely 29 students (12.6%) reported that these concerns led to a lower grade on an assignment, 5 students (2.2%) reported a lower grade in a course, and 1 student (0.4%) mentioned having to take an incomplete or drop a course due to these concerns[53].

4.8. Limited Coping Mechanisms

Efforts to manage or address stressful situations are commonly referred to as coping mechanisms, encompassing various approaches related to the environment, behaviour, physical well-being, emotions, spirituality, and cognition[118–121]. In broad terms, coping strategies can be categorized into two main functions: problem-focused and emotion-focused, although they often intersect. Problem-focused coping involves acquiring information and taking actions to modify the actual circumstances of a situation, either through self-directed actions or changes in the environment[100]. In contrast, emotion-focused coping aims to regulate the emotions associated with the stressful situation without necessarily altering the objective reality of the situation[122].

These coping strategies play a pivotal role in determining both physical and emotional well-being and serve as crucial intermediary factors between stress and health outcomes[11]. Students employ a wide range of coping strategies, some of which can potentially compromise their functioning and lead to significant negative consequences[118]. Coping mechanisms are deemed adaptive when they effectively reduce stress and promote long-term benefits[100]. Conversely, maladaptive coping may temporarily alleviate stress (e.g., through alcohol or drug use or social withdrawal) but pose risks to physical and psychological health over time[123]. Effective coping typically leads to a reduction in perceived stress levels, while ineffective coping is associated with heightened stress levels[122]. Individual factors play a significant role in shaping a person's coping response to stressors. These factors include one's health and energy level, problem-solving abilities, social skills, access to social support, level of intelligence, education, access

to the material resources needed for taking action, and cognitive thinking style, such as optimism or pessimism[11, 122].

Research on the stress experienced by college students and the different coping methods between gender detailed the five coping responses[124]. The 5-factor revised COPE model is derived from an updated version of the COPE inventory[125]. The five coping responses include self-help, accommodation, approach, avoidance, and self-punishment. These coping responses aim to: (1) promote self-help by maintaining emotional well-being, (2) address stress by employing problem-solving strategies, (3) accommodate stress by accepting and reframing negative outcomes, (4) avoid stress by denying and attributing blame to others, and (5) engage in self-punishment through self-focused rumination and self-blame. Research by Zuckerman and Gagne indicated that self-help, approach, and accommodation were associated with more positive outcomes, such as beliefs in realistic control and the pursuit of mastery goals for academic performance[126]. Conversely, avoidance and self-punishment coping strategies among college students were linked to more negative outcomes, including self-harming and depression. Consequently, self-help, approach, and accommodation were identified as adaptive coping responses, whereas avoidance and self-punishment were identified as maladaptive coping strategies. Additionally, Zuckerman and Gagne found that college women were more inclined to utilize adaptive strategies like self-help, approach, and accommodation when dealing with stress compared to college men[126].

The findings of the study by Brougham et. Al clearly indicates that emotion-focused coping strategies were more prevalent among both college women and men compared to problem-solving strategies[124]. Previous research has suggested that college students' proficiency in effective communication and emotion regulation plays a role in sustaining relationships and mitigating stress[127]. Positive interactions within family relationships, including social support and opportunities for autonomy, have also been shown to enhance college students' ability to manage stress[128]. Consequently, providing opportunities to enhance emotional processing and emotion regulation among college students should lead to reduced stress levels and a greater utilization of adaptive coping strategies[124].

4.8. Gender Differences

The connection between gender, the perception of stress, and the utilization of coping strategies remains a topic of ongoing debate. Previous studies have indicated that female college students often report experiencing more stress than their male counterparts[129–133]. While there is substantial support for gender differences in how college students assess stress, empirical evidence regarding the specific stressors that contribute to and sustain stress levels has been inconsistent. For instance, Misra et al. [134] discovered that female college students reported higher stress levels than males in certain areas, such as frustration, self-imposed stress, and academic pressure. On the other hand, Dyson and Renk [135] did not find any gender differences in reported stress levels among college students when it came to stressors related to college and family. Thus, prior research has identified gender disparities in reported stress levels among college students, but it has not provided conclusive evidence regarding the specific stressors involved.

Within the 2017 study by Killinger et al.[6] on stress and depression it was observed that women exhibited higher baseline stress levels in the first year and consistently reported higher stress levels (51%) throughout their four years in veterinary medical school, in line with existing literature on professional students[136–138]. A recent comprehensive study involving over 90,000 college students similarly found that a greater proportion of women (46%) compared to men (37%) reported experiencing "more than average stress"[139]. Furthermore, when assessing stress longitudinally, it was found that female students had a higher average distress score compared to their male counterparts both upon entry into medical school and after completing the first year[140]. Consequently, it appears that veterinary medical students, especially females, undergo heightened levels of stress, a trend that aligns with the experiences of college students and professional students in general[6]. Interestingly as another aspect of the gender disparity debate, research consistently indicates that women are more inclined to seek assistance for emotional issues[141] and exhibit more favourable attitudes toward counselling compared to men[142]. One contributing factor to this gender difference may be that men perceive a higher level of stigma associated with seeking help. Society often views counselling as a last resort, a step to be taken only when all other forms of support have failed[143]. These attitudes may be particularly relevant to men, who are culturally expected to embody traits such as stoicism, self-control, and self-sufficiency[144]. This is supported by the fact that adults are more willing to recommend counselling for female adolescents rather than males[145]. Consequently, men may perceive

a form of public stigma associated with seeking help[146]and may fear being stigmatized for discussing certain issues with a counsellor[147].

Moreover, the traditional male gender role's emphasis on independence and control can heighten concerns about the loss of self-esteem linked to seeking help. This may involve acknowledging an inability to handle challenges independently[148]. Consequently, if a man believes he requires counselling, he might experience a heightened sense of failure, making the act of seeking help particularly challenging. In line with this, research has found that men tend to experience greater self-stigma than women when it comes to seeking help in college settings[149].

Some experts, like Braiker [146], have proposed that many women tend to set exceptionally high standards of excellence and place excessive pressure on themselves to excel in their careers. These internal expectations have been linked to an increased vulnerability to psychological distress and physical health issues[147]. Furthermore, unrealistic academic or career aspirations can contribute to an imbalanced lifestyle, potentially resulting in physical and emotional exhaustion, depression, and even addiction[150].Recent research has confirmed that female veterinary students exhibit a similar tendency, often holding themselves to higher standards than their male peers[151].

4.9. Year Groups

Research suggests that veterinary medical students undergo a growing level of psychological distress, encompassing stress, anxiety, and depression symptoms over the course of their four-year academic training[92].The concept of attitude posture, also referred to as the achievement ethic, posits that one contributing factor to the experience of stress is the inability to savour accomplishments and instead constantly looking towards the next goal, hoping that achieving it will make life better. This sensation can be likened to being caught in a "rat race" [54]. Among first-year veterinary students, the likelihood of not being able to enjoy their achievements was most pronounced[54]. Subsequently, with each successive class, there was an increasing capacity to appreciate the results of their efforts. The fourth-year class, having completed their initial three years, exhibited a greater ability to embrace healthier thought patterns that countered stress[54]. They focused on past accomplishments to gather energy and confidence for facing new challenges[54].

Moreover, students in the later years of the curriculum demonstrated healthier attitudes and behaviours more frequently than those just entering veterinary professional education[54]. Since adopting healthy habits like regular exercise, proper nutrition, adequate sleep, and

avoiding detrimental behaviours such as smoking, drug use, and excessive alcohol consumption are recognized strategies for managing stress, there is a clear indication for efforts to promote these behaviours among first-year students as part of stress management training. In comparison to stress, the patterns of anxiety and depression scores showed variations among different cohorts[51]. Depression scores consistently increased from the first-year cohort to the third-year cohort, with first-year students exhibiting the lowest levels of depression symptoms, second-year students reporting higher levels compared to first-year students, and third-year students experiencing the highest levels of depression symptoms [92]. Fourth-year students, however, demonstrated reduced levels of depression symptoms, nearly on par with first-year students[92]. Anxiety scores displayed a similar trajectory, remaining elevated throughout the entire program, reaching their peak during the second and third years[92].

4.10. Stigma and other Barriers to seeking help

Numerous studies conducted in both Europe and North America also point to an increasing prevalence of health-related issues among students; however, these students often refrain from utilizing professional health services[149, 152]. When attempting to elucidate why students avoid seeking help for their reported problems, researchers commonly attribute their decisions to perceptions (or misperceptions) about their own health status and unfavourable attitudes towards health matters.

These perceptions of health problems have been linked to traits such as self-reliance and reluctance to disclose personal issues, concerns related to stigma and embarrassment, a hesitancy to express emotions openly, difficulties in discussing health problems, and a lack of trust in mental health professionals[153]. Furthermore, passive problem-solving approaches, introspective attitudes, or feelings of limited control are believed to exert a negative influence on students' willingness to seek help[154]. The stigma related to seeking counselling services encompasses concerns such as the fear of being perceived as mentally unstable and resulting in a premature ending of treatment. Stigma is defined as a mark or flaw resulting from personal or physical characteristics that are deemed socially unacceptable [155]. Specifically, the "stigma associated with seeking mental health services refers to the perception that individuals who seek psychological treatment are seen as undesirable or socially unacceptable" [156].

According to a 2012 report on the psychological services for US and international veterinary students, students tend to form health-related identities that align with prevailing social

values and expectations, placing a high premium on qualities such as competence, self-sufficiency, and academic individualism[157]. Consequently, constructing a health identity grounded in the opposition to and resistance of illness establishes expectations and perceptions that do not facilitate the inclination to seek professional help[157]. This report also claimed that students may construct a health identity that reinforces their affiliation with their peer group. In situations where confusion regarding social status and identity predominates, health issues may become linked to the establishment and maintenance of a sense of belonging[157].

Chew-Graham et al.[158] conducted interviews with medical students to gain insights into the obstacles hindering their access to mental health assistance. Apart from scheduling conflicts, many students expressed apprehension about the perceived stigma associated with mental health issues and seeking help. Some students discussed their fears of being seen as weak by their peers or faculty[158]. Veterinary students, who also contend with a multitude of commitments and rigorous schedules, face similar challenges in accessing services during standard working hours[53].

In some reports, the majority of students were aware of the availability of general university counselling services, but very few actually utilized these services[56]. This reluctance could stem from challenges in securing appointments, concerns about privacy, or perhaps simply a hesitation to engage with a service perceived as being somewhat detached from the veterinary school. Additionally, some students might have been unwilling to accept the potential benefits offered by these services[56].

4.11. Mindset

Research has indicated that individuals' perceptions of their own intelligence vary widely, with some holding a belief in fixed intelligence (referred to as a "fixed mindset") and others viewing their intelligence as flexible and adaptable (referred to as a "growth mindset")[104]. Individuals with a fixed mindset tend to choose activities that showcase their existing intelligence, opting for tasks they are already proficient at to bolster their self-esteem. They tend to avoid challenges that might cast doubt on their intelligence. When faced with setbacks, this group often responds with a sense of helplessness, interpreting a negative outcome as a reflection of their overall identity[102]. For instance, after encountering a failed assessment, receiving unfavourable feedback, or experiencing an adverse outcome during a clinical procedure, a student or veterinary surgeon with a fixed mindset might consider giving up on that particular aspect (e.g., "I can't perform certain surgical procedures") or

even contemplate leaving the profession altogether, perceiving one failure as a reflection of their entire competence as a veterinarian[159].

Prior research has also highlighted that one's mindset about intelligence is shaped by the type of praise received from parents and teachers, as well as the methods used to evaluate young individuals[102]. Children who have grown up being consistently told that they are gifted, intelligent, or special, often those identified as high achievers in school, tend to hold a fixed mindset and are actually more susceptible to setbacks[102]. This vulnerability is particularly pronounced among high-achieving girls[159, 160]. A study, which explores the link between mindset and psychological well-being in veterinary students, has revealed that veterinary undergraduates who hold a fixed mindset regarding their intelligence experience notably lower levels of psychological well-being compared to those with a growth mindset[102]. Therefore, the individual's mindset can determine how they respond and cope with such stressors when undertaking a veterinary degree.

4.12. Characteristics of a veterinary student.

To date, there is no verifiable research suggesting that individuals who opt for a career in veterinary medicine and gain admission to veterinary schools have an inherent predisposition to suicidal behaviour due to their personality or behavioural traits. However, there are shared characteristics observed among prospective veterinary medical students that are believed to contribute to their susceptibility to mental health challenges[161]. One key factor is the exceptional academic aptitude of veterinary medical students[49, 115]. It is theorized that veterinary medical students, similar to their peers in highly competitive academic programs, might be more vulnerable to mental health issues when they are surrounded by other high-achieving students[162, 163]. As students find themselves in increasingly academically homogeneous environments compared to their undergraduate experiences, they may experience heightened anxiety about their ability to excel[163]. High-achieving students may tie their self-esteem to their academic performance feedback. Consequently, discovering that their academic achievement is below the class average for the first time can be particularly distressing for a student during their veterinary education[74].

It has been proposed that various professions may attract individuals with varying susceptibilities to mental health issues, and the undergraduate experience could potentially worsen these problems[161, 162]. It remains uncertain whether there is a high prevalence of pre-existing mental health conditions or susceptibility to psychiatry issues among individuals entering veterinary training, or if these issues develop later. Studies conducted

in the USA and Australia have revealed elevated levels of perceived stress, time pressure, and depression among veterinary students compared to the general population[51, 54] as well as higher education students in general and medical students in particular[51].

In a 2017 study exploring the link between mindset and psychological well-being of veterinary students, approximately half of the respondents reported experiencing some of these mental health challenges even before they commenced their training, and there was no evidence of a decline in well-being over the course of the 5-year program[102]. This suggests that many of these issues could be related to the attributes or characteristics of individuals entering veterinary surgeon training[97]. The findings from these studies imply that factors affecting mental health prior to students entering a university program may be significant and warrant further investigation. Additionally, these results pose the contentious question of whether it is advisable to screen for mental health issues during our admissions process[164, 165].

Evidence from a medical school in Australia has established a connection between dysfunctional tendencies at admission and the likelihood of not successfully completing the program[102, 166]. In this study involving Australian medical students, most students registered a high score on at least one of four dysfunctional syndromes[166] such as mental illness, with more extreme scores expected to negatively impact teamwork, decisiveness, interpersonal skills, academic performance, and emotional resilience[166]. Identifying modifiable factors that contribute to mental health issues in veterinary students and professionals is crucial. This information can inform student selection processes and guide the development of pastoral support and emotional skills training[53].

4.13. Other Stressors

Beyond the rigorous academic demands and time pressures associated with veterinary medical education, other aspects of the curriculum were also considered challenging. Herzog, Vore and New[106] conducted ethnographic interviews with 24 graduating veterinary students to explore their attitudes and ethical concerns regarding animals. They expected that veterinary students would become desensitized to the ethical issues related to caring for and euthanizing animals, but this was not the case. Many students continued to experience “morally troublesome” or “viscerally upsetting” stress in relation to medical procedures on animals that they perceived as medically unnecessary. Students also felt this stress when owners chose to euthanize seemingly healthy animals. The demands on their time,

constant evaluation, the moral stress and lack of sleep associated with veterinary ethical dilemmas were all challenges faced by veterinary medical students. These similar stressors persist into the professional lives of practicing veterinarians[54].

Several novel demographic factors were linked to distinct stress experiences, adding to our understanding of stress among veterinary students. Notably, years of prior animal-related experience, the number of animal companions and the proportion of student income derived from loans, were associated with various stress indicators[54]. For instance, veterinary students with more extensive animal-related experience often indicated lower satisfaction with their current educational environment. These seasoned individuals, who had returned to school, were more inclined to focus on achieving their next milestone as a means of seeking satisfaction, rather than fully appreciating the current environment[54]. This may be attributed to the fact that students with more prior experience in animal care within a medical setting find the didactic nature of the veterinary academic curriculum challenging and tend to concentrate on their next academic goal in their journey towards becoming veterinary professionals.

5. Consequences of prolonged stress & anxiety in Veterinary Medicine Education

Stress can have a significant impact on an individual's social, physiological, and psychological health. This means that stress can affect not only the body but also how a person interacts with others and their mental well-being [100]. Stressful reactions may manifest as emotional or psychological responses like anger, hostility, depression, and anxiety disorders[11, 100, 167]. They can also lead to physical issues such as sleep disturbances and fatigue, headaches, and eating disorders[168, 169]. These stress related responses can also lead to cognitive and behavioural challenges, impacting one's work or academic performance,[100, 170, 171] potentially leading to substance use[172], and causing issues in interpersonal relationships[100] even leading to social withdrawal[173].

5.1. Psychological Consequences

Research findings show that depression and anxiety symptoms are common among veterinary students, with a higher susceptibility to depressive symptoms compared to the general population and students pursuing human medical degrees[50,53,73]. A study involving 93 first-year veterinary students found that 32% experienced clinical-level depressive symptoms[51]. Several factors, including homesickness, unclear expectations, and physical health issues, are associated with depression and anxiety among veterinary students[51]. Significant mental health challenges often emerge during veterinary school, possibly leading to mental health issues among veterinarians, including the risk of veterinary suicide[74]. A recent controlled twin study established a causal link between stress and depression, with some individuals being more predisposed to developing depressive symptoms following stressful life events[174]. Ongoing research aims to identify these predisposing factors[116, 174, 175].

The severity and duration of stressful life events are positively correlated with the development of depression[176]. Chronic stressors such as job-related stress or academic stress, are linked to persistent depressive symptoms[174,177,178]. Elevated depression scores in veterinary students can be predicted by factors such as perceived physical health, a demanding workload, social integration challenges, unclear expectations from professors, and homesickness[51]. Similarly for anxiety among veterinary students, significant predictors include difficulty fitting in, perceived physical health, heavy workload, and unclear expectations from professors[51].

A study of US veterinary students regarding non-academic stressors found that a substantial number of students reported feeling overwhelmed by depression, hindering their ability to function. A small percentage had contemplated suicide[53]. These findings highlight the importance of addressing mental health challenges in veterinary education and practice.

5.2. Resulting prevalence of mental health issues in vet students

Research from various countries, including the US[50,52,53,91,115], New Zealand[179], the Netherlands[180], the UK[97], and Australia[100], consistently shows that veterinary medical students experience high levels of distress. Notably, depression symptoms often reach clinical levels, affecting a significant proportion of students, ranging from 32% to 69% in various studies[51] [74]. These rates far exceed those observed among human medical students (23%)[181], undergraduate students (23.7%)[182], and the general population (21.5%) [183]. Veterinary medical students commonly experience anxiety, subjective stress, and overall distress throughout their training, as indicated by multiple studies in different countries[51, 54, 92, 183]. A study in the US found that one-third of veterinary medical students surveyed in their first and second semesters reported depression levels exceeding the clinical threshold[116]. About 15% of students exhibited an increase in depression by at least one standard deviation, with the proportion of students experiencing significant depressive symptoms remaining stable[116]. Students categorized as "struggling" had more instances of homesickness and academic concerns during the first semester, along with difficulties in social integration with peers and a poorer perception of their physical health during the second semester. This study helped identify students at a higher risk of developing or sustaining concerning depression scores[116] which is vital for the future of admissions.

5.3. Emotional Consequences

Stress is linked to factors related to anger[184], with passive individuals struggling to express their needs effectively and aggressive individuals hindering cooperation with others[4]. In a 2005 study on veterinary students and non-academic stressors, questions about feelings of hopelessness and sadness were addressed[53]. While most students surveyed did not report experiencing hopelessness, a notable proportion felt this way between six and ten times. Regarding feelings of intense sadness, most students felt sad five times or less, but a significant number experienced intense sadness more than ten times in the past year, with no significant gender or academic year differences[53]. The academic workload's impact on physical exercise (i.e reducing exercise time) led to concerns about body image and low self-esteem among students. Nearly half of the students considered

themselves overweight, with many actively trying to lose weight due to negative body image[53]. Research by Gardner and Parkinson revealed that veterinary medical students with higher self-esteem experienced less stress during their time in veterinary school[179]. Self-esteem, a stable global self-evaluation, can be influenced by personal experiences[74, 185, 186]. Negative experiences related to academics, like in medical training, can impact overall self-esteem, making it especially important for veterinary students given the significance of their educational experiences[114, 187].

5.4. Physical Consequences

There is a significant link between students' distress and their physical health[188]. Students reporting poorer physical health experience higher levels of distress, life dissatisfaction, anxiety, depression, and social role conflict compared to those with better physical health[188]. The demands of veterinary training can disrupt students' diet, sleep patterns, and self-care practices, affecting both their physical and emotional well-being.

Stress can manifest physically through symptoms like headaches, skin rashes, disrupted sleep patterns, digestive issues, and muscle tension[4]. It can lead to behavioural changes such as performance difficulties, social withdrawal, procrastination, and increased use of smoking or alcohol. Cognitive symptoms include memory problems, difficulty focusing, and heightened worry. Emotionally, stress can result in restlessness, irritability, and a short temper. Long-term stress is a known causative factor for heart disease and stroke[3]. While fully developed exhaustion syndrome is not commonly expected in younger populations, chronic stress can lead to immediate effects, including trouble settling in[189], depression[190,191], and higher diastolic blood pressure[192, 193]among adolescents[194]. However, limited attention has been given to how chronic stress may influence critical aspects of life, such as academic achievement among adolescents[195].

5.5. Implications for Academic performance and well-being

5.5.1. Academic Performance

The psychological well-being of students significantly impacts their academic success[53], with personal issues contributing to a substantial portion of the dropout rate among medical school students[196]. Stress hampers students' focus, attention, and decision-making abilities[1], making emotional factors potentially more critical than intellectual ones in determining success in medical education[197]. Effective stress management is essential for training future medical professionals[53, 198]. There is a negative correlation between academic stress and GPA, affecting both students' perceived academic performance and

quantifiable academic indicators like GPA[74]. Family-health-related stress also influences objective academic performance, highlighting the need for support for students facing bereavement or family illnesses during the semester[199]. Stress often leads to symptoms like decision-making difficulties[25], particularly among first-year students, manifesting as challenges in time management and exam preparation[26]. Educational institutions have recognized the detrimental impact of the stress response on learning and achievement for over two decades[196]. Stress is a common factor for veterinary students and practicing veterinarians[4], driven by various pressures, including managing a veterinary business, client interactions, colleague conflicts, long work hours, and emotional toll. Veterinary students encounter similar challenges during their education[4], underscoring the importance of instilling resilience-building skills to manage stress and navigate their future career responsibilities effectively. The physical consequences of stress are intricately tied to academic performance, potentially creating a detrimental cycle where health problems and academic duties reinforce each other[200].

5.5.2. Well-being

Psychological distress and ineffective coping mechanisms can significantly affect individuals' well-being and performance, leading to issues like depression, irritability, memory decline, concentration problems, and decision-making difficulties[53]. Some students employ maladaptive coping methods that may harm their physical and psychological health and hinder their program performance[100]. Addressing these risks and offering alternative strategies for managing anxiety and negative emotions is essential. Medical and veterinary students face a heightened risk of suicide, with suicide rates among physicians and veterinarians exceeding those of the general population[161, 201]. Veterinary professionals have one of the highest proportional mortality rates for suicide[202–204]. Unfortunately, barriers often prevent students from accessing appropriate treatment, leading some to turn to negative coping mechanisms[100]. The observed correlation between academic stress and perceived overall health aligns with previous research indicating a decline in physical health among high-stress student populations, particularly during transitional periods[129, 205]. This highlights the importance of considering overall health, including physical well-being, in orientation information provided to new veterinary students[74].

6. Conclusion

Undertaking a veterinary medicine degree is a rigorous endeavour. From day 1 students are bombarded with terms they have never heard of and a copious amount of information they are expected to learn. Veterinary medical students must attain proficiency in various disciplines, including anatomy, physiology, pharmacology, pathology, and medicine, across multiple species. Moreover, they must navigate specialized areas such as behaviour, welfare, practice management, and veterinary law, with the knowledge base continuously expanding each year.

The extensive learning requirements in veterinary school can lead even the most academically inclined students to fear failure. Many students feel overwhelmed by the volume of information, causing them to question their admission to veterinary school. In an attempt to cope, students often sacrifice personal aspects of their lives, leading to an unbalanced lifestyle and emotional isolation. This imbalance can contribute to issues like depression and substance abuse, as mentioned previously[150]. Veterinary students must learn how to maintain a healthy lifestyle while coping with both academic and non-academic stressors. However, students often fail to obtain a healthy balance, often resulting in spreading themselves thin. Many students' express feelings of being overwhelmed, exhausted and depressed. To protect their psychological well-being students often sacrifice their physical well-being however as I discussed in my consequences, it is difficult to maintain a psychological health without a good physical health.

The ability to cope with stress is crucial for veterinary students, but there is a growing concern about the resilience of the newer generation. This generation expects regular positive feedback, prioritizes their own needs, and displays self-assuredness[101]. Changing parenting styles may have contributed to their stress management capabilities[102]. Colleges must adapt to this "less-resilient" generation by providing academic and psychological support. Colleges need to implement measures that not only alleviate stressors but also teach stress coping strategies that students can carry into their veterinary careers. Addressing the unique stressors faced by veterinary students can contribute to a healthier and more resilient future generation of veterinarians.

In a profession where mental health is a prevalent concern, universities must provide support and adequately prepare students for the daily stressors they will encounter. Collaboration between veterinary schools and practicing veterinarians is essential to nurture a more resilient, capable, and happier cohort of professionals.

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Thesis progress report for veterinary students

Name of student: Aisling Lily Hughes

Neptun code of the student: WZ6M8F

Name and title of the supervisor: Istvan Toth, Associate professor

Department: Department of Physiology of Biochemistry

Thesis title: Development of stress & anxiety during the veterinary medicine education

Consultation – 1st semester

Timing				Topic / Remarks of the supervisor	Signature of the supervisor
	year	month	day		
1.	2023	02	15	The importance of the thesis and consultation; Overview of semester assignments; Preparation and signing of necessary documents	
2.	2023	03	15	Scientific search engines and their use; Critical thinking: how to interpret the information read in the article	
3.	2023	04	18	Preparing your first draft	
4.	2023	05	18	Interpretation and management of scientific citations; Learning the citation handling program	
5.	203	06	30	By the end of the semester, structure of the thesis and foundations of each chapter are complete	

Grade achieved at the end of the first semester: 5

Consultation – 2nd semester

Timing				Topic / Remarks of the supervisor	Signature of the supervisor
	year	month	day		
1.	2023	09	10	Evaluation of the current version prepared during summer	



2.	2023	09	30	Incorporation of the supervisor's suggestions, and evaluation of final text cohesion	Tok G
3.	2023	10	15	Insertion of final figures and figure captions; review and final update of references, bibliography	Tok G
4.	2023	10	30	Final check: Detection and correction of possible errors	Tok G
5.	2023	11	06	Generate a PDF and review the final PDF before uploading	Tok G

Grade achieved at the end of the second semester: 5

The thesis meets the requirements of the Study and Examination Rules of the University and the Guide to Thesis Writing.

I accept the thesis and found suitable to defence,

.....
signature of the supervisor

Signature of the student: Aisling Hughes.....

Signature of the secretary of the department: [Signature].....

Date of handing the thesis in... 2023.11.13.....