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International comparative study on suicidal tendency among veterinarians

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Budapest

2022

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List of abbreviations

WHO	World Health Organization
PMR	Proportional Mortality Ratio
USA	United States of America
AVMA	American Veterinary Medicine Association
UK	United Kingdom
RR	Relative Risk
BVA	British Veterinary Association
MBI	Maslach Burnout Inventory
HADS	Hospital Anxiety and Depression Scale
ProQOL	Professional Quality of Life Scale
CD-RISC	Connor-Davidson Resilience Scale
PHQ-9	Patient Health Questionnaire-9
SBQ-R	Suicide Behaviors Questionnaire Reserved
BLS	Bureau of Labor Statistics
CFSS	Compassion Fatigue Short Scale
RCVS	Royal College of Veterinary Surgeons
AAS	American Association of Suicidology
SVF	Swedish Veterinary Association

1. Introduction

The World Health Organization (WHO) states in their latest's estimates that globally 1 in every 100 deaths is caused by suicide [1]. Certain occupations have been linked to be hazardous for suicide, especially medically related profession [2]. Suicide in veterinarians is double that of any other medical profession and four times that of the general population [3]. Areas in the veterinary field that can be potential occupational stressors are: working hours, workload, financial issues, client demands/expectations, work-life balance, area of work, euthanasia, professional support, job satisfaction, general work-related stress to name a few [3]. With increased stressors comes increased risk of suicide in veterinarians. This study will further explore the topic of suicide in the veterinary community and the occupational hazards that puts veterinary medical professionals at risk.

The aim of the present study is to examine the prevalence of suicidal ideation and suicidal tendencies among veterinarians in Hungary, Finland, Sweden, Germany, and other Nordic countries (including Denmark, Estonia, and Norway). The study will also determine what veterinarians in each country consider to be the contributing factors to suicidal ideation, i.e. what are the most common reasons for suicidal ideation. The research focuses on the participants' own assessment of the impact of suicide on the veterinary profession, which were evaluated using statistical methods and retrieved through an online questionnaire survey. Responses are mainly compared across countries to see to what extent they are similar or even different. In addition, I also sought to find out how other influencing factors such as age, gender, number of hours worked per week, job position (managerial/non-managerial) and length of annual leave affect the development of suicidal ideation among veterinarians. This study will allow me to assess how the responding veterinarians compare with veterinarians in Europe and outside Europe in terms of occupational stress factors associated with the profession.

2. Literature Review

2.1. Suicidality among veterinarians

As the topic of suicide garners interest worldwide, so has the amount of research being done on the topic. In 2008, Platt et al. performed a systematic search of the international research literature and identified the leading causes of veterinary suicide [3]. More recent studies have analyzed these causes in their research in their own countries. These studies analyze the rate of veterinary suicide and compare it to that of the general population. These studies also observe via veterinary surveys what are the possible risk factors present in the veterinary field that illicit the higher suicide rate in veterinarians [4–6]. Some of these risks being the exposure to high levels of occupational stress [7], client relations and time and work management [8], long working hours [9] and delivering bad news [10].

2.1.1. United States of America

A method utilized by the United States [6] and United Kingdom [4] to see if suicide is increased in a population is proportional mortality ratio (PMR). PMR describes the observed number of suicides in each population divided by the expected number of suicides expressed as percentage to assess suicide risk. A PMR of 100 mean that it is the same as the general population, 50 means half that of the general population and 200 means double that of the general population. One of the first study done on veterinarian suicide in the United States of America (USA) was published in 1982 [6]. It explored the cause of death in vets between the years 1947 and 1977 and found the PMR for suicide among white male veterinarians PMR 170 [6]. Based on responses from 11,627 veterinarians in a 2015 survey, the results demonstrated that veterinarians were more likely to experience current serious psychological distress, have a history of depression, and have experienced suicidal ideation, compared with the general population. They were also 2.1 to 3.5 times more likely to commit suicide compared to the general population [11]. A study done in 2019 showed that 89.1% of vets who answered the survey considered suicide to be one of the most critically important issues facing the profession [12].

The Merck Animal Health Veterinary Wellbeing Study found that burnout, suicide ideation and attempts, job satisfaction, and cyberbullying where the main causes of ailment in vets. This study found that not all veterinarians were thriving in the profession, especially not that younger and female veterinarians [12]. Veterinary medicine is a stressful profession, as evident by the high rates of burnout. 92.0% of respondents considered stress to be the most critically important issue facing the profession. In terms of future thinking and

reflecting on the profession over half of veterinarians would not recommend the profession [12]. Extensive student debt plays an important role on the mental wellbeing of veterinarians practicing in America. Financial stress in the form of high student debt and low income and poor work-life balance were major stress contributors [12–13]. The American Veterinary Management Association (AVMA) reported that the mean debt figure of veterinary school graduates in America was \$188,853 [14]. The Purdue also study found that job opportunities are abundant, and the industry revenues have grown over the past five years at an annualized 6.3 percent, financially the market is good. Despite this, veterinarians in the US still suffer from financial crisis due to the overwhelming student debt they accumulate in becoming a veterinarian [13].

2.1.2. United Kingdom and Canada

The prevalence of suicide amongst vets in the United Kingdom (UK) is higher than the general population [15]. A study done in 1993 showed that the risk of suicide is 4 times that of the general population. Male veterinarians between the ages of 45 and 64 had a relative risk (RR) of suicide that was 5.62 times higher than that of the general population and higher than that of pharmacists (RR=4.15), dentists (RR=5.19), and medical practitioners (RR=2.22). Female veterinarians had the highest relative risk (RR=7.62) compared to their non-veterinarian counterparts and a significantly higher risk than female physicians (RR=4.54) [16]. A study conducted by the British Veterinary Association (BVA) collected data on the cause of death for those whose occupation was recorded as veterinary between the years 1979 and 2000 in England and Wales. The PMR for suicide is considerably higher for veterinary professions and is higher than other health care professions, with the PMR in the years 1979 to 1980 and 1982 to 1990 being: 361 for males and 414 for females [4]. Although the absolute number of suicides by veterinarians is smaller compared to other occupational groups such as farmers and medical practitioners, the PMR for suicide by veterinarians is one of the highest of any occupational groups. The finding of a high PMR in both male and female veterinarians suggests that the number of suicides relative to deaths due to other causes is much higher in the veterinary profession than in the population as a whole and is higher than in other health care professions such as medical or dental practitioners. The data found that it wasn't a specific age group either, or the women number was so low we need to look at it with caution. Veterinary surgeons were also found to have higher levels of anxiety and depressive symptoms, higher 12-month prevalence of suicidal thoughts, less favorable working conditions when looking at psychosocial demands and managerial

support, a decreased positive mental well-being, and elevated levels of negative work-home interaction [17].

A study in Canada sent out a survey to their vets utilizing valid psych scales. The study compares its results with the suicide ideation of UK veterinarians. Whereas 28% of UK veterinarians considered suicide in the past 12 months, only 17% of Canadian veterinarians considered it, which is lower than the UK veterinarians, but still higher than the Canadian general average of 12% [18]. Multiple psychological test questions were done with the online survey including the perceived stress scale, Maslach Burnout Inventory (MBI) - Human services survey, Hospital Anxiety and Depression Scale (HADS) survey which analyzed depressive state as a reduced ability to experience pleasure. Professional Quality of Life Scale (ProQOL) which asks about burnout and traumatic stress and Connor-Davidson Resilience Scale (CD-RISC) which asked questions about the resilience of participants. The questionnaire also had a portion that asked the participants about their own history with mental health. Based on all these results, Canadian veterinarians did far worse than the general population in all aspects: perceives stress, burnout, depression, anxiety, compassion fatigue and suicidal ideation and lower resilience. These factors correspond with each other; burn out is linked with compassion fatigue which are common symptoms of exhaustion and stress during caregiver work. Anxiety and depression can also lead to burnout as well as suicidal ideation [18].

2.1.3. Australia and New Zealand

An Australian study also examined whether the suicide rate is markedly higher among Australian vets than the general population [19]. This study lacked extensive data as they only recently began investigating this topic and have no prior information on the veterinary profession. They were only able to provide information for veterinarians that had died by suicide while they were working in the veterinary profession and not of retired. The combined rate of suicide per 100,000 was 45.2 in the states of Western Australia and Victoria. In the 13-year period between 1990 and 2002, there was a reported 11 veterinary deaths by suicide. This is higher than the national average of 11.8 per 100,000. The rate of suicide in Australian vets was 3.8 times the general population. The researchers stated how reducing the rate of suicide in veterinarians will be a complex and difficult undertaking. They suggested that the factors associated with this high suicide rate were the composition of students who were selected into vet school being highly intelligent and gifted individuals, who lack support following graduation and have readily available lethal agents [19]. Another study had 2,125 vets complete a psychological questionnaire. From the responses

approximately one-third reported poor psychological health. Increasing age, increasing time in current job, increasing years since graduation and male gender was associated with fewer signs of distress, anxiety and depression. Compared with the general population, veterinarians experienced more negative emotions at work, but were similar to other professional groups [20].

A survey sent out to New Zealand veterinarians in 2006 asked demographic questions as well as their stress levels, depression, suicidal thoughts, and attempts, causes of stress and sources of support [9]. There was a total of 849 responses used in the paper. From their data, women experienced more work-related stress and depression than men, younger veterinarians experienced higher levels of stress than older veterinarians. The main sources of stress were hours worked, client expectations and un-expected outcomes. Respondents were also stressed by the need to keep up their knowledge and technical skills by personal relationships, finances, and their expectations of themselves. Most respondents reported that they had good networks of family and friends to help them deal with stress [9]. In general, respondents tended to rely on informal networks such as family and friends, other veterinarians, and workmates to provide support. The small proportion of respondents who reported clinical depression or suicidal thoughts or attempts were more likely than respondents in the general population to have used health professionals, counselling, pastoral/spiritual support, and the Vets in Stress phone line and they were less likely to have sought support from employers and workmates [9].

2.1.4. Germany, Austria, Finland and other Nordic countries

In 2016, Germany sent out a questionnaire to their veterinarians [5]. They collected information of the demographics, professional training, as well as several standardized instruments to assess depression, suicidality, and suicide specific constructs. The suicide specific constructs ranged from the interpersonal psychological theory of suicide, and euthanasia distress as well as effort-reward-imbalance. They assessed symptoms of depression in veterinarians via the Patient Health Questionnaire-9 (PHQ-9) questions. Veterinarians were screened positive for depression, 17% of the sample had moderate depression and 10% of veterinarians had severe depression and the general population screened only 3.99% to have symptoms of depression [5]. They found that veterinarians are about three times more likely to be screened positive for depression compared to the general population. The survey also assessed suicidal ideation and found that 19% of veterinarians had suicidal ideation in the past 2 weeks. This is compared to 5.7% in the general population. The second survey type questions were done with the Suicide Behaviors Questionnaire

Reserved (SBQ-R), which measure those at risk of suicide. The study found that veterinarians appeared to be six to seven times more likely to have an increased suicide risk compared to the general population [5].

A study done at the veterinary school in Vienna questioned what could be affecting the wellbeing of their veterinarians [21]. In their study the researchers found that disagreements with colleagues, superiors, dealing with impolite or unreasonable clients and the impossibility of treating animals due to financial reasons were perceived as particularly detrimental to the respondents' emotional well-being. Furthermore, brooding over patients or other work-related issues after work as well as a lack of time for other activities, friends and family also seem to have significant negative effects on the subjective well-being of veterinarians. While problematic interactions with colleagues and clients occur in a variety of professions, the remaining issues are largely specific to veterinary medicine [21].

Finland had one of the highest suicide rates in the world in 1992, with 28.8 per 100,000 [22]. A study done in Finland that compared retired individuals that shared the same occupation during their employment and were compared on the basis of their mortality and disability over a period of 15 years [23]. The summary showed that in Finland, between the years of 2001-2005 the occupation with the 3rd highest rate of suicide in women, was veterinarians. This is a drastic improvement from their first study done between the years 1979-1982 that showed veterinarians having the highest rate of suicide per occupation in both men and women. In a study of the veterinary working environment in Finland found that vets experienced work-related fatigue, stress, and exhaustion as well as physical risks including the risk of injury [23].

In Norway, census data from 1960, 1970, 1980 and 1990 showed that the highest rate of suicide was among male veterinarians with a suicide rate almost double of that the general population [24]. Interestingly, the suicide rates varied among Nordic countries. In Denmark, there wasn't an elevated rate of suicide among veterinarians. In a 2007 publication, a study was conducted on the relationship between occupation and suicide from 3,195 suicides in Denmark over a 7-year period (1991 to 1997). They found that the highest rates of suicide were among doctors and nurses. There were no suicides among veterinarians in that time period [2]. In 2011, a study examined rates of suicide in the health professions in Denmark over a 26-year period (1981 to 2006). They used teachers as the comparator group and found that the rates were significantly higher for physicians, dentists, nurses, pharmacists but not for veterinarians [25].

2.2. Risk Factors

There is no singular answer as to why an individual chooses to take their own life. However, statistics and research found the three most common features in most suicides. The common stimulus in suicide is intolerable psychological pain, the common emotion in suicide is hopelessness/helplessness and the common cognitive state in suicide is constriction. Even though mental health conditions are an important risk factor for suicide, suicide is an outcome that arises from a variety of factors, including life circumstances [26].

2.2.1. Mental illness

A Finnish study conducted in 1995 observed that over 90% of suicide victims have at least one psychiatric disorder. Mental disorders are carrying a markedly heightened risk of suicide but most individuals with psychiatric illness do not die by suicide [27]. The three commonalities are frequently associated with several types of mental disorders, hence looking into the mental health in vets is such a crucial aspect. A US study done in 2015, showed that 9% of veterinarians were classified as having serious psychological distress [11]. Multiple regression analysis revealed that the attributes most strongly associated with serious psychological distress were personalities high in neuroticism and high levels of student debt, which are both common in veterinarians [12]. From the study, the vets reported that they had previous depressive episodes (31%) or suicidal ideation (17%) or had attempted suicide (1%). From the vets in that study that stated they were in serious psychological distress, 16% of them planned to leave veterinary medicine, compared to 9% respondents who were not planning on leaving [28]. When looking at mental health in the profession, understanding the attitudes towards mental illness can help us understand why the number of mentally ill is higher in vets than the general population. Less positive attitudes towards mental health were found amongst vets than other US adults. 60.2% of US adults somewhat or strongly agreed that people are caring toward people with mental illness opposed to veterinarians who responded lower, with only 31.8% somewhat or strongly agreeing to the statement [11].

Gender was mentioned in many research papers as a relevant part of their results. Studies from various countries found that females and younger vets responded higher for increased levels of stress and mental illness. Studies done in the United States [12], Canada [18] and New Zealand [9] found that younger and female vets were experiencing greater negative effects in their life due to the profession compared to older and male vets. An Australian study found that males and older vets were at a lower risk than females [20].

However, a German study found that no relevant gender differences were found in their study [5]. The Canadian study paid specific attention to the differences between their male and female responses and how they varied. In a whole, females fared worse in all measured aspects as the questionnaire focused more on individuals perceived stress, resilience and burnout and more internalized mood disorders, while men tend to have more externalized disorders like substance abuse [29]. The study also noted that this could be due to the overrepresentation of young females who completed the survey along with the shift of more female veterinarians in recent years, so when we are looking at it statistically, the female responses will be from younger veterinarians and the male responses will be older and more experienced veterinarians. Also, female participants were overrepresented, which is a common phenomenon with online surveys related to gender-based differences in participation rates. They also consider that all these online surveys access bias stemming from the online nature of the survey which may have limited the participation of some individuals [29].

2.2.2. Unhealthy tendencies

The stress-diathesis model suggests that suicidal behavior results from the interaction between stressful life events and an individual's predisposition or vulnerability to suicide. In the past, studies on suicide mainly focused and recognized mental illness as the cause of suicide. However, more recent studies have been done recognizing stress as a trigger for suicidal behavior and the role stress has in developing suicidal behavior. An individual's susceptibility to developing suicidal behavior is a balance between the stress exposed and the diathesis of the individual. The amount of stress that becomes a trigger is based on the vulnerability of the individual. This vulnerability can be based off a gene, a unique combination of genes, or a particular brain pathology that would predispose an individual to disorders like depression. If an individual has no diathesis, no predisposition for mental illness or brain pathology, then even a severe stress won't affect the individual. However, minimal stress is needed for depression to occur in individuals with a strongly depressogenic schema [30]. Another factor that can lead to developing suicidal behavior is the individual's ability to problem solve. In 1982, Schotte and Clum studied a college population and they found that poor problem solvers under high life stress are at risk for depression, hopelessness, and suicidal behavior [31]. Majority of the risk factors in the veterinarian field are based on work stress. This statement is supported by various studies that have identified job stress as one of the main risk factors for suicide [31].

A paper studying work-related stressors in the veterinary field found social isolation, long working hours including night shifts and weekends to be a stressor amongst vet [15]. Individuals who isolate themselves from society have been linked to increased rates of suicide. Social isolation can be defined as having a lack of or minimal social connections, relationships or interactions with friends, family members, or one's community [32]. A study looked at multiple papers and found that being alone (e.g., living alone) and the subjective feeling of being alone (i.e., loneliness) were strongly associated with suicidal outcomes. Loneliness had a major impact on both suicide ideation and suicide attempt. These associations were transculturally consistent [33]. A Korean study looked at groups who worked less than 52 hours per week with those who worked 60 hours per week and compared them based on suicidal ideation. In this study, long working hours were linked to suicidal thoughts for both genders [34]. According to the US Bureau of Labor Statistics (BLS), Veterinarians often work long and erratic hours. Vets work nights or weekends, and they may have to respond to emergencies at any time. About 1 in 3 veterinarians worked more than 50 hours per week in 2012 [14]. The relationship with work hours has been proven to have a negative effect on vets. Veterinarians who worked 10-20 hours had a lower Compassion Fatigue Short Scale (CFSS) score compared to those who worked 20-30 hours a week [35]. Vets were less satisfied with their work-life balance, with only 39.6% stating they were, compared to the general population which scored 61.3% [12]. An Australian study used Warr scales to show that Anxiety and depression tended to increase with longer working hours [20]. According to the Royal College of Veterinary Surgeons (RCVS), in 2019, 57.2% of vets wanted a better work-life balance [36]. The number of vacation days allotted to individuals also has a role on their mental health. Linear regression analysis with mediation indicated that taking more paid vacation days was positively associated with both overall health and life satisfaction [29]. For every ten additional days of paid vacation leave, the odds of depression in women were 29% lower [30].

2.2.3. Client Relations and other Job Stressors

A part of the veterinarian's role requires breaking bad news often. Physicians who are unprepared for the difficult task of breaking bad news may experience negative psychological effects, such as increased stress, poor mental health, anxiety and burnout [37]. There can also be issues with communication between the owner and the vet. Increased anxiety may ensue due to a general lack of understanding of the pet's condition and their possible treatment options available due to poor communication skills on the part of the provider [10]. Dealing with difficult clients does result in compassion fatigue as is

demonstrated in Dow et al with a high proportion of vets feeling like their own mental health was affected by dealing with clients grieving the loss of a companion animal [38]. There's also the factor of dealing with difficult clients. Between 2010 and 2014 UK vets jumped from less than 20% of vets struggling with clients to more than half. In a recent study where they asked more than 150 graduates what the most energizing and draining parts of being a vet was, clients were at the top of both lists. In a US study among the 1,298 vets that wanted to leave the vet profession, 22% of those respondents stated that client complaints were the reason [36].

The performance of euthanasia has been implicated as contributing to the prevalence of suicide risk and psychological distress in veterinarians [15]. If an individual is performing lots of euthanasia, it will lower their resistance to taking their own life. Veterinarians have a unique job requirement of putting down animals: euthanasia or stunt gun/large animal killing. Veterinary students, found a positive relationship between experiences with companion animal euthanasia, distress about euthanasia and fearlessness about death, which is one of the three core components of the Interpersonal Psychological Theory of Suicide by Thomas Joiner [5]. Since fearlessness about death is conceptualized as a specific risk factor for suicidal behavior, companion animal euthanasia and its association with fearlessness about death is proposed as a possible risk factor for suicidality in veterinarians. Findings from clinical studies point at the possibility that each time such a suicidal mode becomes activated, it becomes increasingly accessible in memory and requires fewer triggering stimuli to become activated the next time [5].

2.2.4. Future Thinking

Hopelessness, the feeling of negative expectations combined with the judgment that problems can't be solved [39], has been shown to be a risk factor to suicide. A study demonstrated extensive evidence for the importance of clinical ratings of hopelessness for the prediction of eventual suicide. Because hopelessness can be reduced rapidly by specific therapeutic interventions, the assessment of hopelessness can potentially improve the prevention as well as the prediction of suicide [39] Another study found that hopelessness is more closely related to suicidal intent than is depression [40]. In a US study 42.6% of respondents said they would not recommend the profession [12]. Another US study found that 13% respondents agreed or strongly agreed that they were planning to leave veterinary medicine [11].

2.2.5. Seeking Aid and Solutions

Research has been done to investigate possible effective tools that are currently available that could help vets in terms of preventing suicidal ideation. Studies from other caregiver work showed that alongside individual changes in the profession it is also vital to have a systemic change [18]. Individual change that has been proven to help in human physician work is wellness interventions such as mindfulness training, resilience building and workplace culture initiatives [18]. When we analyze mental health solutions, we should also note if the individual has access to that type of health care. In a US study a total of 8,506 of 10,214 (83%) respondents somewhat or strongly agreed that mental health treatment was accessible [28]. In contrast, the 1,708 (17%) respondents who were unsure or who disagreed or strongly disagreed about accessibility of mental health treatment were more likely to have current serious psychological distress. In addition, although veterinary organizations have invested heavily in wellbeing and mental health resources, these resources were lightly used. Only 12.0% (345/2,874) of all respondents, including 15.8% (29/183) of those with serious psychological distress, had accessed any organizational materials. Resources available from AVMA were used most, by 70.4% (243/345) of those who had accessed any organizational materials. Although AVMA resources were among the most highly rated, only 42.8% (104/243) of those using them said they found them useful. When looking for solutions we should also consider what attributes most strongly associated with positive mental health. Studies have shown that enjoying work, good work-life balance, spending time with family and friends, being older, having a family and satisfaction with income have the highest association with positive mental health [28].

3. Materials and Methods

3.1. Survey Methodology and Questionnaire

After finalizing the questionnaire, it was sent to veterinarians in Hungary, Finland, Sweden, Germany, Estonia, Denmark, and Norway. The same survey was sent out to each country, and for all the countries other than Hungary, an English survey was used. A link to the questionnaire was sent/shared with a short description which, in addition to inviting participation in the survey, also provided information on the different aspects of the topic and the purpose of the study. Brief information was provided on the duration of the processing time, the anonymity of the data collection and the evaluation of the results. The questionnaire was completed voluntarily by the veterinarians, who were assured of anonymity. In Hungary the questionnaire was shared in the “Állatorvosok-Vets” Facebook

group. Contact with Finnish and Swedish vets was mainly made via e-mail. In Finland, the questionnaire was circulated on a Finnish Vet Facebook group to increase the number of responses, while in Sweden it was shared to veterinary groups and posted in the Swedish Veterinary Association (SVF) newsletter. In Germany, the questionnaire was sent out to German veterinary mailing lists. Responses from other Nordic countries were collected through Swedish and Finnish postings. The surveys were opened on the 19th of July, 2021 and closed on the 23rd of February, 2022. Responses from the questionnaire were analyzed using Microsoft Excel. The percentages were calculated for all questions, and the mean (M) was found for the five Likert scale questions. Statistical analyses were performed in R version 4.2.1 [41]. The responses were analysed using Pearson's chi-square test to see how significantly the results differ between countries (Hungary, Finland, Sweden, and Germany).

After an initial literature review, the main themes discussed in the context of suicide became apparent. This allowed the identification of key thematic aspects and the design of the first draft of the questionnaire. The draft was revised several times in view of the completeness of the topics and issues to be covered, arising from the literature and debates on the subject. The focus of my study was to survey veterinarians from different countries and analyze how their responses vary to the claims made from previous studies to verify if these statements regarding risk factors in the veterinary profession hold validity in other countries. The online questionnaire was designed using Google Forms. The questionnaire consisted of 55 questions and was estimated to take 15 minutes to complete. Of the 55 questions, 49 were "Closed-questions", 3 were "Semi-closed questions" (including 49 single-choice questions and 3 multiple-choice questions) and 3 were "Open-ended questions".

Questions 1-8 gave information on the demographics of the vets who were filling out the questionnaire: age, gender, current marital status, name of country they were born in, population of the place of their residence, name of country where they work, population of where they work, the field in which they work. Questions 9-13 gave information on the individuals work as a veterinarian: the position of their current job, how many years of professional experience, average weekly work hours, how many colleagues do they work with, how much annual leave they are given. Questions 14-19 are a set of six Yes or No questions that provided a mental and physical status of the individuals, as well as asking if they heard of or personally knew of a veterinarian who had taken their own life. The next part of the questionnaire (questions 20-51) used a 5-scale Likert Scale to ask veterinarians how strongly they agree or disagree with a statement where 1 = strongly disagree, 2 =

disagree, 3 = undecided, 4 = agree and 5 = strongly agree. The 31 statements I utilized for the Likert scale were inspired by data and statements made in other studies most notably the study by Platt et al. [3] with special regards to the statements they made in their study stating what the 12 common risk factors in veterinary medicine. The final 4 summary questions (questions 52-55) asked about the impact of different stressors on personal life and work activities, and the extent to which the workplace is attentive to the mental health of its vets. The questions can fall under 5 topics: Mental Health, Unhealthy behavior, Client Relations, Future thinking, and Plan of Action/Aid Seeking.

3.2. Sample

Altogether 724 veterinarians participated in the online questionnaire with the majority of respondents working in Hungary (n=236, 32.6%) and Finland (n=218, 30.1%), followed by Sweden (n=157, 21.7%) and Germany (n=77, 10.6%) and then the other Nordic countries (n=36, 5.0%, including Estonia, n=26, 3.6%, Denmark, n=5, 0.7% and Norway, n=5, 0.7%).

The majority in the age group 35-54 years (n= 336, 46.4%), followed by age group 23-34 years (n=329, 45.4%), and then age group over 54 year (n=59, 8.1%). Of all respondents, 89.0% were females (n= 640) and 11.0% were males (n=79). About half of the respondents worked over 40 hours per week (n= 360, 50.3%), the other half of them worked under 40 hours per week (n= 356, 49.7%). The majority worked as an employee/non-managerial position (n=489, 71.2%) and the other respondents were owners/manager position (n=198, 28.8%). Almost half of the respondents received between 14 and 28 holidays per year (n=329, 45.4%), the other half received more than 28 days (n=325, 44.9%) and the others got less than 14 days (n=70, 9.7%).

From the entire sample, the majority of respondents also practiced in Small Animal Medicine (n=504, 69.6%), including who practiced only in this veterinary field (n=306, 42.3%). They were followed by respondents working in Farm Animal Medicine and Mixed Practice (n=176, 24.3%), and the proportion of veterinarians specializing in Exotic Animal Medicine was relatively low (n=65, 9.0%).

Further descriptive statistics for the entire sample then for Hungary, Finland, Sweden, Germany, and the other Nordic countries are summarized in Table 1–3 respectively.

Table 1. Descriptive statistics of the sample working in Hungary and Finland

		Hungary		Finland	
		N	%	N	%
Age group	23-34 years	113	47.9%	88	40.4%
	35-54 years	95	40.3%	112	51.4%
	Over 54 years	28	11.9%	18	8.3%
	Total	236	100.0%	218	100.0%
Gender	Male	55	23.4%	8	3.7%
	Female	180	76.6%	207	96.3%
	Total	235	100.0%	215	100.0%
Working hours	Weekly <40 hours	132	57.1%	116	53.2%
	Weekly >40 hours	99	42.9%	102	46.8%
	Total	231	100.0%	218	100.0%
Position	Owner/manager position	83	37.7%	59	28.9%
	Employee/non-managerial position	137	62.3%	145	71.1%
	Total	220	100.0%	204	100.0%
Holidays	<14 days per year	49	20.8%	11	5.0%
	14-28 days per year	132	55.9%	62	28.4%
	>28 days per year	55	23.3%	145	66.5%
	Total	236	100.0%	218	100.0%

Table 2. Descriptive statistics of the sample working in Sweden, Germany, and Other Nordic countries

		Sweden		Germany		Other Nordic countries	
		N	%	N	%	N	%
Age group	23-34 years	65	41.4%	41	53.2%	22	61.1%
	35-54 years	80	51.0%	35	45.5%	14	38.9%
	Over 54 years	12	7.6%	1	1.3%	0	0.0%
	Total	157	100.0%	77	100.0%	36	100.0%
Gender	Male	8	5.1%	6	7.9%	2	5.6%
	Female	149	94.9%	70	92.1%	34	94.4%
	Total	157	100.0%	76	100.0%	36	100.0%
Working hours	Weekly <40 hours	72	46.2%	25	33.3%	11	30.6%
	Weekly >40 hours	84	53.8%	50	66.7%	25	69.4%
	Total	156	100.0%	75	100.0%	36	100.0%
Position	Owner/manager position	41	26.8%	11	14.7%	4	11.4%
	Employee/non-managerial position	112	73.2%	64	85.3%	31	88.6%
	Total	153	100.0%	75	100.0%	35	100.0%
Holidays	<14 days per year	5	3.2%	4	5.2%	1	2.8%
	14-28 days per year	76	48.4%	45	58.4%	14	38.9%
	>28 days per year	76	48.4%	28	36.4%	21	58.3%
	Total	157	100.0%	77	100.0%	36	100.0%

Table 3. Descriptive statistics of the sample working in Hungary, Finland, Sweden, Germany, and Other Nordic countries based on veterinary field

	Hungary		Finland		Sweden		Germany		Other Nordic countries	
	N	%	N	%	N	%	N	%	N	%
Vets also working in Small Animal Medicine	184	78.0	145	66.5	103	65.6	44	57.1	28	77.8
Vets working only Small Animal Medicine	114	48.3	85	39.0	66	42.0	25	32.5	16	44.4
Vets also working in Farm Animal Medicine and in Mixed Practice	42	17.8	66	30.3	44	28.0	16	20.8	8	22.2
Vets also working in Exotic Animal Medicine	33	14.0	15	6.9	11	7.0	4	5.2	2	5.6

4. Results

4.1. General findings from respondents

Results varied between countries for the question if the individual had been diagnosed with mental illness, with an average of 24.4% for the entire sample ($p < 0.0001$). In Germany, other Nordic countries, and Sweden the responses were between 20.8-29.9% stating they had been diagnosed. In all the countries except Hungary (7.1%), younger vets had a higher percentage of being diagnosed with mental illness (Germany 14.6%, Sweden 33.8%, Finland 43.2%). In Hungary, vets over the age of 54 stated to have been diagnosed with mental health (14.3 %) opposed to vets aged 35-54 (9.5%) and aged 23-34 aged (7.1%). From the entire sample, females were more likely to be diagnosed with mental illness (26.4%) than males (7.8%). In Germany, 75% of vets having less than 14 days of annual leave stated to being diagnosed with mental illness, as opposed to 10.7% for those vets with over 28 days of annual leave and 22.2% for those with 14-28 days annual leave. Finland (Employee 41.4 % yes, Owner 27.1% yes), Hungary (Employee 10.9 % yes, Owner 6.0% yes), Sweden (Employee 30.4 % yes, Owner 24.4% yes) displayed owners having lower mental illness opposed to employees and non-manager positions. German was the only country where owners (27.3%) had a higher percentage of mental illness opposed to employees (20.3%). The responses to the question asking if the vets took or had taken any medicine for mental

health followed the same trend was 22.0% on average for the entire sample ($p < 0.0001$). 26.9% of the respondents said that someone in their family was diagnosed with a mental illness. The percentage who said yes from all countries was between 22.9% (Sweden) and 32.1% (Finland). The vets were asked if they had obtained an injury and the permanency of the Injury. From the entire sample 6.2% had permanent injuries. The results varied widely by country ($p < 0.0001$): Germany had the highest of permanent injuries 11.7%, but also the highest of no injuries at 35.1%. Hungary had the highest injuries that were non-permanent (83.5%). Vets were asked if they personally knew a vet who had taken their own life, 29.6% of respondents said yes for the entire sample, the lowest belonging to the other Nordic countries and the highest Hungary (19.4% and 31.8% respectively). Older vets, over 54 years, from all countries (Finland 55.6%, Germany 100%, Hungary 75.0%, Sweden 75.0%) were more likely to personally know a vet who took their own life compared to younger vets. Male vets from all countries (Finland 37.5%, Germany 50.0%, Hungary 56.4%, Sweden 50.0%) were more likely to personally know a vet who took their own life than the female vets. For the entire sample, 94.3% of the respondents said that they had heard of a vet taking their own life ($p < 0.01$), the highest belongs to Germany, Sweden, and Finland (98.7%, 96.8% and 95.9% respectively) and lowest to the other Nordic countries and Hungary (91.7% and 90.3% respectively).

4.2. Mental Health

The vets were asked whether they believed that the suicide rate is higher among veterinarians than the general population. From the entire sample, 59.9% strongly agreed with that statement ($p < 0.0001$), the mean value was 4.43 points. The different response points are summarized in Chart 1. Significance is high due to the high percentage of older aged Hungarian vets (10.7%) that disagreed with this statement and therefore Hungary had the lowest mean value (4.19). In Hungary, 4.2% of their responses strongly disagree, and 2.5% disagree. Germany had the highest agreement (agree and strongly agree) with 16.9% and 79.2%. Finland and Hungary were the only two countries that had responses that disagreed with this statement and were below the entire sample when measuring the mean average. Younger vets aged 23-34 were more likely to strongly agree with this statement, (65.1%) versus vets aged 35-54 (58.7%) and vets older than 54 (33.9%). Females strongly agreed more (61.9%) compared to male vets (39.0%). Employees in non-managerial positions were more likely to strongly agree with this statement (63.1%) versus vets in owner/managerial positions (52.6%).

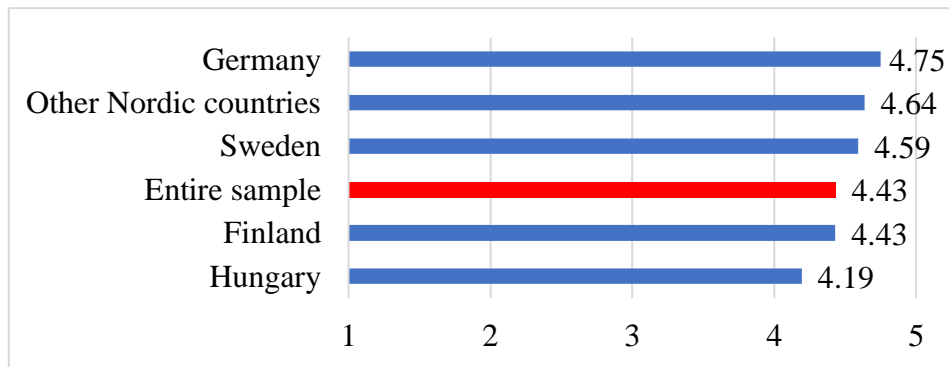


Chart 1. Mean values for the statement that the suicide rate is higher among veterinarians than the general population. On a 5-point Likert Scale, where 1 = strongly disagree and 5 = strongly agree.

When asked if they have ever had suicidal thoughts, 49.4% from the entire sample strongly disagreed. Germany had the greatest percentage of strongly disagreement with 62.3%, followed by Hungary 52.1%, Sweden 49.7%, Finland 45.9%. Other Nordic countries that had the lowest, with only 25.0% of their responses strongly disagree and 27.8% disagreeing, and 30.6% of the responses agreeing. Younger vets aged 23-34 were more likely to strongly agree (20.5%) versus older vets aged 35-54 (9.3%) and over 54 (3.4%). Employees in non-managerial positions were more likely to strongly agree with this statement (15.7%) versus vets in owner/manager positions (7.7%).

When asked if they have ever seriously considered or tried to commit suicide, from the entire sample 76.8% and 8.4% strongly disagree/disagreed and 5.5% and 4.0% agreeing/strongly agree ($p < 0.05$). The countries that disagreed with this statement the most being Germany and Hungary at 82.6% and 4.7% strongly disagreeing/disagreeing. Finland had the highest agreement at 12.4%. Employees in non-managerial positions were more likely to strongly agree with this statement (4.6%) versus vets in owner/manager positions (1.5%).

When asked if having mental health issues would make them unfit to be a veterinary professional, from the entire sample, most respondents strongly disagreed or disagreed (36.2% and 22.0% respectively). On average, respondents gave this question a point of 2.37. The different response points are summarized in Chart 2. The biggest difference being between Hungary and Germany ($p < 0.0001$). In Hungary, 71.2% strongly disagreed that having a mental illness would make a vet unfit to practice, with only 3.4% and 0.8% of Hungarian vets agreeing/strongly agreeing to this statement. In contrast, in Germany 41.6% and 11.7% of the vets agree and strongly agree with this statement and only 9.1% strongly disagreeing. Other Nordic countries responded similar to Germany with 41.7% and 8.3% of the correspondents agreed and strongly agreed to the statement. Males were more likely to

strongly disagree (61.0%), compared to females (34.3%). Vets with less than 14 vacation days were more likely to strongly disagree with this statement (50.5%) compared to vets with 14-28 vacation days (38.1%), and less than 28 vacation days (32.2%). Vets in owner/managerial positions were more likely to strongly disagree with this statement (50.0%) versus vets in non-managerial positions (30.1%).

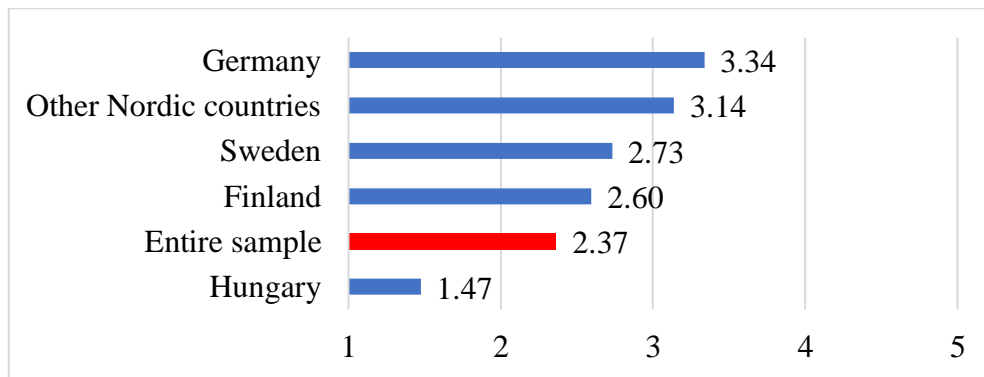


Chart 2. Mean values for the statement that veterinarians feel having mental health issues would make them unfit to be a veterinary professional. On a 5-point Likert Scale, where 1 = strongly disagree and 5 = strongly agree.

When asked if they felt their role at work had a negative impact on their mental health, from the entire sample, 12.6% and 22.1% of respondents strongly disagreed and disagreed, and 24.2% and 15.6% of agreed and strongly agreed with this statement ($p < 0.01$), scored 3.08 points on average. The different response points are summarized in Chart 3. The respondents of Hungary and Finland were the strongest to disagree with this statement (17.8% and 11.9% respectively). Sweden was the highest to strongly agree, followed second by Germany and the other Nordic countries (24.8%, 16.9% and 16.7% respectively). Younger vets 23-34, were more likely to agree and strongly agree with this statement (28.7% and 15.6% respectively) opposed to vets aged 35-54 (18.9% and 17.1% respectively) and vets over 54 year (16.9% and 6.8% respectively). 33.9% of older respondents (aged 54 years and over) strongly disagreed with this statement. Vets who have working hours over 40 hours a week (24.5% and 18.2% respectively) strongly agreed and agreed versus under 40 hours a week (21.4% and 12.8% respectively). Vets who have less than 14 days of annual leave were more likely to strongly agree with this statement, 21.7%, opposed to vets with 14-28 days (15.6%), or over 28 days (14.1%) of annual leave.

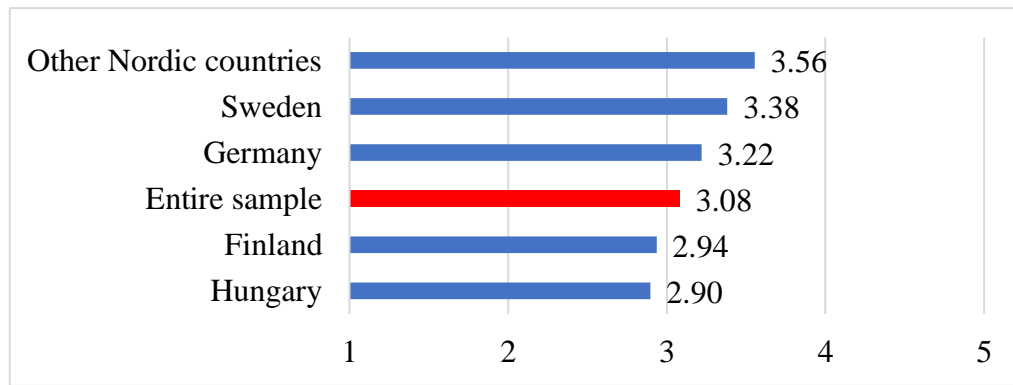


Chart 3. Mean values for the statement that veterinarians role at work has a negative impact on their mental health. On a 5-point Likert Scale, where 1 = strongly disagree and 5 = strongly agree.

From the entire sample 24.0% strongly disagreed that performing euthanasia affects them personally, 24.3% disagreed, 23.0% uncertain, 20.1% agreed while only 8.6% strongly agreed that they are affected by it. This statement was ranked low by respondents with an average score of 2.65 points, with significant differences between countries, which were also considered significant ($p < 0.0001$). The different response points are summarized in Chart 4. Other Nordic countries had the most response in agreement/strongly agreement (33.3% and 13.9% respectively), followed by Germany (26.7% and 12.0% respectively). Finland and Sweden having the most response in strongly disagreement/disagreement (34.4%/28.0% and 26.1%/26.8% respectively). Vets with less than 14 days of annual leave were more likely to strongly agree with this statement (11.8%) compared to vets with 14-28 and over 28 days (8.9% and 6.9%) of annual leave.

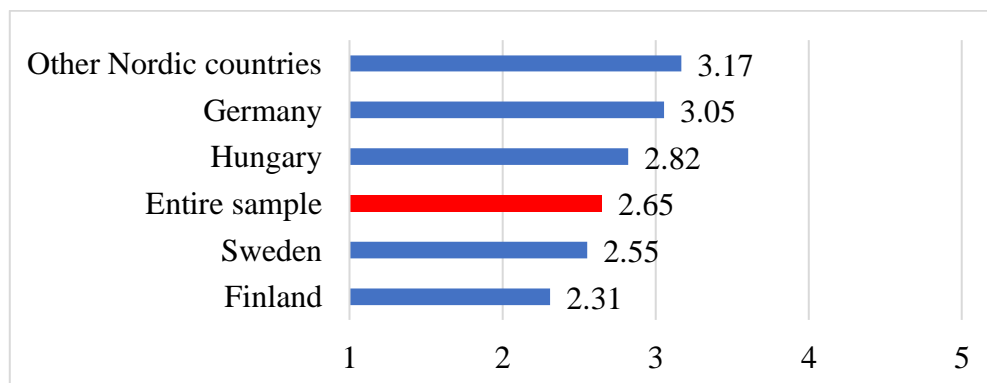


Chart 4. Mean values for the statement that veterinarians feel that performing euthanasia affects them personally. On a 5-point Likert Scale, where 1 = strongly disagree and 5 = strongly agree.

Vets were asked if certain behavior or situations in their work elicits anxiety. They were asked if they always strive for conscientiousness, accuracy, but then have feelings of not being good enough, causing them to get anxious. From the entire sample, 31.5% and 39.6% of total vets agreed or strongly agreed to that statement ($p < 0.01$), with an average score of 3.91 points. The different response points are summarized in Chart 5. Hungary had

the highest percentage of vets strongly agreeing (50.4%). Other Nordic countries had a lot of vets high agree (27.8%) and strongly agree (50.0%). Younger vets aged 23-34 were more likely to strongly agree with this statement (49.8%) versus vets aged 35-54 (32.0%) and vets older than 54 (22.0%). Females were more likely to strongly agree with this statement (41.1%) compared to males (20.8%). Vets who have fewer than 14 days of annual leave were more likely to strongly agree (52.2%) versus vets with 14-28 and over 28 days of annual leave (43.5% and 31.6%). Vets who are employees with non-managerial position are more likely to strongly agree with this statement (45.6%) versus vets who are owners/manager position (23.2%).

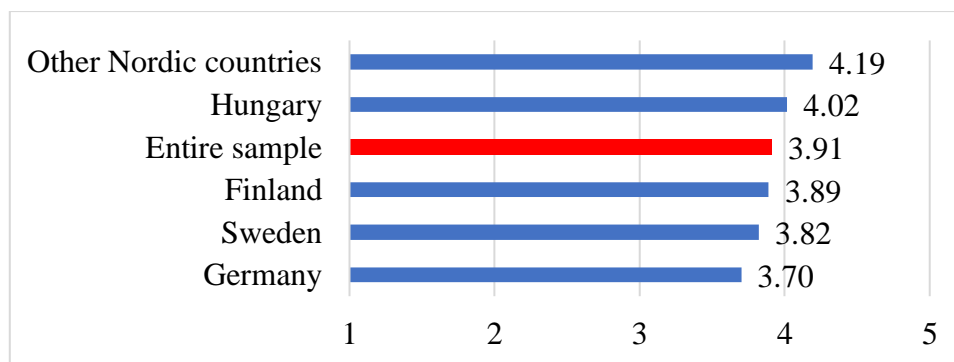


Chart 5. Mean values for the statement that veterinarians in their work, they always strive for conscientiousness, accuracy, but they feel that in some cases they are not performing well enough, so they get anxious. On a 5-point Likert Scale, where 1 = strongly disagree and 5 = strongly agree.

When asked if they often go into their workplace anxiously about what they will do on a given day (unexpected cases, time-consuming administrative tasks, interventions that take longer than expected), each country had a high percentage agreeing. From the total sample over 28.2% agreed 27.6% strongly agreeing. Younger vets aged 23-34 were more likely to strongly agree with this statement (35.2%) compared to vets aged 35-54 (22.7%) or vets aged over 54 (15.3%). Females are more likely to strongly agree to this statement (29.0%) compared to males (14.3%). Vets with less than 14 days of annual leave were more likely to strongly agree with this statement (40.6%), compared to vets with 14-28 days of annual leave (30.2%) and vets with over 28 days of annual leave (22.0%). Employees in non-managerial positions were more likely to strongly agree with this statement (33.0%) compared to vets in owner/managerial position (16.0%).

When asked if they often go into their workplace anxiously because of the manager/co-workers (humiliation, competition, too many people working in one place, disagreements, conflicts, tension), the answers were unanimously similar in their thinking that a large percentage disagreed with that sentiment. On average, 39.9% and 23.1% in the entire sample strongly disagreed or disagreed that their co-workers were causing them anxiety. Other

Nordic countries and Hungary were the two highest to agree/strongly agree that they felt anxiety due to their co-workers (27.8%/8.3% and 12.7%/15.3% respectively). Vets in owner/managerial position were more likely to strongly disagree to this statement (56.2%) compared to employees in non-managerial positions (33.8%).

4.3. Unhealthy Tendencies

When asked in their work has caused them to develop unhealthy habits and tendencies in their personal life, on average 28.3% and 23.8% in the entire sample, vets felt that it had ($p < 0.05$). The mean value was 3.34 points. The different response points are summarized in Chart 6. The significance was affected by the high percentage of agreement/strongly agreement from Germany (29.9% and 31.2% respectively) and the relatively low agreement/strongly agreement from Hungary (26.3% and 19.3% respectively). Consequently, in Germany the strongly disagreement/disagreement was the lowest among countries (5.2% and 9.1% respectively). Employees in non-managerial positions were more likely to agree with this statement, 25.1%, versus vets in owner/manager positions, 18.6%. Vets working over 40 hours a week strongly agreed the most to the statement 29.3% versus 16.8% of vets working under 40 hours a week. Younger vets aged 23-34 were more likely to strongly agree and agree with this statement (24.1% and 32.2%) versus vets aged 32-54 (23.0% and 28.0) and vets older than 54 (15.3% and 16.9%).

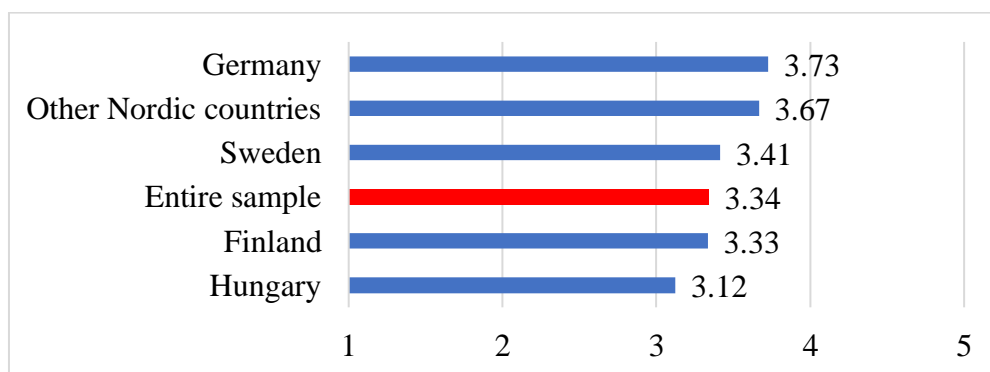


Chart 6. Mean values for the statement that veterinarians work has caused them to develop unhealthy habits and tendencies in their personal life. On a 5-point Likert Scale, where 1 = strongly disagree and 5 = strongly agree.

The majority of respondents felt that they could not separate their work from their private life, i.e. the majority of the total sample strongly disagreed or disagreed (15.3% and 33.1% respectively) ($p < 0.0001$). The highest in strongly disagreement or disagreement being from Germany (14.3% and 51.9% respectively) and Sweden (18.5% and 36.9% respectively) and the lowest from Hungary (8.9% and 27.5% respectively). Hungary was the highest to agree (33.5%) and strongly agree (11.0%) with the statement. Vets over 54 were

more likely to strongly agree with this sentiment (18.4%) compared to vets aged 35-54 (7.5%) and vets 23-34 (8.1%). Vets working less than 40 hours a week strongly agree more (12.2%) than vets working more than 40 hours a week (5.1%).

When asked if they must go to work even when they are sick or have family emergencies because of the nature of their work, there was a divide between the answers. Other Nordic countries (27.8% and 47.2% respectively) and Germany (35.1% and 36.4% respectively) agreed or strongly agreed the highest. Hungary has a markedly different response with only 22.0% and 16.5% agreeing or strongly agreeing. Finland (8.3% and 15.1% respectively) and Sweden (7.0% and 17.2% respectively) are almost identical with their responses being around 24% in strongly disagreement/disagreement and around 27% who strongly agreed (27.5% and 27.4% respectively). Finland had a smaller uncertainty than Sweden at 12.8% versus 19.7% from Sweden. With variations across countries ($p < 0.0001$), the average score was 3.42. The different response points are summarized in Chart 7. Females were more likely to strongly agree, 26.1% versus males, 14.3%. Vets with longer working hours were more likely to strongly agree 30.4% versus vets working less than 40 hours a week, 18.8%. Vets with an annual leave of less than 14 days agreed more with the statement (37.7%) than vets with an annual leave of 14-28 days (21.4%) and over 28 days (29.6%).

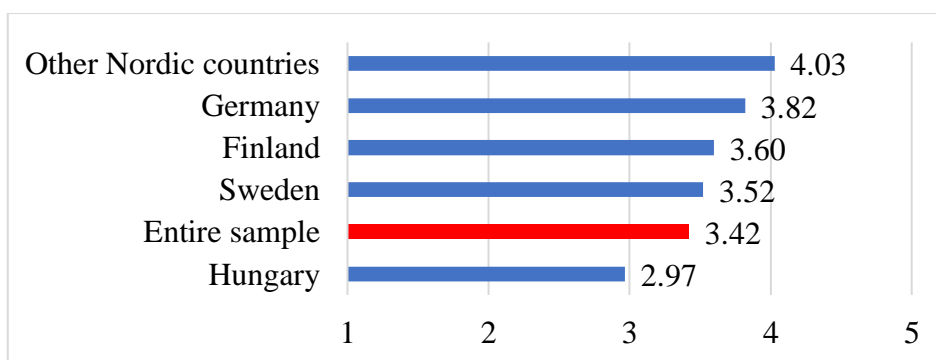


Chart 7. Mean values for the statement that veterinarians often feel they must go to work even when they are sick or have family emergencies because of the nature of their work. On a 5-point Likert Scale, where 1 = strongly disagree and 5 = strongly agree.

When asked if they often feel isolated from society due to long working hours, 24.7% and 30.9% agreed or strongly agreed with this statement from the entire sample ($p < 0.05$), the mean value was 3.45. The different response points are summarized in Chart 8. Germany and Hungary strongly agreeing the most 42.9% and 35.6%, as well as other Nordic countries having the highest percentage of agreeing and strongly agreeing at 38.9% and 30.6%. Finland and Sweden were below the average mean value by disagreeing the most with 15.3% and 15.6% strongly disagreeing. Younger vets aged 23-34 are more likely to strongly

agree with this statement (36.5%), compared to 35-54 (27.6%), older vets over 54 years (20.3%). Females are more likely to strongly agree with this statement (32.3%) compared to males (22.1%). Vets working more than 40 hours a week are more likely to strongly agree with this statement (45.4%) compared to less than 40 hours a week (17.1%). Vets with less than 14 vacation days are more likely to strongly agree with this statement (50.7%) compared to vets with 14-28 vacation days (35.6%) and over 28 vacation days (21.7%). Vets in owner and managerial positions were more likely to strongly disagree (22.7%) opposed to vets in employee in non-managerial position (9.0%).

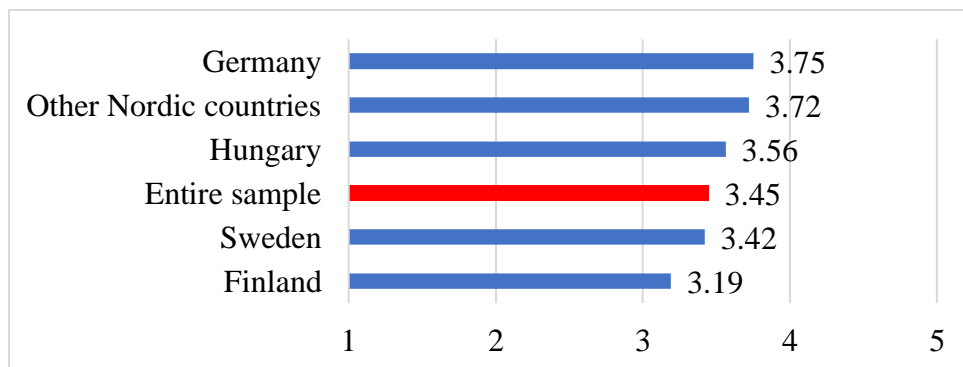


Chart 8. Mean values for the statement that veterinarians often feel isolated from society due to long work hours, they feel they don't have enough free time and because of this they have to face the consequences (for example not having family time, not enough time for sports and hobbies). On a 5-point Likert Scale, where 1 = strongly disagree and 5 = strongly agree.

From the entire sample 50,0% and 25,3% strongly disagreed or disagreed that when they run into an obstacle while working, they are afraid to ask for help due to what others might think, with an average point 1.92 ($p < 0.0001$). The different response points are summarized in Chart 9. Sweden strongly disagreed with this statement (56.1%) the most and 0.0% strongly agreeing and only 3.8% agreeing. Other Nordic countries agreed the greatest with 8.3% strongly agreeing, 2.8% agree. Vets with less than 14 vacation days are more likely to strongly agree with this statement (5.8%) compared to vets with 14-28 vacation days (5.1%) and over 28 vacation days (2.6%). Vets in owner/managerial position were more likely to strongly disagree to this statement (66.0%) compared to employees in non-managerial positions (44.1%).

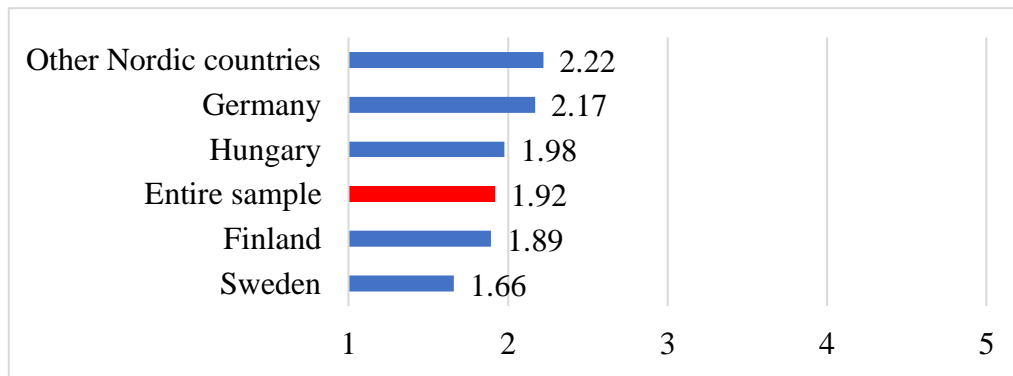


Chart 9. Mean values for the statement that if veterinarians run into an obstacle while working, they are afraid to ask for help due to what others might think. On a 5-point Likert Scale, where 1 = strongly disagree and 5 = strongly agree.

From the entire sample, 20.0% and 13.3% of respondents agreed or strongly agreed on the extent to which respondents often feel like they don't get enough professional support in the workplace. Germany had the highest rate of agreement or strongly agreement (36.4% and 11.4% respectively). Germany followed closely by other Nordic countries (25.0% and 16.7% respectively). Sweden (19.7% and 12.1% respectively), Finland (18.8% and 12.8% respectively), and Hungary (15.3% and 14.4% respectively) strongly agreed/agreed much less ($p < 0.0001$). Employees in non-managerial positions strongly agreed with this statement (15.3%) compared to vets in owner/manager (7.7%).

4.4. Client Relations

The importance of establishing and maintaining client relations along with encountering barriers in communications had mixed responses from the vets ($p < 0.05$). From the total sample 16.7% strongly disagreed, 30.1% disagreed, 26.4% were uncertain and 18.6% agree, 6.4% strongly agreed. Germany (29.9% and 10.4% respectively) agreed or strongly agreed the most with this statement the most, followed by other Nordic countries (27.8% and 8.3% respectively). Finland strongly disagreed/disagreed with this statement the most (16.1% and 36.7% respectively) followed by Hungary (22.9% and 26.7% respectively). Younger vets were more likely to strongly agree with this statement (10.1%) compared to vets aged 35-54 (7.1%), vets over 54 (3.4%).

When asked if animal owners often expect an immediate diagnosis to be made, from the entire sample, 0.3% strongly disagreed, 3.7% disagreed, 11.1% uncertain, 32.0% agreed, and 53.0% strongly agreed, with an average 4.34 points. The different response points are summarized in Chart 10. Germany had the highest at 20.8% and 76.6% agreeing or strongly agreeing. Followed closely by Hungary (28.9% and 57.9% respectively), Finland (39.9% and 44.0% respectively), other Baltic countries (22.2% and 58.3 respectively) and then

Sweden (33.8% and 44.6% respectively). The difference between countries considered significant ($p < 0.001$). The highest percentage of disagreement being from Sweden (5.7%) and Finland (4.1%). Younger vets aged 23-34 were more likely to strongly agree with this sentiment (59.8%), compared to vets aged 35-54 (49.7%) and vets over 54 (31.0%). Female vets were more likely to strongly agree 53.8% compared to male vets 41.6%. Employees in non-managerial positions were more likely to strongly agree with this statement (55.1%) compared to owners/managerial position vets (45.6%).

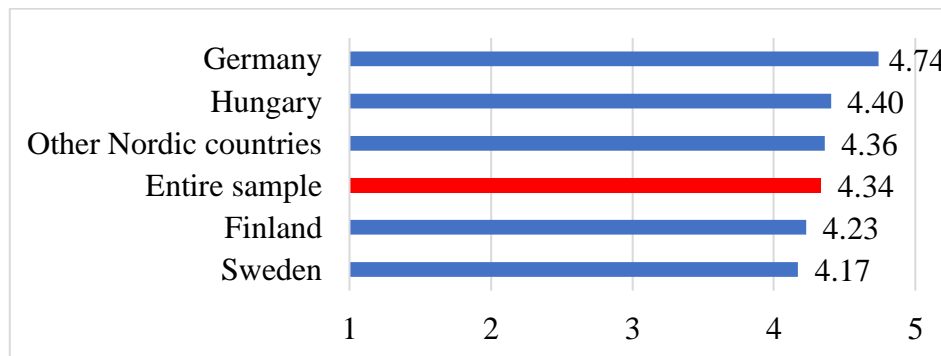


Chart 10. Mean values for the statement that animal owners often expect an immediate diagnosis to be made. On a 5-point Likert Scale, where 1 = strongly disagree and 5 = strongly agree.

Basically, the veterinarians agreed as extensively that animal owners often expect a veterinarian to treat animals free of charge just for the sake of animal love and do not allow certain interventions that would benefit the animal. From the entire sample: 31.3% agreed and 37.4% strongly agreed with this statement. The highest strongly agreement being from Germany followed by other Nordic countries and then Hungary (57.1%, 50.0% and 46.2% respectively). Finland and Sweden had the lowest in strongly agreement at 23.9% and 29.9%. The amount of disagreement (strongly disagree and disagree) to the statement was low, the highest being from Sweden (5.1% and 15.3% respectively) and Finland (6.0% and 13.3% respectively). The difference in results was found to be significant ($p < 0.0001$). Younger vets aged 23-34 were more likely to strongly agree with this sentiment (44.4%), compared to vets aged 35-54 (31.4%) and vets over 54 (24.1%). Vets with a vacation time of less than 14 days were more likely to strongly agree (47.8%) compared to vets with 14-28 vacation days (41.1%) and vets with more than 28 vacation days (29.4%). Employees in non-managerial positions were more likely to strongly agree with this statement (39.6%) compared to owners/managerial position vets (29.5%).

4.5. Future Thinking

When asked if they felt they picked the right profession when they became a veterinarian, from the total sample, 35.6% strongly agreed they had ($p < 0.01$). 2.3% and

11.5% vets strongly disagreed/disagreed with this statement. Sweden had the lowest in agreement with 26.6% strongly agreeing and 27.4% agreeing and a mean value under lower than the entire sample, 3.89. The different response points are summarized in Chart 11. Finland and Germany were the highest in agreement, 37.6% and 39.0% strongly agreeing. Owners in Finland (49.2% and 37.3% respectively), Hungary (51.8% and 27.7% respectively), Sweden (48.8% and 29.3% respectively) agreed and strongly agreed with this statement.

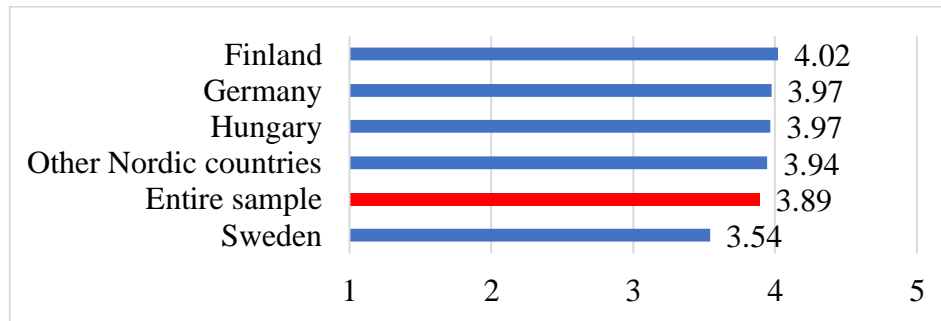


Chart 11. Mean values for the statement that veterinarians feel they picked the right profession when they became a veterinarian. On a 5-point Likert Scale, where 1 = strongly disagree and 5 = strongly agree.

When asked if they often think about whether to leave their veterinary career, from the entire sample, 25.4% and 23.1% of respondents strongly disagreed or disagreed with the statement. 21.0% and 12.6% of respondents agreed or strongly agreed. The countries that agreed/strongly agreed the most were other Nordic countries (25.0% and 16.7% respectively) and Sweden (24.8% and 16.6% respectively). The country to agree/strongly agree the least was Finland at 18.8% and 9.2%. The highest in strongly disagreement/disagreement were Hungary (28.8% and 24.6% respectively) and Finland (28.9% and 23.9% respectively). Vets over 54 said they were less likely to think about whether to leave their career with 57.6% stating they strongly disagreed with the statement. Males were more likely to strongly disagree compared to females (41.6% and 24.4% respectively). Owners were less likely to leave the profession than employees, with 38.1% strongly disagree opposed to 19.7% of employees in non-managerial position strongly disagreeing.

Veterinarians were asked if they felt the profession has been under increased stress for the past 10 years, 26.3% agreed and 59.3% strongly agreeing from the entire sample. The highest being from Sweden 22.3% and 71.3% agreeing/strongly agreeing and the lowest from Hungary with 23.2% and 55.1% agreeing/strongly agreeing. The highest strongly disagreement/disagreement was from Hungary (2.5% and 3.8 respectively) and Finland (0.9% and 4.1% respectively). Differences between countries were significant ($p < 0.01$).

Younger vets aged 23-34 were more likely to strongly agree with this statement (61.2%) versus vets aged 35-54 (60.9%) and vets older than 54 (37.30%). Females were more likely to strongly agree, (61.7%) compared to males (37.7%). Vets in non-managerial positions were more likely to strongly agree with this statement (41.0%) compared to vets in owner/managerial position (30.9%).

From the entire sample, the 30.4% and 37.8% of the respondents agreed or strongly agreed with the statement that the income level and status of the veterinary profession has declined in recent years, and this worries them greatly. The other Nordic countries agreed or strongly agreed the most (41.7% and 44.4% respectively), Hungarian's responses were more mixed, with 27.1% agreeing and 33.5% strongly agreeing and 8.9-8.9% disagreeing and strongly disagreeing. Finland at 3.2% and 10.1% was a close second after Hungary, followed by Germany 2.6% and 10.4% and then Sweden 1.3% and 3.8% ($p < 0.0001$). Females were more likely to strongly agree (38.9%) compared to males (26.0%). Vets in non-managerial positions were more likely to strongly agree with this statement (62.2%) compared to vets in owner/managerial position (53.1%).

When vets were asked if keeping up with technological, professional developments and practical changes within a particular veterinary field, and feel it's hard to keep up, from the entire sample 34.3% and 21.4% agreed or strongly agreed with this statement. The percentage that strongly disagreed or disagreed was low in the entire sample, 6.6% strongly disagreed and 13.5% disagree. The highest to strongly disagree/disagree being Hungary at 11.9% and 17.4%, the lowest being Sweden at 1.9% and 8.9%. The highest to agree/strongly agree was Sweden (37.6% and 26.8% respectively) and Finland (43.1% and 21.1% respectively). Because of the percentage differences, the results were significant ($p < 0.0001$). Females were more likely to strongly agree with this statement (22.4%) opposed to males (9.1%).

4.6. Plan of Action/Aid Seeking

When asked if they would need professional counseling due to stress at work or if they currently use professional counseling due to stress at work, from the entire sample 18.8% strongly disagreed, 16.0% disagreed, 18.2% were uncertain, 25.4% agree and 21.5% strongly agreed. The other Nordic countries agreed or strongly agreed the most (27.8% and 27.8% respectively), followed by Finland (31.2% and 28.0% respectively) and Sweden (21.7% and 22.9% respectively). The lowest being Hungary (22.0% and 18.2% respectively) and Germany (26.0% and 7.8% respectively). Germany had the highest in disagreement with

20.8% strongly disagreeing and 26.0% disagreeing. There was significance due to the variation in means across countries ($p < 0.0001$). Females were more likely to strongly agree with this statement 22.4% versus males, 9.1%. Employees in non-managerial positions were more likely to strongly agree 23.1% and agree 29.3% versus vets in owner/manager positions (16.5% strongly agree and 16.0% agree).

When asked if their government/country has accessible mental health services they could use in case they needed it, there was a landslide of a difference between Hungary and then the rest, from the entire sample the average score was 2.79. The different response points are summarized in Chart 12. There was a strong significance due to the variation between countries ($p < 0.0001$). 60.2% and 21.6% of Hungarian vets strongly disagreed or disagreed as opposed to Sweden (34.4% and 21.7% respectively) and Finland (35.3% and 16.5% respectively), where vets basically agreed or strongly agreed with this statement. Other Nordic countries had responses 22.2% and 16.7% agreeing/strongly agreeing. Germany was the closest to the entire sample with 16.9% and 27.3% strongly disagreeing/disagreeing. Vets over 54 years of age were more likely to strongly agree with this statement (27.1%) compared to vets aged 35-54 (12.4%) and vets aged 23-34 (8.8%). Vets with less than 14 vacation days were more likely to strongly disagree to this statement (50.7%), followed by vets with 14-28 vacation days (31.4%) and vets with over 28 vacation day (12.8%).

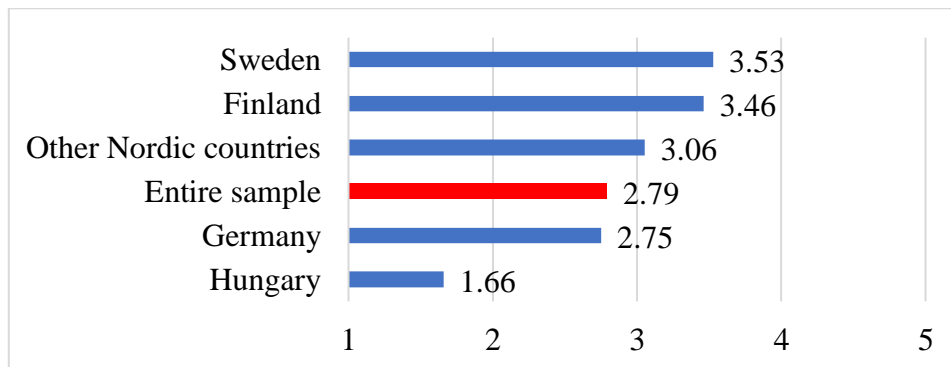


Chart 12. Mean values for the statement that the veterinarians government/country has accessible mental health services they could use in case they needed it. On a 5-point Likert Scale, where 1 = strongly disagree and 5 = strongly agree.

When vets were asked if they know how to perform self-care and know how to destress themselves if life getting overwhelmed, the mean point of the entire sample was 3.12. The different response points are summarized in Chart 13. The highest to strongly disagree/disagree was other Nordic countries (8.3% and 27.8% respectively), followed by Sweden (12.7% and 31.8% respectively) and Hungary (11.9% and 20.8% respectively). Finland was the highest to strongly agree/agree that they did have a plan in action to be able

to help themselves at 37.2% and 11.9%. The results were significant ($p < 0.05$). Vets over 54 were more likely to strongly agree with this sentiment (25.4%), compared to vets aged 35-54 (13.0%) and vets 23-34 (7.2%). Vets working less than 40 hours a week strongly agree more (14.2%) than vets working more than 40 hours a week (8.4%). Vets who are owners/managerial positions are more likely to strongly agree (19.6%) compared to vets who are not in managerial positions (7.9%).

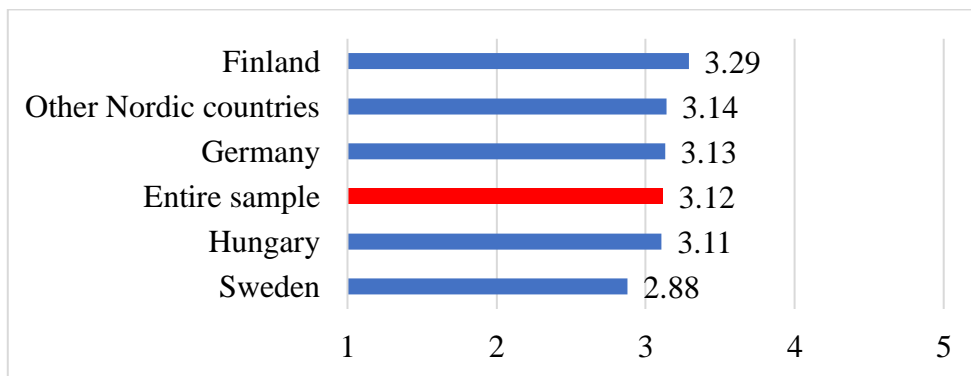


Chart 13. Mean values for the statement that veterinarians know how to perform self-care and know how to destress myself if life gets overwhelming. On a 5-point Likert Scale, where 1 = strongly disagree and 5 = strongly agree.

5. Discussion

The present study was designed to examine the data I collected from Hungary, Finland, Sweden, Germany, and other Nordic countries and determine common themes in suicidal ideation affecting the veterinarians. The results indicate differences but even more similarities between countries in terms of the number of vets that agreed or disagreed with the statements in my questionnaire on suicide and suicidal ideation.

From the entire sample 17.0% of vets have had suicidal thoughts and 9.5% have seriously considered or attempted suicide. Finnish vets were in the highest percentile of those who seriously considered or attempted suicide; this finding is in line with the 1992 statistic that indicated Finnish were in the highest percentage of suicide in the world [22]. Despite most vets' own lack of suicidal thoughts, they agreed that suicide in vets is higher than in the general population. These results are consistent with research done in the USA [10], UK [15], Canada [17], Australia [18] and Finland [22] which found that vets have a higher rate of suicide compared to the general population. Based off my results there is also a correlation between demographics and suicidal beliefs. Younger vets, female vets, vets working more than 40 hours a week, vets with less than 14 days of annual leave and vets in non-managerial positions are statistically shown to agree or strongly agree more frequently to statements that had a negative correlation towards the veterinary profession.

Veterinarians are prone to mental illness as they experience more negative emotions at work than the general population [19]. When comparing my results to that study, it must be pointed out that the vets felt rather inconclusive (a mean value of 3.08, indicating uncertainty) that their work has a negative impact on their mental health. Swedish vets agreed the most that their work has a negative impact on their mental health. The findings of my study agree with previous research regarding vets dealing with mental illness including anxiety [11–12, 17–18]. My data indicates work induced anxiety amongst vets. More than half of vets (50.4%) strongly agreed that their work does cause anxiety in terms of striving for conscientiousness and accuracy, and feel they are not performing well enough. The vets also strongly agreed that they go to work anxious about what they will do on a given day. This finding is consistent with previous studies that mention the impact of perfectionism in strengthening negative moral stressors in the veterinary practice [19, 42]. The countries that struggle with work induced anxiety the most was other Nordic countries then Hungary. My data found that younger vets agreed typically more than older vets in regards of having mental illness, suicidal thoughts, unhealthy work life balance, workplace induced anxiety and insecurity over the profession. The data found that female vets agreed significantly more than male vets when asked if they have been diagnosed with mental illness, work life balance struggles, going to counseling due to work stress and work-related anxiety. These results tie well with previous reports wherein younger female vets demonstrated to not be thriving in the profession [12], were at increased relative risk for suicide [16] and respond stronger for increased levels of stress and mental illness [5, 18]. When asked if having mental health issues would make them unfit to be a veterinarian, there were significant country variations. Hungary was the only country that strongly disagreed with this sentiment. The other countries were uncertain. A US study found that veterinarians have a less positive attitude towards mental health compared to other US adults [11]. My data can't tell for certain if this is the case here for all the countries except for Hungary due to the high response of uncertainty. A potential explanation is that the question lacked clarification and a rewording or further investigation of this question is required before deeper analysis behind this question is indulged.

Unhealthy tendencies among vets remain prominent in the profession [2]. Work related stressors in the veterinary field include increased stress [23], long work hours [6, 14], as well as a lack of work life balance [21]. The data suggests that work causes vets to develop unhealthy habits and tendencies, and that majority of vets agree that they lack a healthy work life balance. The data also demonstrates that vets feel compelled to go to work even during

family emergencies or sickness. All these factors of unhealthy tendencies overtime can lead to deteriorating mental health [15, 31–32]. The time an individual spends at work can affect their overall health, vets experience elevated levels of negative work-home interaction [17]. The number of vacation days allotted to working individuals has been proven to effect mental health, with more days of annual leave correlating to better mental health [29–30]. Vets with holidays less than 14 days of annual leave a year reported higher to a mental illness diagnosis, uncertainties about their profession, anxiety in the workplace, feelings of overworking and isolation, difficulties with clients than vets with longer holidays. They also disagree that their government/country has accessible mental health services that they could use, and that having mental health issues would make them unfit to be a vet. Furthermore, vets working more than 40 hours a week agreed significantly more than vets working less than 40 hours a week that their role at work has a negative impact on their mental health and feelings of isolation. This data corresponds to previous studies that link long working hours has been linked to suicidal thoughts [34]. On the other hand, vets working less than 40 hours a week can better separate their work and private life and when they feel themselves getting overwhelmed and their mental health deteriorating, they have a plan of action set in place. Vets agreed that they must go to work even when they are sick or have a family emergency.

Job stressors like dealing with clients, euthanasia, difficult cases put a pressure on the vet's mental wellbeing [6, 15, 21]. When it came to client expectations the results were unanimously high amongst the countries. All vets agreed that clients expect an immediate diagnosis to be made, with the mean values being between 4.2 and 4.7. Hungary, Germany, and other Nordic countries agreed that the owners expect vets to treat animals free of charge, while Finland and Sweden agreed less so. My data doesn't support previous study that have indicated the role of euthanasia on mental wellbeing [5]. The mean value for the entire sample was 2.64, demonstrating on average more uncertainty and disagreement for that statement. Financial stressors play an extensive role on the mental wellbeing of veterinarians practicing in America [13] yet are not mentioned in other countries literature or in my own data. This could be due to the magnitude of student debt American vets accumulate. A mean debt figure of veterinary school graduates in America was \$188,853 to complete their education [14], while the average student debt of European vet students is \$29,800 [43].

In terms of vets perception of the future, an American study indicated that over half of the veterinarians that completed the study would not recommend the profession [12] another study done in the US indication 13% of responded wanted to leave the profession. My study focusing on European countries disagrees the American studies and does that show that

negative sentiment. Most vets from my data felt they had picked the right profession and don't consider leaving it. However, in terms of attitude for the future, direction of the profession, they are not as positive. Majority of the vets believe that the profession has been under increased stress in the past 10 years. They agree that the income level and status of vets have declined over the years.

In terms of seeking aid and plan of action, accessibility to mental health services seems to be the greatest dividing factors between countries. Hungarian vets remained the outliers when asked if their government had accessible mental health services. 60.2% of Hungarian vets strongly disagreed while over 50% of Finish and Swedish vets agreeing that their government had accessible mental health services. The other countries remained uncertain. In comparison 83% of US vet respondents stated that mental health treatment was accessible [11].

The pressures that veterinarians felt at the workplace stem from themselves and not their supervisors or co-workers as all countries disagreed that their workplace anxiety would be due to co-worker/managerial issues. In my study the vets felt comfortable asking for help in the workplace. However, when asked if they received professional support in the workplace, the mean value was lower than 3.1, indicating more uncertainty. These findings are contrary to previous studies which found that colleague disagreement [21] and lack of support [19] as job related stressors. In reviewing the literature, no additional data was found on the association between employment position and mental wellbeing in the veterinary profession, so I conducted some research on it. Vets in non-managerial positions were more likely to need professional counseling due to stress at work, have suicidal thoughts/seriously considered suicide and have an unhealthy work life balance plus workplace anxiety opposed to vets who were owners or in managerial positions. Vets who owned their own practice or were in managerial positions were more likely to agree that they picked the right profession and have a plan of action set in place to help themselves if they get overwhelmed and feel their mental status deteriorating. They were also less likely to consider leaving the vet profession. The data suggests that vets in owner/managerial positions suffered less than vets who were not. This contradicts other studies done on general business owners that indicated that they have increased stress due to financial issues, with more than half of small-business operators saying running their own business has led to feelings of anxiety or depression [44].

It is important to note, that the evidence of the present study relies on data from an online questionnaire. Online questionnaires can limit the responses and demographic of those who have internet access and know how to respond to an online questionnaire in which

younger demographics would be overrepresented. There are fewer veterinarians compared to other professions, limiting statistical measures and causing it to be harder to derive certain statistics accurately [19]. A German study reported on the issue of over-representation of younger and female veterinarians in the sample which leads to skewed data [5]. I also experienced the over representation of female and young vets in my data. There are statistical methods to account for this uneven sampling but compensating for that is beyond the scope of this study.

A general observation from my literature review, which was also supported by my study is that veterinarians suffer a greater loss to suicide opposed to that of the general population. The veterinary profession has increased occupational stressors that put its practitioners at a higher risk of suicide, however, individual circumstances beyond the veterinary field are also contributing factors. Studies have shown that enjoying work, good work-life balance, spending time with family and friends and satisfaction with income have the highest association with positive mental health [28]. Further investigation should be conducted within the veterinary community to derive possible solutions which will vary between countries as noticeable differences were seen in terms of available mental health services.

6. Summary

The suicide rate among veterinarians is twice that of any other medical profession and four times that of the general population. The present study examines the main factors contributing to suicidal ideation and the prevalence of suicidal tendencies among veterinarians in Hungary, Finland, Sweden, Germany, and a small sample of veterinarians in other Nordic countries (Norway, Denmark, and Estonia). The survey was carried out using an online questionnaire and it examined how country, age, gender, number of hours worked per week, job title and length of annual leave affects suicidal ideation among veterinarians.

By means of Google Forms, an online questionnaire composed of 55-questions was created and completed between 19 July 2021 and 23 February 2022. A total of 724 veterinarians from seven countries completed the questionnaire: 236 from Hungary, 218 from Finland, 157 from Sweden, 77 from Germany, 26 from Estonia, 5 from Denmark and 5 from Norway. The responses were analysed using Pearson's chi-square test.

The results showed that work-related stressors were significant in contributing to negative mental health among veterinarians in all surveyed countries. Among these stressors, respondents rated clients' expectations of prompt diagnosis on average 4.34 points on a Likert scale of 1 to 5; 76.6% in Germany and 57.9% in Hungary strongly agreed (5 points), a difference considered significant ($p < 0.001$). Veterinarians rated anxiety due to conscientiousness and punctuality in their work with an average score of 3.91 points, with which 50.4% of respondents in Hungary strongly agreed. The emotional impact of performing euthanasia on veterinarians was ranked low by respondents with an average score of 2.65 points, with significant differences between countries, which were also considered significant ($p < 0.0001$). 28.7% and 15.6% of younger veterinarians (aged 23-34 years) agreed and strongly agreed that their role in their work had a negative impact on their mental health, while 33.9% of older respondents (aged 54 years and over) strongly disagreed with this statement. Female veterinarians were more likely to seek professional counselling (22.4%) than male veterinarians (9.1%). Older veterinarians and veterinarians in more senior positions (25.4% and 19.6%) were able to take care of their mental health and get help if their mental health deteriorated, compared to younger veterinarians (7.2%).

The causes of suicide are complex, with a mixture of social, psychological, and behavioural issues specific to the individual. But by addressing the issues in the veterinary field, an effective suicide prevention strategy can be developed to save lives.

7. Összefoglaló

Az állatorvosok körében az öngyilkosságok aránya kétszer akkora, mint bármely más orvosi szakmában, és négyszerese a teljes népességhez képest. Jelen tanulmány az öngyilkossági gondolatokhoz hozzájáruló legfontosabb tényezőket és az öngyilkosságra való hajlam gyakoriságát vizsgálja Magyarország, Finnország, Svédország, Németország, és kisebb mértékben egyéb északi országok (Norvégia, Dánia és Észtország) állatorvosai körében. A felmérést online kérdőív segítségével végeztük és vizsgáltuk, hogy az ország, az életkor, a nem, a heti munkaórák száma, a munkaköri beosztás és az évi szabadság hossza hogyan befolyásolják az öngyilkossági gondolatok kialakulását az állatorvosok körében.

Egy 55 kérdést tartalmazó online kérdőívet (Google Forms) állítottunk össze, amelyet 2021. július 19. és 2022. február 23. között tölthettek ki a válaszadók. Összesen 724 állatorvos töltötte ki a kérdőívet a hét országból: 236 fő Magyarországról, 218 fő Finnországból, 157 fő Svédországból, 77 fő Németországból, 26 fő Észtországból, 5 fő Dániából és 5 fő Norvégiából. A válaszokat Pearson-féle khi-négyzet próbával elemeztük.

Az eredmények azt mutatták, hogy a munkával kapcsolatos stresszorok minden felmérésben részt vett országban kulcsfontosságú tényezők az állatorvosok negatív mentális egészségének kialakulásában. Ezen stresszorok közül a válaszadók az ügyfelek elvárásait az azonnali diagnózis felállításának tekintetében átlagosan 4,34 pontra értékelték 1-5-ig terjedő Likert skálán; Németországban 76,6%, míg Magyarországon 57,9% teljes mértékben egyetértett az állítással (5 pont), amely eltérés szignifikánsnak tekinthető ($p < 0.001$). Az állatorvosok átlagosan 3,91 pontra értékelték munkájukban a lelkiismeretesség és a pontosság miatti szorongást, amellyel a magyarországi válaszadók 50,4%-a teljes mértékben egyetértett. Azt, hogy az eutanázia elvégzése érzelmileg hat az állatorvosokra, átlagosan 2,65 pontra értékelték a válaszadók és jelentős különbségek voltak országonként, amelyek szintén szignifikánsnak tekinthetők ($p < 0.0001$). A fiatalabb (23-34 év közötti) állatorvosok 28,7%-a egyetértett és 15,6%-a teljes mértékben egyetértett azzal, hogy a munkájukban betöltött szerepük negatív hatással van a mentális egészségükre, míg az idősebb (54 év feletti) válaszadók 33,9%-a egyáltalán nem értett egyet ezzel az állítással. A női állatorvosok gyakrabban vesznek igénybe szakmai tanácsadást (22,4%), mint a férfi állatorvosok (9,1%). A magasabb pozíciót betöltő vagy idősebb állatorvosok jobban tudták, hogyan gondoskodjanak magukról és hogyan kapjanak segítséget abban az esetben, ha a mentális egészségük romlana (19,6% és 25,4%), szemben a fiatalabb állatorvosokkal (7,2%).

Az öngyilkosságok okai olyan összetett társadalmi, pszichológiai és viselkedési kérdések, amelyekkel foglalkozni szükséges, és hatékony öngyilkosság-megelőzési stratégiákat kell kidolgozni annak érdekében, hogy minél több életet meg lehessen menteni.

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9. Acknowledgements

This paper would not have been possible without the remarkable guidance and patience of Dr. Marietta Máté. Words cannot express my gratitude for the countless hours she has sacrificed to assist in my research. This endeavor would not have been possible without the additional expertise of Dr. László Ozsvári who provided invaluable feedback and support. Additionally, I am grateful to Dr. Andrea Harnos, who generously provided the statistical expertise required for this research.

I would like to extend my sincere thanks to Dr. Heidi Rosengren, Dr. Tove Särkinen and Dr. Erik Diez. They supported my research by sharing my questionnaire, and without their help my data would not exist.

I would be remiss if I did not mention the endless support I received from my family. They were the backbone that held me together during this process by providing endless editing advice, late-night feedback sessions and moral support. This also goes to my friends and classmates whose belief in me and my paper has also kept my motivation high. Lastly, I would like to thank my dog and all the other cuddly creatures who have kept my spirits high throughout it all.

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Thesis progress report for veterinary students

Name of student: Claire Helen Várnai

Neptun code of the student: WNE9DO

Name and title of the supervisor: Dr. Marietta Máté, research fellow

Department: Department of Veterinary Forensics and Economics

Thesis title: International comparative study on suicidal tendency among veterinarians

Consultation – 1st semester

Timing				Topic / Remarks of the supervisor	Signature of the supervisor
	year	month	day		
1.	2022	02	15	Planning the research for this semester, continuing to complete the questionnaire used for the study	<i>Mate' Marietta</i>
2.	2022	02	23	Completing and closing the questionnaire	<i>Mate' Marietta</i>
3.	2022	03	23	Processing some of the data collected	<i>Mate' Marietta</i>
4.	2022	04	07	Writing the Introduction and Literature review of the thesis	<i>Mate' Marietta</i>
5.	2022	05	05	Further processing of the collected data	<i>Mate' Marietta</i>

Grade achieved at the end of the first semester:*excellent (5)*.....



Consultation – 2nd semester

Timing				Topic / Remarks of the supervisor	Signature of the supervisor
	year	month	day		
1.	2022	09	01	Writing the Materials and Methods of the thesis	Mate' Manetta
2.	2022	09	19	Writing the Results of the thesis	Mate' Manetta
3.	2022	09	23	Writing Discussion of the thesis, concluding own results	Mate' Manetta
4.	2022	10	03	Writing and finalising the Summary of the thesis	Mate' Manetta
5.	2022	10	17	Acceptance of the final form of the thesis	Mate' Manetta

Grade achieved at the end of the second semester: *excellent (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,

..... *Mate' Manetta*
signature of the supervisor

Signature of the student: *Caroline*

Signature of the secretary of the department: *Bobo Kistina*

Date of handing the thesis in... *15. November 2022*

NYILATKOZAT

Alulírott Claire Helen Várnai nyilatkozom, hogy diplomamunkám, melynek címe:

International comparative study on suicidal tendency among veterinarians

tartalmi és formai szempontból teljes mértékben megegyezik azonos című, a 2022. évi TDK konferencián szerepelt dolgozatommal.

Budapest, 2022. 11. 15.

Claire Helen Várnai



a hallgató neve és aláírása