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Demographic Characteristics of Individuals Who Abuse Animals: A Systematic Review

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Abstract: The purpose of the following review is to evaluate current literature on animal abuse including animal hoarding and zoophilia to identify demographic characteristics of adults who abuse animals. The review was conducted by using the Preferred Reporting Items for Systematic Review and Meta-analysis (PRISMA) Checklist 2009 (Moher et al., 2010). As the body of this research is still limited there were no restrictions regarding the level of evidence of studies made. A total of 40 studies met the selection criteria and were included in the review. The present review's main findings suggest that animal hoarders are mostly female and between their fifties and sixties. In contrast individuals who engage in nonsexual abuse are more likely to be male and younger (20–35 years). Several comorbid clinical symptoms could be identified in animal abusers such as depression, autism, or substance abuse. Overall, the phenomenon of animal abuse remains an underresearched area of study and studies are characterized by limited levels of evidence. The present review may contribute to a deeper understanding of animal abuse with the objective of prevention and the development of multiprofessional management strategies.

Human care for some animals and the abuse of others, even within the same species, has been documented in ancient and modern societies (Tiplayd, 2013). The history of animal abuse therefore ranges from ancient Egypt, when for example kittens and cats were sacrificed by ancient Egyptian priests (found mummified presumably with broken necks) (Clutton-Brock, 1993, as cited in Tiplayd, 2013), to animal experiments in recent times (e.g., Sandercock & Roberts, 2002).

Definitions of this phenomenon include torture, mutilation, beating, killing, deprivation of necessary sustenance, animal fighting, baiting, and carrying an animal in or upon any vehicle in a cruel or inhumane manner (Escobar, 2016). Here, Agnew (1998) differentiates between active and passive, as well as

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intentional and unintentional forms of animal abuse (e.g., in the form of neglect or active maltreatment). Further attempts at defining animal abuse are oriented toward the terminology developed by medical professions for children (Ascione, 2008). In this context abuse of animals and children can happen in the following four dimensions: physical abuse, sexual abuse, emotional abuse (threats or threatening behavior), and neglect due to not providing essentials like food, water, shelter, companionship, and so on. Ascione and Shapiro (2009) suggest, in addition, that animal abuse may be defined as "non-accidental, socially unacceptable behavior that causes pain, suffering or distress to and/or the death of an animal" (p. 4).

In view of diagnostic characteristics, the diagnostic classification of animal abuse was initially described in 1987 (APA, 1987) as a symptom of conduct disorder in the *Diagnostic and Statistical Manual of Mental Disorders III* (DSM-III) and was also adopted in the DSM-IV (APA, 2000) and DSM-5 (APA, 2013). Considering sexual abuse of animals, the fifth version of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) (APA, 2013) addresses zoophilia as "other specified paraphilic disorder." A further classification of zoophilia was developed by Aggrawal (2011) by mapping ten categories of zoosexual practices. A very recent classification based on a comparison of Aggrawal's classes (2011) with an online sample of zoophiles describes a total of seven classes (Emmett, Klamert, & Stetina, 2020). The DSM-5 also introduced a further differentiation in its latest version called animal hoarding, which is coded as a special manifestation of hoarding disorder (APA, 2013). The Hoarding of Animals Research Consortium (HARC) has, moreover, defined certain characteristics to capture the phenomenon of animal hoarding as well as a typology of people who hoard animals (HARC, 2016). According to HARC the following characteristics define animal hoarding: (1) having more than the typical number of animals, (2) failing to provide minimal standards of care, (3) denial of the inability to provide this minimum care and the impact of that failure, (4) persistence in accumulating more animals. The typology of hoarders consists of three general categories called the overwhelmed caregiver, the rescuer hoarder, and the exploiter hoarder. Overwhelmed caregivers initially provide proper care, but eventually get overwhelmed. An overwhelmed caregiver links his self-esteem to the role as a caregiver and has a strong attachment to animals as family members. This type of hoarder is more likely to respect the system and comply with recommendations. The rescue hoarder considers saving animals as a mission and thinks that he/she is the only one who can provide adequate care. The number of animals gradually overwhelms the capacity to provide minimal care. The rescue hoarder avoids authorities and/or impedes their access. The last type, the exploiter hoarder, is the most problematic type to deal with. The exploiter hoarder accumulates animals to serve his own needs and lacks empathy for animals and people. This type of hoarder tends to deny the situation and rejects concerns from any authorities over animal care. Additional types called the incipient hoarder and the breeder-hoarder are described as intermediate stages of full-blown hoarding (HARC, 2016).

Studying animal abuse by humans can be described as a fairly recent phenomenon (Ascione & Shapiro, 2009). However, the scientific community has researched the phenomenon of animal abuse from various perspectives. One area of research examines the link between violence toward animals and violent interpersonal behavior (e.g., DeGue & DiLillo, 2009; Krienert et al., 2012). In this context the progression or graduation hypothesis and the deviance generalization hypothesis are theoretical models trying to explain the relationship between animal abuse and interpersonal violence. These hypotheses are based on evidence that examined the histories of adult criminals and compared them to noncriminals (e.g., Felthous, 1980; Kellert & Felthous, 1985; Felthous & Kellert, 1986; Merz-Perez et al., 2001). The co-occurrence of animal abuse and interpersonal violence was also documented by a large body of studies focusing on the co-occurrence of domestic violence and animal abuse (e.g., Ascione et al., 2007; Haden et al., 2018; Krienert et al., 2012; McDonald et al., 2019; Strand & Faver, 2005).

Ascione & Shapiro (2009), moreover, propose a complex relationship between the severity of the abuser's clinical behavior and the degree of suffering of the victims. As an example, neglect might be a combination of certain behaviors such as personal irresponsibility, adoption attitudes, as well as limited financial resources that lead to suffering and death of the victims. In this perspective active violence toward animals in form of maltreatment, for example, in homes with domestic violence (e.g., McDonald et al., 2019) can be associated with severe clinical behavior and a high degree of suffering of the victims.

Oriented toward the above-mentioned definition of Ascione and Shapiro (2009) of animal abuse in the form of any nonaccidental, socially unacceptable active or passive harm to animals and the international handbook on animal abuse (Ascione, 2008), which addresses animal abuses including animal hoarding and zoophilia from various professional perspectives, the following types of animal abuse were integrated in the systematic review: animal hoarding, zoophilia, and any kind of nonsexual abuse of animals. First, the present study aims to find relevant studies about animal abuse. Second, the systematic review of literature attempts to identify a demographic profile of adult individuals who abuse animals. To our knowledge, this is the first systematic literature review that focuses on the demographic characteristics of animal abusers including animal hoarders and zoophiles.

Method

The present review was conducted by using the Preferred Reporting Items for Systematic Review and Meta-analysis (PRISMA) Checklist 2009 (Moher et al., 2010) to abstract studies investigating animal abuse including zoophilia and animal hoarding. Relevant databases such as PubMed, PsycInfo, and MEDLINE were searched to find relevant papers.

The systematic research was conducted by three independent researchers (LE, NK, BUS) by using the following keywords: *animal hoarding*, *zoophilia*, and *animal abuse* during January 2021 and February 2021. Full articles were selected if they met the following criteria: (1) were written in English, (2) were published between 2011 and February 2021, (3) focused on adult individuals who abused animals. We did not include any literature reviews, conference contributions, or letters to the editor. However, the literature search was not done following strong limitations in order to provide a comprehensive overview regarding the state of research on animal abuse. Accordingly, there were no papers excluded based on their level of evidence. The first literature search was done by the three investigators (LE, BUS, NK), where papers were selected by titles and abstracts. The next step was the exclusion of papers not matching the inclusion criteria. Subsequently duplicated papers were excluded. Afterward, the remaining studies were reviewed in full-text. The investigators then extracted information about the authors, the year of publication, the topic, the study type/study design, the sample size, and the main findings. Finally, the primary author assigned the extracted studies to the OCEBM (Oxford Center for Evidence-Based Medicine) levels of evidence (OCEBM, 2011) to take into consideration the bias and quality of studies included in the review, on which evidence conclusions are based (see Table 1).

Table 1 Oxford Centre for Evidence-Based Medicine 2011 Levels of Evidence

Levels of Evidence	Criteria
Level I	Systematic review of randomized control studies
Level II	Randomized trial
Level III	Nonrandomized controlled cohort or follow-up study
Level IV	Case series, case control studies
Level V	Mechanism-based reasoning

Results

The first literature search showed 438 studies. After excluding the duplicates and the studies not matching

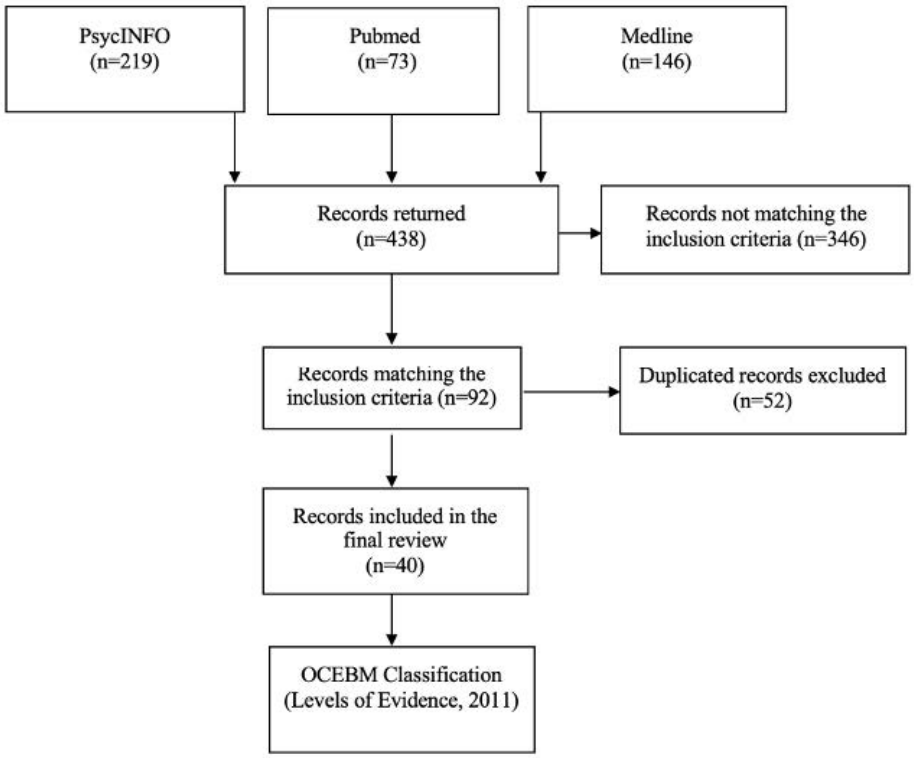

Figure 1. Flowchart.

the inclusion criteria, the final selection produced 40 sources. This selection was assigned to the following types of animal abuse: animal hoarding, nonsexual animal abuse, and sexual animal abuse (see Figure 1).

Animal Hoarding

Thirteen studies focused on the phenomenon of animal hoarding and were published between 2014 and 2020 (Table 2). Regarding gender, the most documented hoarding cases included women (Calvo et al., 2014; Joffe et al., 2014; Ockenden et al., 2014; Paloski et al., 2020; Saldarriaga-Cantillo & Rivas Nieto, 2015). On average the examined individuals seem to be in their fifties or sixties (Calvo et al., 2014; Dozier et al., 2019; Ferreira et al., 2017; Joffe et al., 2014; Ockenden et al., 2014; Paloski et al., 2020). Concerning marital status, individuals with animal hoarding behavior seem to be single, divorced, or widowed (e.g., Ferreira et al., 2017; Paloski et al., 2020). Considering occupation, some studies demonstrate that hoarders were unemployed, breeder, or pensioner (Ferreira et al., 2017; Joffe et al., 2014; Ockenden et al., 2014; Saldarriaga-Cantillo & Rivas Nieto, 2015). The homes of animal hoarders seem to be characterized by unsanitary conditions or by lacking hygiene (Calvo et al., 2014; Ockenden et al., 2014). In addition, studies show that individuals who accumulate animals show mental and/or somatic health problems by themselves and in their family history (e.g., Campos-Lima et al., 2015; Ferreira et al., 2017; Ockenden et al., 2014; Saldarriaga-Cantillo & Rivas Nieto, 2015). Some studies reported the presence of comorbid psychopathological symptoms such as object hoarding (Campos-Lima et al., 2015; Ockenden et al., 2014), Noah syndrome (Saldarriaga-Cantillo et al., 2015), and depressive symptoms (Campos-Lima et al., 2015; Ferreira et al., 2020; Saldarriaga-Cantillo & Rivas Nieto, 2015). One study assessed the cognitive performance of individuals showing animal hoarding behaviors. Findings also support deficits of animal hoarders in executive functions (Paloski et al., 2020).

Table 2 Characteristics of Studies Regarding Animal Hoarding

Authors (Year)	Topic	OCEBM Level (2011)	Study Type/ Design	Sample Size	Main Findings
Joffe et al. (2014)	Characteristics of animal hoarding cases	IV	Retrospective case reports	29 animal hoarding cases	The criteria of the Hoarding of Animals Research Consortium (HARC) were used to examine cases of the Prevention of Cruelty to Animals Act (NSW) animal welfare agency. The majority of the 29 examined cases were female (72.4%) and on average 54.8 years old. At their first offense hoarders were between 40 and 64 years old. The most reported occupation was breeder, pensioner, or unemployed. Hoarded animals were mostly dogs, cats, farm animals, horses, and birds. The number of hoarded animals ranged from 6 to 500 (M = 80). All animals required veterinary attention. Living areas of all cases were described as unsanitary.
Calvo et al. (2014)	Characteristics of animal hoarding cases	IV	Retrospective case reports	24 animal hoarding cases (27 hoarders)	All cases included were supplied by the Asociación Nacional de Amigos de los Animales (ANAA). Not all information about all cases was available. In half of the cases the duration of abuse exceeded five years. Of the 27 individual hoarders, 51.8% were female, 63% were older than 65 years (12/19), 83% of the cases were living alone (15/18). Eleven of 14 cases were described as having a borderline financial situation and 3 cases were described as having a bad financial situation. The mean number of animals per case was 50. In 14 cases there were dogs involved, in 5 cases there were cats involved. In 23 cases accumulating animals resulted from collecting stray animals (16/23) or uncontrolled breeding (18/23). The mean for food availability was 1.82 and for lack of hygiene 3.79 (1–10). Fearfulness was the most reported problem of behavior. Dead animals were found in 3 of 24 cases.

(*continued*)

Table 2 (*Continued*)

Authors (Year)	Topic	OCEBM Level (2011)	Study Type/ Design	Sample Size	Main Findings
Ockenden, De Groef, & Marston (2014)	Characteristics of animal hoarding cases	IV	Case reports	22 case reports	Animal case reports were selected from the Royal Society for the Prevention of Cruelty to Animals Victoria (RSPCA). Of hoarders, 45% were in their fifties and 63% were female. Four of the 22 hoarders were known to be working. The employment status of 45.5% was unknown. A mental condition was diagnosed in 6 of the 22 cases. Three of eight males and 64% of female hoarders did live with someone else. Hoarding objects was comorbid for 10 of the 22 cases. Unsanitary conditions of the hoarders' homes could be reported in 15 of 22 cases. The number of collected animals ranged from 10 to 180. Accumulating animals resulted from uncontrolled breeding (18/22), collecting strays (7/22), actively purchasing them (5/22). The most hoarded species were cats (50%), followed by dogs (22.7%). In 8 of 22 cases dead animals were found.
Saldarriaga-Cantillo & Rivas Nieto (2015)	Case report of Noah syndrome and animal hoarding	IV	Case report, clinical interview, and examination	83-year-old widow	The woman (holding a master's degree) was suffering from Noah syndrome and living with 15 dogs and 16 cats (also malnourished and in poor health). She was living alone and was single. She suffered from cardiovascular disease, dementia, and depressive disorder. The authors assume a cerebrovascular accident 15 years ago as the potential start of hoarding behavior. The medical family history is marked by cardiovascular diseases and psychiatric diseases.

(*continued*)

Table 2 (*Continued*)

Authors (Year)	Topic	OCEBM Level (2011)	Study Type/ Design	Sample Size	Main Findings
Campos-Lima et al. (2015)	Animal hoarding in obsessive-compulsive disorder	IV	Chart review	420 patients (with a DSM-IV diagnosis of OCD who also reported animal hoarding as a main clinical problem)	The mean age of the sample was 35.6 years and 55% were female. Most of them were single (59.7%). The following symptoms could be examined in the sample: forbidden thought/ checking (79.3%), contamination/ washing (63.3%), symmetry/ordering (47.6%), hoarding (20.7%). Only two cases of AH were identified among the sample of 420. Case I: A 35-year-old single female architect, living alone with 19 cats and 4 dogs, suffering from insomnia, increased appetite, decreased self-esteem. Strangers leave pets at her doorstep, knowing about her habits. She meets the criteria for major depressive disorder (MDD) and hoarding disorder (HD) (DSM-5). Her mother has a history of Alzheimer. Case II: A 59-year-old male pharmacist housing 130 animals and showing washing, symmetry, and checking compulsions. He met the criteria for MDD, HD, and attention deficit/hyperactivity disorder (DSM-5).
Ung, Dozier, Bratiotis, & Ayers (2017)	Animal hoarding symptoms in a sample of adults with hoarding disorder	IV	Exploratory study	65 adults who met the OCD criteria of DSM-5	More than half of the sample reported owning animals (53.85%) and the average number of pets was two. No participants reported having more than four animals. Eighty percent reported having at least one pet in their childhood. There were no significant associations found between present hoarding symptoms and pet ownership.

(*continued*)

Table 2 (*Continued*)

Authors (Year)	Topic	OCEBM Level (2011)	Study Type/ Design	Sample Size	Main Findings
Ferreira et al. (2017)	Characterization of sociodemo-graphic profile of animal hoarders	IV	Cross-sectional and exploratory study	33 individuals with animal hoarding behavior	Seventy-three percent of the sample were female. Regarding their relationship status, 88% were divorced/ widowed or single, 52% lived alone, and 61% were retired. The average number of animals was 41 (mainly dogs, cats, and ducks). The sample was on average 61.39 years old and the average period of AH or living with a large number of animals was 23.09 years. Sixty-three percent reported some type of health problem. The educational background of the sample studied was on average 9.39 years. Four people of the sample had a college degree. Most of the sample was retired or pensioner (61%).
Dozier et al. (2019)	Characteristics of animal hoarding cases	IV	Case report	17 people with animal hoarding disorder	Seventeen cases of AH were examined. On average there were 94 animals hoarded in each household. Most hoarded animals were cats (65%) and dogs (59%). Half of the reviewed homes showed signs of object hoarding (53%). All of the 12 examined hoarders showed low or absent insight about the situation and reported as a reason for the high number of animals the desire to rescue them (29%) or to keep them as pets (18%). Case I: A 59-year-old woman, who was found hoarding a total of 212 living cats, 65 deceased cats, and 5 dogs, described feeling the need to take in cats when they are sick. Several deceased cats were also found in her freezer. She also attempted to shoplift cat food from a local pet store. The woman also expressed suicidal thoughts if the police took the animals away. Case II: A 51-year-old man, who called himself a breeder, was found hoarding 150 dogs trapped in crates filled with animal excrement. All animals showed poor health conditions. The man stated how well he cared for the dogs.

(*continued*)

Table 2 (*Continued*)

Authors (Year)	Topic	OCEBM Level (2011)	Study Type/ Design	Sample Size	Main Findings
Strong, Federico, Banks, & Williams (2019)	Development of a model for managing animal hoarding cases	IV	Strategic intervention plan for animal hoarding cases, collaborative approach	Six animal hoarding cases	In 2015 the Wake County Animal Center (WCAC) developed a novel approach for six animal hoarding cases to evaluate this new multidisciplinary approach. The total number of cases involved was 100 (65 cats, 1 bird, 34 dogs). It was possible to achieve a 92% live release for the six cases (normal annual live release rate: 75%). Five of the six cases could be classified as overwhelmed caregiver, whereas one of them also showed extreme object hoarding and food hoarding. One of the examined cases was assigned to the profile of a rescue hoarder.
Paloski et al. (2020)	Characterization of cognitive performance of animal hoarders	IV	Cross-sectional study	33 individuals showing animal hoarding behavior	Most of the sample was female (73%) and single (90%); 64% of the sample were over 60 years old. The years of education were on average 9.93. The average number of animals per home was 41.12 (dogs and cats) and ranged from 3 to 101. The results of the cognitive performance test showed the following proportions of the sample substandard performances: Mini-Mental State Examination (MMSE) (27.3%), Verbal Fluency Test (9.4%), Rex Complex Figure Copy section (40%), Rex Complex Figure Recall (40%), Wechsler Abbreviated Scale of Intelligence (WASI Similarities subtest) (73.3%).
Ferreira et al. (2020)	Description of psychopathological symptoms comorbid to animal hoarding disorder	IV	Cross-sectional study Exploratory study	33 individuals with animal hoarding behavior	The same sample was used as in the study in 2017. In addition, comorbid pathological symptoms were obtained through semistructured clinical interviews: depression (36%), anxiety (36%), memory deficits (27%), mania (21%), and obsessive-compulsive disorder (18%). There was a significantly higher occurrence of symptoms of mania, panic, OCD, psychosis, and memory deficits found in people who hoarded animals for over 20 years.

(*continued*)

Table 2 (*Continued*)

Authors (Year)	Topic	OCEBM Level (2011)	Study Type/ Design	Sample Size	Main Findings
Snowdon et al. (2020)	Characteristics of animal hoarding cases	IV	Retrospective case reports	50 animal hoarding cases	Data was collected from the Royal Society for Prevention of Cruelty to Animals (RSPCA) in New South Wales (NSW). Most of the hoarders were female (78%). Most of the sample was between 40 and 59 years old (44%). Regarding marital status, 34% were married and 20% had never been married. In 11 cases data about marital status was missing. Fourteen percent were divorced or separated and 10% were widowed. Forty-four percent of the sample were living with children and 42% were living alone. Human agencies were involved in 28 of the 50 cases and mental health services in 11 cases. In 28 cases inspectors assumed substance abuse or other mental conditions were associated with the hoarding behavior. Eleven cases were categorized as rescuers, 12 as overwhelmed, 15 as breeders, 7 as incipient hoarders, and 5 as exploiters. The total number of hoarded animals was 2,560. The most hoarded species were cats (1,167) and dogs (869).
D'Angelo et al. (2020)	Characteristics of an animal hoarding case	IV	Case report	Woman suffering from animal hoarding	A woman living in Italy suffering from animal hoarding since 2005 was found accumulating 450 animals (mostly dogs, but also cats and horses). Several animals suffered from zoonotic diseases. Despite several ordinances she continued accumulating animals, for example by adopting stray animals or via online platforms. Several behavioral problems as well as clinical problems could be documented in the rescued animals.

The most documented reasons for accumulating animals were uncontrolled breeding and collecting strays (Calvo et al., 2014; Campos-Lima et al., 2015; Ockenden et al., 2014). Only two studies tried to assign the examined hoarders to the typology developed by the Hoarding of Animals Research Consortium (HARC, 2016). Accordingly, the results of Snowdon and colleagues (2020) show that the most represented types were breeders (30%) and overwhelmed caregivers (24%). These results are consistent with the results of Strong, Federico, Banks, and Williams (2019), where five of six cases were classified as overwhelmed caregivers.

Finally, the most hoarded species seem to be cats and dogs (Calvo et al., 2014; Campos-Lima et al., 2015; D'Angelo et al., 2020; Dozier et al., 2019; Ferreira et al., 2017; Joffe et al., 2014; Ockenden et al., 2014; Saldarriaga-Cantillo & Rivas Nieto, 2015; Snowdon et al., 2020; Strong et al., 2019). Some studies reported the average number of hoarded animals ranged from 41 to 94 (e.g., Dozier et al., 2019; Ferreira et al., 2017). The highest numbers of accumulated animals per case was documented in the study by D'Angelo and colleagues (2020) (450) and in the study by Joffe et al. (2014) (500).

Nonsexual Animal Abuse

Eighteen studies focused on nonsexual abuse of animals and were published between 2012 and 2019 (Table 3). The findings suggest a great diversity in examining the subject of nonsexual animal abuse. Eight of the identified studies based their research on individuals who came into conflict with the law due to acts of animal abuse (Browne et al., 2016; Febres et al., 2012; Febres et al., 2014; Haden et al., 2018; Hensley et al., 2012; Hensley et al., 2018; Levitt et al., 2016; Stupperich & Strack, 2016; van Wijk et al., 2018). Six of those studies investigated animal abuse in student populations (Newberry, 2018; Parfitt & Alleyne, 2016; Sanders & Henry, 2015, 2017; Sanders et al., 2013; Schwartz et al., 2012). Two descriptive studies were based on individuals engaging in acts of animal abuse registered because of public mass, active shooters (Arluke et al., 2018) or companion animal neglect (Monsalve et al., 2018). Regarding gender distribution it can be stated that most studies examined animal abuse in male populations (e.g., Browne et al., 2016; Haden et al., 2018; Hensley et al., 2012;). Only one study focused exclusively on female offenders (Febres et al., 2012). Almost all studies that investigated animal abuse in student populations or prison populations provided demographic characteristics of the whole sample (including control groups) and not only concerning individuals committing acts of animal abuse (e.g., Browne et al., 2016; Febres et al., 2012; Newberry, 2018; Parfitt, 2016). Therefore, demographic profiles of nonsexual animal abusers cannot be presented comprehensively. However, the results of two studies providing demographic characteristics of animal abusers show that the majority of animal abusers were male (Schwartz et al., 2012; van Wijk et al., 2018). Moreover, one study identified being of male gender as a significant predictor for animal abuse (Sanders & Henry, 2017). Therefore, males were almost four times more likely to be identified as an animal abuser compared to females. In two studies presenting demographic variables of animal abusers, the average age ranged from 20 (Schwartz et al., 2012) to 34 years (van Wijk et al., 2018). Considering available information about marital status in these studies, most individuals stated they were single. Additionally, dysfunctional behaviors such as intoxication of drugs or alcohol could be identified in animal abusers (Levitt et al., 2016; van Wijk et al., 2018). Van Wijk, Hardeman, and Endenburg (2018) reported the following diagnoses in 24% of the sample: personality disorder, depression, and autism. According to the results of the study by Stupperich and Strack (2016), abusers scored higher on several subscales of the Psychopathy Checklist (e.g., lack of empathy, adolescent antisocial behavior) compared to nonabusers.

The initial age of witnessing acts of animal abuse seems to be an important factor regarding the first act as well as the frequency of animal abuse. Results indicate that individuals who were younger when they first witnessed animal abuse tend to commit animal cruelty at a younger age and more frequently (Browne et al., 2016; Hensley et al., 2012; Hensley et al., 2018). Individuals who engaged in childhood

Table 3 Characteristics of Studies Regarding Nonsexual Animal Abuse

Authors (Year)	Topic	OCEBM Level (2011)	Study Type/ Design	Sample Size	Main Findings
Hensley, Tallichet, & Dutkiewicz (2012)	Investigation of demographic and childhood characteristics related to initial age of animal cruelty	IV	Cross-sectional survey	180 male inmates	A total of 103 of the 180 analyzed cases engaged in animal cruelty in their childhood at least once. The significant correlations showed mostly weak or moderate effects. White males were more likely to live in rural areas and have witnessed a family member hurt or kill animals. Individuals who were younger when they witnessed someone hurt or kill animals were more likely to commit animal cruelty more frequently. Those who were younger when they first hurt or killed animals were more likely to commit recurrent animal cruelty. The education level of the sample was not associated with any of the observed variables.
Schwartz, Fremouw, Schenk, & Ragatz (2012)	Psychological profiles of male and female animal abusers	IV	Cross-sectional survey, control group used	58 college students (29 animal abusers, 29 controls)	The mean age of abusers was 20.00 (*SD* = 2.4), and 19.97 for the controls (*SD* = 2.2). The majority of the 29 animal abusers were male (17; 58.62%). Most of the participants were single (abusers: 93.2%; controls: 100%). The animal abuser group showed higher scores on the Power Orientation scale (subscale of the Texas Christian University Thinking Scales [TCU] measuring maladaptive thinking related to criminal behavior) compared to the controls (p = <.005). Most of the interviewees were of European American descent (93.2%; 96.6%). Males showed significantly higher scores on the Total Criminal Thinking scale compared to females. Female abusers scored significantly higher on the Total Criminal Thinking Scale compared to female controls. Results showed that animal abusers had more previous criminal behaviors and were more likely to bully. No differences were found in empathy between animal abusers and controls.

(*continued*)

Table 3 (*Continued*)

Authors (Year)	Topic	OCEBM Level (2011)	Study Type/ Design	Sample Size	Main Findings
Febres et al. (2012)	Animal abuse in female inmates	IV	Cross-sectional survey	87 women arrested for domestic violence	Seventeen percent (*n* = 15) stated committing at least one act of animal abuse since the age of 18. The mean age was 30.5 and they had on average 12.3 years of education. Most of the sample was cohabitating but not married (35.6%) and primarily non-Hispanic Caucasian (74.7%). Results show that the sample committed on average 8.8 acts of animal cruelty. There were no significant differences between women who perpetrated cruelty to animals and women who did not commit any act of animal abuse regarding the frequency of interpersonal violence perpetration.
Sanders, Henry, Giuliani, & Dimmer (2013)	Animal abuse tendencies associated with bullying behaviors, victimization by bullying	IV	Cross-sectional survey	244 male undergraduate students	The mean age was 24.80 (*SD* = 7.06). Most of the sample was white (68.3%); 26 participants of the sample stated having engaged in animal abuse. Based on the results of the Bully/Victim Questionnaire (BVQ) and the questions about animal abuse, the three groups of animal abusers, bullies, and victims of bullying were compared. Findings suggest that individuals who are perpetrators of animal abuse or bullying or victims of bullying show more behavioral disturbances. A significant positive association between animal abuse and bullying as well as between animal abuse and victimization of bullying could be identified. Bullies, victims, and animal abusers all scored on the conduct and hyperactivity scale.
Febres et al. (2014)	Animal abuse in male inmates arrested for domestic violence	IV	Cross-sectional survey	307 men arrested for domestic violence	The mean age was 33.1 years (*SD* = 10.02) and reported a mean education of 12.1 years (*SD* = 2.0). A total of 41% stated committing at least one act of animal abuse since the age of 18. On average they committed 9.52 acts of animal abuse; 80% of animal abuse incidents were associated with physical abuse, followed by threats (71.2%) and neglect (12.0%). Adulthood animal abuse was not significantly associated with overall psychological aggression or severe physical aggression above and beyond antisocial personality traits.

(*continued*)

Table 3 (*Continued*)

Authors (Year)	Topic	OCEBM Level (2011)	Study Type/ Design	Sample Size	Main Findings
Sanders & Henry (2015)	Animal cruelty, bullying, and behavioral difficulties among women	IV	Cross-sectional survey	500 undergraduate female students	The mean age was 22.84 years (*SD* = 6.86), ranging from 18 to 60 years. Most of the sample was White (68%). Individuals who identified as animal abusers scored high on the bullying scale, the victimization scale, and the emotional difficulties subscale, and lower on the prosocial behaviors scale, compared to nonabusers.
Browne, Hensley, & McGuffee (2016)	Association between demographic characteristics and childhood experiences on the respondent's age of committing childhood animal cruelty	IV	Cross-sectional survey	257 male inmates	Of the 257 respondents, 126 inmates stated having engaged in animal cruelty. Most of the sample was White (56.8%), had completed high school, and lived in rural areas (51.4%). Results showed that inmates who were physically abused in their childhood were more likely to engage in recurrent childhood animal cruelty. Inmates who were younger when they first witnessed acts of animal cruelty tended to commit animal cruelty at a younger age. Inmates who reported witnessing their sibling abusing an animal were more likely to commit acts of animal cruelty at a younger age. Participants who witnessed a parent abusing animals were more likely to engage in acts of animal abuse at an older age.
Levitt, Hoffer, & Loper (2016)	Criminal histories of animal cruelty offenders	IV	Descriptive study	150 male inmates	On average the examined men were 37.4 years old (*SD* = 13.2) and 85% were U.S. citizens. Animal abuse cases included 17 different species. The majority of cases involved abusing or neglecting at least one dog (19%). Active or passive animal abuse was most common (59%). In 47% of the cases the animal belonged to the offender; 58% of those arrested for active animal cruelty had also been arrested in the past for interpersonal violence. A total of 38% of animal cruelty offenders were intoxicated at the time of arrest. One third of offenders arrested for animal sexual abuse were also arrested for sexually assaulting a human.

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Table 3 (*Continued*)

Authors (Year)	Topic	OCEBM Level (2011)	Study Type/ Design	Sample Size	Main Findings
Parfitt & Alleyne (2016)	Behavioral and psychological correlates of adulthood animal abuse	IV	Cross-sectional survey	164 students	A total of 87 males (53%) and 77 females (47%) participated in the study. The majority of the sample was aged between 18 and 21 (87%) and were predominately White (69%). Specific acts of animal cruelty were significantly related to direct (the animal was perceived to be the provocateur) and indirect (a person was perceived to be the provocateur, the animal was an alternative outlet) forms of animal abuse proclivity. Direct human aggression was related to direct forms of animal abuse proclivity. Indirect human aggression was not related to indirect forms of animal abuse proclivity. Childhood animal abuse, personal distress, and empathic concern correlated significantly with indirect forms of animal abuse
Stupperich & Strack (2016)	Animal abuse, psychopathy, and sadistic actions in a German sample of forensic patients	IV	Cross-sectional survey	60 German male forensic patients	The patients were on average 36 years old. Fourteen patients of the sample, according to the files, were diagnosed with personality disorders, 7 with intellectual disabilities, and 39 patients were diagnosed with psychosis. The following crimes could be documented within the sample: murder (n = 11), rape (n = 7), child molestation (n = 5), battery (n = 26), robbery (n = 6), others (n = 5). A total of 10 individuals of the 60 patients had engaged in animal abuse in their past. Comparing animal abusers and nonabusers, abusers scored significantly higher regarding the subscales adolescent antisocial behavior, superficial, lack of remorse, lack of empathy, and grandiosity in the Psychopathy Checklist-Screening Version.
Hensley, Browne, & Trentham (2018)	Childhood animal cruelty and its link to adult human violence	IV	Cross-sectional survey	180 male inmates	Of 180 inmates, 103 individuals reported animal cruelty in their childhood. Participants who reported committing animal cruelty at a younger age were more likely to report recurrent animal cruelty. There was a significant correlation between recurrent childhood animal abuse and recurrent interpersonal violence. There was no significant relation between acting alone or being upset by their own abuse of animals found in regard to repeated acts of adult interpersonal violence.

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Authors (Year)	Topic	OCEBM Level (2011)	Study Type/ Design	Sample Size	Main Findings
Sanders & Henry (2017)	Beliefs about aggression in cyberbullying and animal abuse	IV	Cross-sectional survey	439 undergraduate students	A total of 267 females and 172 males took part in the study. Most of the sample was between 18 and 21 years old (males: 91; females: 165). Results revealed that animal abusers tended to be perpetrators of traditional bullying and cyberbullying. Regarding gender differences between male and female abusers, male perpetrators expressed significantly more general approval of aggression, whereas female abuser endorsed aggression for retaliation. The likelihood of animal abuse is higher in males (four times) among individuals who exhibit violence toward humans (bullying) as well as individuals who hold accepting attitudes about aggression.
Haden et al. (2018)	Perpetrators' reports of violence against animals	IV	Cross-sectional survey	42 male inmates (incarcerated for intimate partner violence [IPV])	The age of the participants ranged from 21 to 55 years (M = 37.40; SD = 8.27). The majority of the sample was divorced (57.1%), followed by single (19%). The sample was primarily White (76.2%). A total of 66.7% reported completing high school and about 90% reporting owning pets related to their current or past relationship. About half of the sample (N = 20) were diagnosed with antisocial personality disorder (ASPD). Fifteen participants stated that they had been cruel to animals in their childhood. Over 80% reported engaging in animal cruelty during their lifetime. Men with ASPD reported engaging in greater psychosocial and physical assault tactics within a relationship, but fewer negotiation tactics. ASPD was not significantly associated with threatening or violating animals during IPV conflicts. Participants who engaged in childhood animal cruelty were more likely to have threatened, harmed, or killed a pet during a (relationship) conflict.
Alleyne & Parfitt (2018)	Distinguishing factors between animal abuse and other antisocial behaviors	IV	Retrospective correlational study	384 participants of a community sample	The mean age was 37.22 (SD = 11.26) and the majority was male (51%). Their ethnicity was mainly White/Caucasian (84%). Animal abusers were more likely to self-report witnessing legal killings of animals (e.g., hunting) during childhood than nonabusers. Animal abusers showed less animal empathy and lower self-esteem than nonabuser offenders. Witnessing legal animal killing and animal abuse perpetration during adulthood was stronger among participants with anger regulation issues.

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Authors (Year)	Topic	OCEBM Level (2011)	Study Type/ Design	Sample Size	Main Findings
Arluke, Lankford, & Madfis (2018)	Animal abuse in public mass and active shooters	IV	Descriptive study	20 cases of public mass shooters and active shooters	Nine (10.2%) of public mass shooters (United States, from 1982 to 2018) of 88 identified public mass shooters had a history of animal abuse. The following characteristics of active and mass shooters with a reported history of animal abuse could be found. The mean age was 25.7 and the sample was 95% male and 95% White. On average 13.4 victims were killed compared to the average of 8.8 victims of nonabuser shooters. The majority of abused animals were cats or dogs (65%). Summarizing animal-abusing offenders, they were more likely to be young and White, less likely to die at the crime scene, and more likely to kill and wound many victims.
Newberry (2018)	Motivations and methods of animal cruelty and facets of impulsivity	IV	Cross-sectional survey	130 undergraduate students	Over half of participants committed an act of animal cruelty at least once (55%). The majority of the sample was female (77), and the mean age was 23.39 (*SD* = 7.60). Most of the sample was White (93%). Dogs were the most abused species (86%). The most prevalent motivation was prejudice against a particular species (63%) (e.g., belief that cats are not worthy of moral consideration), followed by amusement (64%), control (46%), and retaliation against an animal (39%). Beating and kicking was the most stated method of animal cruelty (97%) followed by squashing (78%) and throwing an object at an animal (40%). Participants who were motivated by prejudice were significantly more likely to have squashed an animal or to have beaten/kicked an animal. Participants who reported a motivation of retaliation or control showed a significantly higher score on urgency (especially negative urgency: tendency to have strong impulses when feeling distressed) compared to participants who did not state these motivations. Individuals who reported amusement as motivation showed significantly higher scores on sensation seeking compared to participants who did not report amusement as motivation for animal abuse.

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Authors (Year)	Topic	OCEBM Level (2011)	Study Type/ Design	Sample Size	Main Findings
Van Wijk, Hardeman, & Endenburg (2018)	Offender and offence characteristics in animal abuse	IV	Descriptive study	97 offenders of animal abuse	A total of 86 animal abusers were male (89%) and 11 were female (11%). At the time of the abuse the participants were on average 34 years old. The marital status of most offenders was unknown; 34% were single. The majority had a Dutch background (85%). Overall, 19 offenders were raised in single-parent families; 12 came from abusive home situations. Secondary training was completed by 26%; for 49% information about education was unknown. Unemployment could be documented for 40% of the offenders; 21% had a steady job. Regarding their financial situation, 39 of the offenders (40%) had debts. In more than half of the cases (52%) the act of animal abuse was unplanned and sometimes alcohol or drugs were involved. In 14% of the cases addiction to alcohol and in 10% of the cases addiction to drugs was documented. When offenders were registered in the police system they were on average 24.4 years old; the average age for registration for animal abuse was 34. One or more diagnoses were documented for 24% of the abusers (e.g., personality disorders, depression, autism). The most abused species were cats and dogs. The majority of the abused animals belonged to the offender (47%).
Monsalve et al. (2018)	Associated factors of animal abuse in family environments	IV	Quantitative study	267 animal abuse investigations	The following indicators were used to evaluate animal welfare degrees: nutritional, comfort, health, behavioral. A total of 95.5% of animal abuse cases were related to dogs and cats. Of 118 cases analyzed, 90 were categorized as animal abuse (animal neglect). Physical aggression was identified in 6.7% of the cases (exclusively in dogs). In 83% of the cases children were exposed to the conditions of animal abuse. Inadequacies in nutritional and health indicators were significantly associated with the presence of people with disabilities and economic difficulties.

animal cruelty were also more likely to have threatened, harmed or killed a pet during a (relationship) conflict. One study called attention to the role of the abuser when witnessing hurting or killing animals. Individuals who witnessed a sibling abusing an animal were more likely to engage in acts of animal abuse compared to individuals who witnessed parents hurting or killing animals; they were more likely to engage in animal abuse at an older age (Browne et al., 2016). Some identified studies investigated the relationship between animal abuse and bullying (Sanders & Henry, 2015, 2017; Sanders et al., 2013; Schwartz et al., 2012), as authors also assume a connection between these forms of aggression in the context of conduct disorder. In these studies, results suggest a positive association between animal abuse and bullying as well as victimization of bullying. Moreover, animal abusers show significantly more behavioral problems compared to non-abusers. Animal abusers also reported high levels of emotional difficulties and lower levels of prosocial behavior. The above mentioned well-investigated co-occurrence between violence toward animals and interpersonal violence could be documented in some of the studies of the systematic review (Levitt et al., 2016; Schwartz et al., 2012).

Lastly, most abused species were cats and dogs (Arluke et al., 2018; Monsalve et al., 2018; Newberry, 2018; van Wijk et al., 2018). Only one study investigated motivations and methods of animal abuse. The most prevalent motivation in the study by Newberry (2018) was prejudice against a particular species (63%), whereas beating and kicking was the most stated method of animal abuse (97%).

Sexual Animal Abuse

The results showed 9 studies regarding sexual animal abuse, which were mainly case reports and were published between 2012 and 2019 (Table 4). Studies

Table 4 Characteristics of Studies Regarding Sexual Animal Abuse

Authors (Year)	Topic	OCEBM Level (2011)	Study Type/ Design	Sample Size	Main Findings
de Cássio Zequi et al. (2012)	Behavioral characteristics and possible association with penile cancer in zoophiles	IV	Quantitative questionnaire	Total sample of 492 (118 penile cancer [PC] patients and 374 controls)	Significant differences (p = <.05) could be documented in the following aspects: PC group tended to be nonwhites (51.8% vs. 36.6%; p = .006); higher rates of smoking (70.3% vs. 45.7%), phimosis (67.8% vs. 14.4%); sex with prostitutes (73.7% vs. 63.9%). One hundred seventy-one individuals (34.8%) reported having sex with animals (SWA), which was more common among PC patients (44.9%) than controls. Subjects who reported SWA also reported having more sex with prostitutes (79.5% vs. 59.2%) and were more likely to have had >10 lifetime sexual partners (64.3% vs. 44.8%). The participants were on average 13.5 years old when they had their first sexual intercourse with an animal. The reported frequency included single (14%), weekly or more (39.5%), or monthly (15%). The most common animal types were mares (n = 80), donkeys (n = 73), and mules (n = 57).

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Amoo (2012)	Zoophilic recidivism in schizophrenia: a case report	IV	Case report	28-year-old male	A single, unemployed male with incomplete secondary school education was psychiatrically evaluated by the court regarding repeated sexual intercourse with animals. He had sex with a pregnant goat, which bled to death afterward. He was observed walking the streets with goats, talking and laughing to himself (no hallucinatory commands), being aggressive, showing hygiene deficits, etc. He withdrew from people and became inappropriately close to animals. Four years before this incident the man was treated for schizophrenia in a psychiatric facility. The patient's childhood was marked by violent quarrels in his adolescence between his parents, who separated when he was 10 years old. In his childhood the patient was unusually attracted to pet dogs. Many of his dogs died under curious circumstances. After the examination schizophrenia and zoophilia were diagnosed. Although he was treated using antipsychotic medication, his zoophilic interests persisted.
Almeida et al. (2013)	Zoophilia and Parkinson's disease	IV	Case report	63-year-old male	A man with Parkinson's disease (first symptoms 22 years ago) was married and living in a rural area. His wife saw him trying to have sex with donkeys. Before that he showed hypersexuality, accompanied by erectile dysfunction, sadness, insomnia, panic attacks, dysautonomia, as well as constipation. After changing medication, the patient did not show any zoophilic or hypersexual behaviors anymore.
Othman, Ab Razak, & Zakaria (2014)	Zoophilia and dementia	IV	Case report	65-year-old male	The man was divorced (had four marriages) and was working as a trishaw peddler and fishmonger (Malaysia). Within 4 years he showed personality and behavioral changes with inappropriate sexual behavior. He was having sexual intercourse with chickens (before that sodomizing them, e.g., by dilating their anus) as well as exposing his genitalia. Apart from that he was managing his daily life and personal hygiene well. After examination he was diagnosed with behavioral variant frontotemporal dementia (bvFTD) with hypersexuality.

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Chandradasa & Champika (2017)	Zoophilia and high-functioning autism	IV	Case report	17-year-old male	The examined student was diagnosed with high-functioning autism, living in a rural area. His grandparents lived close by and raised a herd of cattle. The patient had deficits in social communication. As a toddler he was mostly isolated playing in preschool and showing restrictive, repetitive behaviors. He continued to have difficulties in establishing peer relations. Twelve months before the incident the patient spent a lot of time at his grandparents' farm with the cattle. When he was found masturbating near the cattle, his parents finally brought him to the local health center. He reported having intense sexual fantasies about cattle and having no sexual contact with humans in his life. The young man met the criteria for autism and the DSM-5 criteria for other specified paraphilic disorder. He was treated with cognitive behavioral therapy (CBT) and sertraline 25 mg (after two weeks 50 mg).
Lesandric, Orlovic, Peitl, & Karlovic (2017)	Zoophilia and psychosis	IV	Case report	24-year-old man	The patient had been sent to be treated due to psychosis. There was no history of mental illness in his family. He grew up as the youngest of three children and describes his family relations as harmonious, but his father as authoritative. He is employed in the agriculture trade of his parents although he is a mechanical engineering technician. In eighth grade of elementary school, he felt the urge to have sex with a cow. He repeated that in June 2016, which was followed by a psychotic decompensation (e.g., paranoid presentations, suicidal thoughts, affect was glum and anxious). At the age of 24 he had had no sexual contacts with humans. Psychological testing showed a lower intellectual efficiency and a suspected start of psychotic process.

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Holoyda (2017)	Case series of forensically committed sexual offenders	IV	Case series	Three men	Mr. A: The patient reported an intact family, and took some special education classes due to learning disabilities. He reported being sexually molested by older peers and adults in his adolescence. After graduation he married and worked as a manual laborer. He was once arrested because he had sexual contact with two preteen boys. He was also assaulting and abusing his partner and reported experiencing auditory hallucinations during this event. He has multiple diagnoses such as major depressive disorder, borderline personality disorder, pedophilic disorder, and other specified paraphilic disorder (zoophilia). He reported having had several sexual contacts with animals since his late teens and continued having sex with male canines into adulthood. Mr. B: He was committed after having sexual relations with a child. He reported coming from an intact family, but his developmental history was characterized by learning disabilities, intellectual delay, hyperactivity. Since his early teens he showed sexual activity with farm animals including occasionally proceeding to sadistic torture or killing of animals. His psychiatric diagnoses include schizoaffective disorder, antisocial disorder, pedophilic disorder, and other specified paraphilic disorder (zoophilia). Mr. C: The man was committed for sexually assaulting his girlfriend´s daughter. He reported that his parents are divorced, and his father physically abused him. After dropping out of high school due to drug use he worked in odd jobs. When he was working at a farm he vaginally penetrated a goat, but did not enjoy it so he did not continue engaging in sexual activities with animals. His diagnoses included schizophrenia, antisocial personality disorder, pedophilic disorder, and other specified paraphilic disorder (zoophilia).

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Edwards (2019)	Retrospective review of bestiality-related incidents	IV	Quantitative, descriptive study	456 arrests for bestiality-related incidents in the United States from 1975 to 2015	The annual number of arrests between 1975 and 2011 was 1–2 per year and 259 during the period of 2011 to 2015. The following demographic characteristics could be documented: 86.0% were males, age ranged between 18 to 82, the most prevalent race was white (71.3%), and 87.5% of offenders were or had been in a relationship. Six percent reported having more than one child, and the most prevalent employment was public service (14.8%) and animal-related jobs (e.g., farming, animal shelter/rescue) (14.8%). More than half of offenders had a prior criminal history (52.9%); 33% committed sexual offenses against children or adults; 25% had committed animal cruelty or bestiality. Men who had been previously charged for animal sex abuse were four times more likely to repeat this crime; 45.6% of offenders had sexually exploited or offended children or adults. The most abused animals were dogs (70%), followed by horses or donkeys (12.4%). Most arrests involved a single animal (83.7%) and the animal's age (if reported) was most often under a year (5.6%).The victim's gender was mostly unknown (64.4%) or female (20%). Regarding the relationship with the offender, most animals lived with the abuser (48.8%).
Kar & Dixit (2019)	Zoophilia and hypersexuality in a schizophrenic patient	IV	Case report	35-year-old man	The patient was brought to the psychiatric facility due to gross disorganization, inappropriate behavior, and not keeping social norms for the past four years. Before his behavior changed, he showed healthy interactions with neighbors and his wife (also regarding sexual life). Then he started neglecting his self-care and personal hygiene, showed inappropriate smiling, and was talking to himself. His sleep was reduced, he remained withdrawn into himself, and was found consuming cannabis. He showed hypersexual behavior regarding his wife, but also other female relatives, and was found having sexual activities with calves. The patient was then hospitalized and diagnosed with undifferentiated schizophrenia, harmful use of alcohol, cannabis with tobacco, and other disorder of sexual or preference (zoophilia). After being treated with medication, his symptoms were reduced.

about zoophilia showed some relevant characteristics of individuals engaging in sexual activities with animals. First of all, all included case studies or case series of zoophilia included male offenders (e.g., Amoo, 2012; Almeida et al., 2013; Chandradasa & Champika, 2017; Holoyda, 2017; Kar & Dixit, 2019; Lesandrić et al., 2017; Othman et al., 2014). Moreover, all identified studies examined a bigger sample showed a male gender distribution (Edwards, 2019) as well as the study by de Cássio Zequi and colleagues (2011), who studied associations between zoophilia and penile cancer patients. The results of some studies about sexual animal abuse show that the first sexual interest toward animals develops during the individual's teens (de Cássio Zequi et al., 2012; Chandradasa & Champika, 2017; Holoyda, 2017; Lesandrić et al., 2017). The documented age in the case studies or case series showed an age range from 17 (Chandradasa & Champika, 2017) to 65 years (Othman et al., 2014). The marital status of individuals who had sexual interest in animals shows a great diversity. Some studies report about single (Amoo, 2012; Chandradasa & Champika, 2017) or married men (Almeida et al., 2013; Kar & Dixit, 2019). The availability of animals to those who have animal-related occupations such as farmers or breeders (Chandradasa & Champika, 2017; Edwards, 2019; Lesandrić et al., 2017) or who live in rural areas (Almeida et al., 2013; Chandradasa & Champika, 2017) may also play an important role.

Besides hypersexuality the following comorbid disorders could be documented in individuals showing zoosexual behaviours: autism (Chandradasa & Champika, 2017), depression (Holoyda, 2017), personality disorders and pedophilia (Holoyda, 2017), dementia (Othman et al., 2014), Parkinson's (Almeida et al., 2013; Raina et al., 2012), and schizophrenia or psychotic symptoms (Amoo, 2012; Kar & Dixit, 2019; Lesandrić et al., 2017).

Two studies reviewed reports of criminals who had sexual activities with animals (Edwards, 2019; Holoyda, 2017). Some of the examined cases in the study by Edwards (2019) had also sexually exploited or offended children or adults (45.6%). Finally, dogs or horses seem to be the most preferred species for zoophiles (Edwards, 2019; Holoyda et al., 2020).

Conclusions

The present paper gives an overview of the current state of research concerning animal abuse and demographic characteristics of individuals who abuse animals. The outcome of this review demonstrates that there are various studies examining animal abuse from different perspectives including nonsexual animal abuse (e.g., Newberry, 2018), neglect (e.g., Monsalve et al., 2018), animal hoarding (Snowdon et al., 2020), as well as sexual animal abuse (e.g., Amoo, 2012). The review outlines that empirical evidence, which was produced in prior research, varies in methodological approaches and quality of research. Regarding the OCEBM criteria (Oxford, 2011), all of the identified literature can be categorized in low levels (IV). In some studies, small sample sizes were included and some moderating variables have not been taken into consideration. Seven of 9 studies specifically addressing zoophilia were case reports or case series with a maximum sample size of 50 cases. Moreover, in most studies about nonsexual abuse demographic details of the whole sample (e.g., student or prison populations) and not just for animal abusers were presented. Strictly speaking only 2 of 18 studies provided detailed demographic characteristics of nonsexual animal abusers, which made it difficult to provide a comprehensive presentation of demographic profiles of animal abusers. Summarizing, the results and associated conclusions of the present study should be interpreted with caution. Nevertheless, an attempt is being made to identify the characteristics of those who abuse animals.

Information on gender suggests that individuals who hoard animals tend to be female (e.g., Ockenden et al., 2014), whereas humans who engage in sexual or nonsexual abuse are more likely to be male (e.g., van Wijk et al., 2018). Considering age ranges, the analyzed studies suggest that animal hoarders seem to be on average in their fifties or sixties (Calvo et al., 2014; Dozier et al., 2019; Ferreira et al., 2017;

Joffe et al., 2014; Ockenden et al., 2014; Paloski et al., 2020). In contrast, those individuals who engage in nonsexual animal abuse are characterized by a younger age range (20–35 years; Schwartz et al., 2012; van Wijk et al., 2018). Case reports investigating comorbid disorders to zoophilia, as for example Parkinson's or dementia, report an abuser's age of 65 years (Almeida et al., 2013; Othman et al., 2014). By comparison the co-occurrence of psychotic symptoms and zoosexual behavior reported in case studies was documented in younger men from age 17 to 35 (Chandradasa & Champika, 2017; Kar & Dixit, 2019; Lesandrić et al., 2017). At this point it has to be stated that the reported age in these case studies is consistent with the prevalence of dementia, which enhances from the age of 65 (Schwarz, 2005), and the prevalence of psychotic symptoms, whereas the first psychotic episode in most cases occurs in a person's late teens and mid-thirties (APA, 2000). The age of being confronted with sexual and nonsexual abuse seems to play an important role in several aspects. First, studies report that zoophiles start engaging in sexual activities in their teens (de Cássio Zequi et al., 2012; Holoyda, 2017), which is also consistent with previous case studies (e.g., Earls & Lalumiére, 2009). Second, individuals, who witness animal abuse at an early age are more likely to engage in animal abuse at an earlier age and tend to show recurrent acts of animal abuse (Browne et al., 2016; Hensley et al., 2012; Hensley et al., 2018). A large body of scientific research provides evidence about the connection of animal cruelty in children and interpersonal violence (e.g., Ascione, 2001; Trentham et al., 2018).

Based on the research findings of this systematic review a proximity to animals due to animal-related occupations (e.g., breeder, farmer) or rural living conditions may also act as a relevant factor in zoophilic and animal hoarding cases (Chandradasa & Champika, 2017; Joffe et al., 2014). However, some case studies also present men who engage in sexual activities with animals growing up in urban areas (e.g., Earls & Lalumiére, 2009). Regarding the social and occupational situation of hoarders, being unemployed or pensioned as well as living alone and/or being single was documented in a majority of the studies' samples (e.g., Calvo et al., 2014; Ferreira et al., 2017; Saldarriaga-Cantillo & Rivas Nieto, 2015). In this context, the results of Cunha et al. (2017) are important, as those authors also found that there is a significant correlation between the population density and the number of object and animal hoarders, using the example of Brazil. While there is evidence that undesired isolation seems to be related to urban living (Deacon et al., 2009) it could be assumed that missing social support in hoarding cases leads hoarders to search for proximity to animals in a pathological way in order to compensate for the lack of a social network. This anthropomorphized relationship style, which is explained as a tendency to attribute human characteristics to a nonhuman target, was already described in studies examining cases of animal hoarding (e.g., Steketee et al., 2011) and zoophilia (Earls & Lalumiére, 2009).

Only some studies provided information about comorbid clinical symptoms of animal abusers. However, the following clinical symptoms could be documented in animal abusers: object hoarding (Campos-Lima et al., 2015; Ockenden et al., 2014), Noah syndrome (Saldarriaga-Cantillo & Rivas Nieto, 2015), depressive symptoms (Campos-Lima et al., 2015; Ferreira et al., 2020; Holoyda, 2017; Saldarriaga-Cantillo & Rivas Nieto, 2015; van Wijk et al., 2018), intoxication through drugs or alcohol (Levitt et al., 2016; van Wijk et al., 2018), personality disorders (Holoyda, 2017; van Wijk et al., 2018), autism (Chandradasa & Champika, 2017; van Wijk et al., 2018), dementia (Othman et al., 2014), Parkinson's (Almeida et al., 2013; Raina et al., 2012), and schizophrenia or psychotic symptoms (Amoo, 2012; Kar & Dixit, 2019; Lesandrić et al., 2017). Moreover, again it should be pointed out that the distribution of demographic variables is strongly biased due to the fact that many studies about animal abuse are case studies or based on (male) prison samples or student populations.

Finally, the most abused animals regarding sexual or nonsexual abuse as well as animal hoarding seem to be dogs, cats, and horses (Arluke et al., 2018; Calvo et al., 2014; Campos-Lima et al., 2015; D'Angelo et al., 2020; Dozier et al., 2019; Edwards, 2019; Ferreira et al., 2017; Holoyda, 2017; Joffe et al., 2014;

Monsalve et al., 2018; Newberry, 2018; Ockenden et al., 2014; Saldarriaga-Cantillo & Rivas Nieto, 2015; Snowdon et al., 2020; Strong et al., 2019; van Wijk et al., 2018). According to the global pet population statistics of 2018, dogs were the leading type of pet with over 470 million dogs kept worldwide. Considering the distribution in the European Union, cats were more common with about 75 million people keeping a cat compared to 65 million pet dogs (Statista, 2021). Therefore, one could assume that these animals are more at risk of being abused because they live in the same household with their potential abuser, which is also consistent with previous findings as animal victims most often lived with or were known to the offender (Edwards, 2019). This circumstance could also be associated with the fact that acts of animal abuse within private households are not that easily detected and the probability of being reported to the authorities is lower as the animal belongs to the abuser. In regard to sexual attraction to animals, the findings of Williams and Weinberg (2003) point out that horses seem to be especially admired because of their strength and power as well as their animal odor.

The main goal of the present systematic review was to identify relevant demographic characteristics of animal abusers, including sexual abuse as well as animal hoarding. In the context of the previously stated bias of the results, animal hoarders tend to be female and in their fifties or sixties, whereas non-sexual or sexual animal abusers are more likely male and younger (20–35 years). Moreover, proximity to animals due to animal-related occupations (e.g., breeder, farmer) or living in a rural area seems to be common in zoophilic and animal hoarding cases. Considering the occupational and social situation of hoarders, these individuals tend to be unemployed or pensioned and are more likely living alone and/or single. The following comorbid clinical symptoms could be documented regarding overall types of animal abuse: object hoarding, depressive symptoms, intoxication through drugs or alcohol, personality disorders, dementia, Parkinson's and schizophrenia or psychotic symptoms. Including all examined types of animal abuse, the most abused animals are dogs, cats, and horses.

These findings might contribute to a deeper understanding of this complex phenomenon, which is necessary when developing multiprofessional management strategies for prevention and assessment as well as treatment. In 1998 the first professionally developed psychological intervention program for adult animal abusers was developed (Jory & Randour, 2000), called AniCare Adult. This concept, which is mainly based on trauma-based theory as well as on attachment and psychodynamic theories, can be used for various types of animal abuse. In 2002 AniCare Child was developed, presenting the first treatment approach for juvenile animal abusers (Levitt, 2017). To the best of our knowledge, to date there are no standardized specialized treatment programs for animal hoarding or zoophilia available. As findings suggest varying characteristics of animal abusers depending on the type of abuse, for example regarding gender, age, or comorbid clinical symptoms but also assumed etiological factors, specially tailored treatment programs should be developed to take these relevant differences into consideration.

Animal abuse is therefore obviously a complex phenomenon that includes several responsibilities of various institutions and professionals such as veterinarians, social workers, psychologists, as well as animal welfare agencies. Veterinarians, for example, fulfill a unique role in the context of witnessing and identifying animal abuse. These professionals assess the severity as well as the duration of the injuries of an animal or even its death, which are essential legal elements of animal abuse cases (Benetato et al., 2011). On the other hand, this issue of reporting acts of animal abuse is also associated with concerns about confidentiality and the risk that the caregiver is no longer willing to seek professional care (Ascione & Shapiro, 2009), which also becomes relevant to other professional settings too such as psychological counseling or treatment. Accordingly, professionals in training, for example veterinary students, should have the opportunity to take part in basic forensic trainings to gain knowledge in recognizing, reporting, and investigating animal abuse cases (Benetato et al., 2011).

Obviously, several limitations regarding the present study have to be taken into consideration when

interpreting the results. First, the selection of the used databases was limited as only PsychInfo aggregates studies from other social sciences, beyond the fields of psychology and psychiatry. Second, the search period only considered studies through February 2021, thus the whole research output of 2021 could not be covered. Lastly, it has to be stated that although there are many studies focusing on animal abuse, the level of evidence is very limited due to nonrepresentative and/or small samples or methodological weaknesses. As a result, the body of research should be expanded toward randomized control studies (RCT), which show higher levels of evidence. Also, in respect to the link between animal abuse and interpersonal abuse, it is highly important to understand the etiology of this phenomenon as well as to develop standardized treatment approaches that facilitate a multiprofessional strategy.

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