



# A survey of senior equine management: Owner practices and confidence



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## ABSTRACT

Senior equines (16 years and over) comprise a significant proportion of the global equine population and there is concern that their management practices may not be entirely appropriate, particularly given recent evidence to suggest an under recognition of disease for which alterations are necessary to ensure optimal care. However, there has been minimal research to investigate the appropriateness of senior equine care and how capable their carers' are in providing care. Consequently, this study used a survey approach to investigate the management practices and health care provision for senior equines. A series of Likert type questions were used to assess respondent confidence in aspects of management regimes, recognition of age associated equine conditions, and perceived importance of nutrition advice sources, using a scale of 1–5 (1 being low and 5 high confidences). In addition, a combination of multiple response and open questions was used to report management practices in place. The survey was administered to those enrolled on a massive open online equine nutrition course and received 1342 responses. Results indicated an encouraging provision of care for senior equines, with associated high carer confidence in management regimes and concerted effort to understand and fulfill their senior equines requirements. However, the study highlighted key areas of requirements for owner education. In particular, the combined lack of frequent body condition monitoring and low confidence in disease recognition and supplement feeding. There was also a prevalence of suboptimal strategic worming and dry hay feeding. Given that veterinarians were consistently considered as the most important advice source it is likely that they will have an important role to play in the education that is required.

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## 1. Introduction

Aging equines represent an increasing proportion of the global equine population (Ireland et al., 2011), but they can often be overlooked. Inappropriate management regimes can facilitate or exacerbate diseases and conditions at any time of life (Secombe and Lester, 2012). But, whilst age is not necessarily indicative of degeneration, senescence increasingly

predisposes equines to particular conditions, the majority of which are related, to nutrition (Jarvis, 2009). Loss of body weight and/or condition is prevalent (Jarvis, 2009) and could be influenced by a variety of age-associated factors including endocrine disorders, digestive dysfunction from dentition to nutrient absorption, in-appetence, and musculoskeletal conditions (Elzinga et al., 2011; Durham et al., 2014). In addition obesity is also a major concern and exacerbates age associated disease (Alford et al., 2001) and requires different management (Geor and Harris, 2009; Secombe and Lester, 2012). It is essential therefore that owners have sufficient knowledge to formulate management and nutritional regimes, and also that they monitor their senior equines condition to assess if or

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indeed when alterations are required (Geor and Harris, 2009; Durham et al., 2014) thus optimizing senior equine care. For owners to do this requires that they have the necessary information but there is a paucity of health, disease, and nutritional information for the senior equine (Ireland et al., 2011) and a variety of sources, which may undermine their confidence. There have been few attempts to assess the feeding and management practices of senior equines, particularly with a view to the confidence owners have in both recognizing prevalent conditions and formulating their management regimes as a consequence. The objectives of the present study were firstly, to assess in general the feeding and management practices of senior equines for their appropriateness. Secondly, to assess owner confidence in recognizing conditions associated with the senior equine and formulating management regimes in relation to their experience. Finally, to ascertain which sources of information are most important for them in so doing.

## 2. Materials and methods

### 2.1. Study population

The study population included those enrolled on a massive open online course in equine nutrition, which ran from February to March 2014. The course was provided by Coursera, which is an online platform offering free open courses in a variety of disciplines through affiliated academic institutions. Participation can have multiple motivations from furthering knowledge to enhancing career prospects as statements of accomplishment and verified certificates are available. Those enrolled on this course represented various nationalities and equine backgrounds. Thus, this offered an ideal opportunity to reach a large population of horses owners or carers.

### 2.2. Questionnaire design

An online survey was created in Survey Monkey, a free online software for survey development and administration. Specifically for the purposes of the survey to gather information on the feeding and management practices of senior equines, to assess owner confidence in these practices and disease recognition, and investigate sources of nutritional advice. Participants were asked to complete the survey at the start of the course. The senior equine was defined as 16 years and older to encompass all ages considered in the previous literature (McGowan et al., 2010; Ireland et al., 2011). The survey comprised three sections: (1) demographics of owner and equines; (2) current feeding practices and management of senior equines; (3) owner confidence and advice sources. The majority of questions were either multiple choices, some allowing multiple responses, or Likert scale rating questions where there was a choice of a number of fixed alternatives. Open text boxes allowed for 'other' comments. Only participants with senior equine management experience answered questions pertaining to senior equine management. Every effort was made to link the questions to the research objectives and to control for confounding factors. A pilot study was conducted to identify technical issues with administration and clarity of questions and instructions.

### 2.3. Statistical treatment of results

Data were gathered in Survey Monkey and downloaded into excel where open responses were manually sorted into common themes and other responses transformed into appropriate form before export to SPSS statistical software version 19. Descriptive statistics were obtained including frequencies and proportions with 95% confidence interval for categorical data, whilst medians, modes, with interquartile ranges (IQR) for continuous and Likert responses. Pearson chi-squared tests were used to assess associations between categorical variables and Spearman Rho for correlations. Kruskal wallis or Friedman test was used to analyze variation in Likert response levels and Wilcoxon signed rank sum tests to test statistical significance of variation between paired categorical data. Influences for average confidence levels were analyzed by fitting independent variables with  $p$ -Values of  $< 0.05$  and potential biological significance into a generalized linear mixed models with Wald chi-square tests of significance. The most parsimonious model was found by sequential removal of non-significant variables, in order of least significance. Significance levels for all analyses were set at  $p \leq 0.05$ .

## 3. Results

### 3.1. Demographics

Of the 10,268 individuals registered on the equine nutrition course, 1342 responded to the survey (13% response rate). Respondents were predominantly (91%) female and in age groups 25–34 (25%) or 45–54 (23%). Countries of residence covered all continents with Great Britain and Ireland being most common (32%). The USA, (28%), rest of Europe, (18%) and Canada (11%) were also common. 39% of respondents listed equine industry related professions and of these, 83% were involved in equine care and management, with 48% specifically health care related. Equine management experience was typically high (25% over 26 years); however, senior equine management experience was consistently lower ( $Z = -26.810$ ,  $p < 0.0005$ ), predominantly (24%) 1–5 years (Fig. 1). Survey respondents managed a total of 13,367 equines, of which 28% were senior. Senior breeds most commonly represented were thoroughbreds and thoroughbred crosses (21%), followed by ponies (13%) of which the majority (61%) were native to Britain. Breeds with counts less than 10, not readily categorized within another group were classified as other (8%). The majority of senior equines were used mainly for hacking/pleasure purposes (54%) and retired or companion animals (43%); however, a large proportion (22%) were still in medium to heavy intensity work.

### 3.2. Senior equine monitoring and health care provision

Body condition scoring (BCS) was assessed more frequently than weight, but not significantly so ( $p = 0.053$ ), weight being most commonly assessed monthly (30%) and BCS weekly (28%) (Fig. 2). A small proportion of the respondents did not assess weight (8%) or BCS (9%). Some respondents did not know the weight or BCS of their horse, 1.4% and 4.1% respectively. There was a relationship between amount of senior equine management experience and frequency of

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