

# Factors affecting owners' choice of nutritional supplements for use in dressage and eventing horses

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## ABSTRACT

The aim of this study was to investigate the factors affecting horse owners' choice of nutritional supplements for dressage and eventing horses. An online questionnaire was distributed to owners/riders of dressage and/or event horses to collect data on the demographics of the owner/rider and their horses, the sources of information used when choosing nutritional supplements and their opinion on these different sources. Data analysis included descriptive analysis and categorisation of free text.  $\chi^2$  tests were used to explore factors affecting decision-making. In total, 757 responses were analysed. Participants obtained information on nutritional supplements from vets (49.8 per cent), internet article/review (39.4 per cent), other horse owners (38.7 per cent), coach/trainer (36.5 per cent) and nutritionists (33.4 per cent). They ranked the most reliable sources of information as vets, followed by nutritionists, then research studies, and the most influential sources of information as vets, followed by coach/trainer and nutritionists. Most participants had used other horse owners as their source of information for their most recent supplement. The age of the owner, competitive discipline, their educational qualification and their riding experience were significantly associated with aspects of decision-making. The study also identified a need for independent, unbiased sources of information on nutrition and supplements in the horse.

## INTRODUCTION

Nutritional supplements are frequently used for the prevention or treatment of a range of problems in horses (Demirel 2006, Burk and Williams 2008, Ireland and others 2011). A study into the use of supplements in performance horses in the USA (Burk and Williams 2008) identified that an average of four supplements were being given to the 77 horses studied, but this study did not provide information as to why the riders had chosen those supplements. A study of 918 owners of geriatric horses in the UK (Ireland and others 2011) found that 62.3 per cent were fed at least one supplement.

Decision-making in selecting the most appropriate supplements is difficult because unlike pharmaceutical products and medicine, supplements are categorised within 'feed' law as complimentary feeding stuffs. Medicinal claims are therefore prohibited; however, some products are marketed as nutraceuticals, often with information on possible health benefits. Nutraceuticals contain nutrients at levels significantly different from published requirements, and there is currently limited evidence on their efficacy in dogs, cats and horses (Vandeweerd and others 2012). Horse owners are therefore presented with a wide range of supplements, which usually purport health benefits, but research studies, if available, are often of poor quality with little or no scientific evidence to support efficacy (Geor 2006).

There are a number of factors that may affect decision-making. Human food choice is not determined solely by physiological or nutritional needs (Bellisle 2010). Factors influencing human food choice include economic determinants such as cost, income, availability; physical determinants such as access, education, skills and time; social determinants such as culture, family and peers; attitudes, beliefs and knowledge about food (Bellisle 2010). There has been limited research into the sources of information used by horse owners in choosing supplements (Hoffman and others 2009).

The aims of the study were to evaluate which sources of information are used by owners/riders when choosing nutritional supplements for competition horses and to evaluate their opinions on these different sources of information.

The study objectives were to:

- identify the main sources of information used by owners and riders of dressage and eventing horses when deciding which nutritional supplement to use;



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- ▶ determine what owners and riders of dressage and eventing horses perceive as reliable sources of information, and which sources of information ultimately influence their decision-making when choosing nutritional supplements for their horse;
- ▶ evaluate whether factors such as an owner's/ rider's experience, education, competitive discipline or competition level influence their decision making.

## MATERIALS AND METHODS

An online questionnaire was developed to gather information from owners and riders competing in dressage and eventing, as described in a previous study (Agar and others 2015). The questionnaire was designed using survey monkey (<http://www.surveymonkey.com>) and was divided into three sections: (1) general information about the rider, for example, age, sex, years of riding experience, discipline and level at which they were competing; (2) information about the supplements used and any health and performance problems in their horses (Agar and others 2015); and (3) the sources of information used for choosing nutritional supplements and their opinion on these different sources (Agar and others 2015). Respondents were asked to rank their opinion of three sources of information (1 most important to 3 least important) in terms of their reliability and the influence on their decision. The questionnaire used a mixed qualitative and quantitative approach, including closed multiple choice questions, single-answer and multiple-answer options, and open free text questions.

Links to the questionnaire were distributed primarily via British Eventing, British Dressage and Dodson and Horrell websites, and there was secondary distribution to other websites through press releases, Twitter and Facebook.

Inclusion criteria for analysis were responses from owners and riders who competed in dressage, or eventing, or both disciplines. Data that met the inclusion criteria was downloaded into Microsoft Excel (Microsoft Office Suite 2007, Microsoft) spreadsheets. Initial analysis of quantitative data was descriptive, including mean, mode, range and percentages, as well as graphical analysis of data. The most reliable and the most influential sources of information were calculated by summing the scores, using a score of 3 for the highest ranked (rank of 1), score 2 for ranked 2, score 1 for ranked 3 and score 0 of not ranked. Qualitative data were analysed by categorising responses and ranking frequency of occurrence.

$\chi^2$  analysis (Minitab 16.1.0, Minitab) was used to determine the association between owners'/riders' demographics and background (including age, gender, education, riding experience and discipline) with the choices they made in terms of sources of information and opinions of those sources. Results were considered statistically significant at  $P < 0.05$ .

## RESULTS

In total, 820 people participated in the online questionnaire, of which 757 respondents were suitable for analysis as they competed in dressage, eventing or both disciplines. 56.6 per cent competed in dressage, 19.9 per cent competed in eventing and 23.5 per cent competed in both dressage and eventing. 79.3 per cent of respondents completed the survey. The majority of owners/riders were aged between 22 and 34 (35.4 per cent of responses), were female (96.1 per cent) and did not have further qualifications in sport or equine science (59.4 per cent) (Table 1). The majority of respondents were both the owners and riders of their horse(s) (90.3 per cent), had been riding for a mean of 26.4 years and competing for a mean of 9.5 years (Table 1) at novice affiliated level (42.7 per cent). More horses were kept at the respondents' home (44.7 per cent) compared with any other single group but the majority were kept at livery; (do it yourself (DIY) 34.7 per cent, full 11.8 per cent, part 8.8 per cent).

Participants were asked where they normally obtained their information on nutritional supplements, (using a multiple-choice option with multiple fixed responses); the top five responses were vets (49.8 per cent), internet article or review (39.4 per cent), other horse owners (38.7 per cent), coach/trainer (36.5 per cent) and nutritionists (33.4 per cent) (Fig 1).

When asked for further details about which specific internet source or magazine articles were used (using a multiple-choice option with multiple fixed responses), participants identified that they used nutrition websites most frequently (60.9 per cent), followed by discipline-specific websites (53.5 per cent) and internet forums (45.2 per cent) ( $n=471$  respondents for this section). When using magazines as a source of information, participants used non-sponsored articles (55.9 per cent) most frequently, followed by advertisements (52.9 per cent) ( $n=397$ ).

Participants were asked to identify the main source of information that they had used before purchasing their most recent supplement (using a multiple-choice option with a single fixed response), and the most frequently identified sources were other horse owners (18.1 per cent of respondents), vets (17.9 per cent), coaches/trainers (12.4 per cent), internet advertisements (1.4 per cent), magazine advertisements (10.4 per cent) and stockists (10.2 per cent) ( $n=458$ ).

Respondents ranked different sources in terms of their opinion of reliability and influence on decision-making. Sums of the scored ranks showed that vets were considered the most reliable source of information (summed score of 950), followed by nutritionists (summed score of 732), research studies (457), coach/trainer (454) and other horse owners (256) ( $n=608$ ) (Table 2). Vets were also considered to have biggest influence on decision (summed score of 844), followed by coach/trainer (557), nutritionists (489), research studies (410) and other horse owners (334) ( $n=596$ ) (Table 3).

**TABLE 1:** Demographic and background information of 757 owners and riders, who completed an online survey on the use of nutritional supplementation of horses competing in dressage and eventing

Owner/rider demographics	
Age (years) of owners/riders, n (%)	
Under 16	18 (2.1%)
16–21	108 (14.3%)
22–34	268 (35.4%)
35–44	158 (20.9%)
45–54	147 (19.4%)
55–64	52 (6.9%)
≥65	6 (0.8%)
No answer	1 (0.1%)
Mode (percentage of respondents)	Female 723 (96.1%)
gender of owner/rider (n=752)*, n (%)	Male 29 (3.9%)
Further qualifications in sport or equine science held by owner/rider (n=705), n (%)	
None	419 (59.4%)
BSc	72 (10.2%)
MSc	12 (1.7%)
PhD	7 (1.0%)
BHS	195 (27.7%)
Number of years owner/rider has been riding (n=754)*, mean (range)	26.4 (3–60) years
Number of years respondent has been competing in the discipline (n=738)*, mean (range)	9.5 (0.16–40) years
Role of respondent as owner/rider of horse (n=746)*, n (%)	
Owner and rider	674 (90.3%)
Owner only	32 (4.3%)
Rider only	40 (5.4%)
Number of owners/riders competing at level (n=566)*, n (%)	
Unaffiliated	138 (24.4%)
Novice affiliated	241 (42.7%)
Intermediate affiliated	117 (20.7%)
Advanced affiliated	70 (12.4%)
Type of horse accommodation/management, n (%)	
Full livery	89 (11.8%)
Part livery	67 (8.8%)
DIY livery	263 (34.7%)
Kept at home	338 (44.7%)

\*If smaller numbers of respondents completed a section, the number of respondents is given as (n=).

Other factors that influenced respondents' purchase of nutritional supplements were price (69.6 per cent), followed by research backup (57.5 per cent), personal recommendation from a friend (55.6 per cent) and availability (51.3 per cent) (n=602).

Only 19.9 per cent of participants thought there was enough information readily available to help decide which nutritional supplement to use, with 61.4 per cent thinking that some of the time there was enough information and 18.6 per cent thinking there was not enough information at all (n=612).

Free text responses (n=462) to the question on whether 'vets should be more involved in the transfer of information on nutritional supplements, and if so how?' produced a mixed response. These ranged from those that considered the vet to be a useful source of information 'I have a very good vet who advises on supplements she is aware of', 'my vet is very good at steering me in the direction of the best product of a specific strand of particular supplements' to those that believed that vets have limited expertise in this area and/or commercial bias 'most vets not fully conversant with nutrition options', 'general vets have limited specialist knowledge generally promoting supplements they sell', 'all they want to do is sell drugs and never look at the bigger picture'. The majority of responses (70 per cent) were positive about veterinary involvement, and the most frequently identified category was increased communication between the veterinary surgeon and client, including through individual or group interactions, newsletters, flyers and leaflets, seminars and talks, and discussions at yearly vaccination appointments. It was also suggested that vets should suggest a supplement type or active ingredient, with the decision of which brand left up to the owner 'I would not like to see vets specify particular products but only recommend a type of supplement if they considered it beneficial'.

$\chi^2$  analysis of the associations between demographics/background and sources of information showed that a university level of education in sports/equine science or similar (BSc, MSc or PhD) was significantly associated with increased use of research papers as a source of information ( $P<0.005$ ).

The use of a coach/trainer as a source of information was significantly higher in owners/riders under 34 years of age ( $P<0.005$ ) (with age categorised into <34 and 35+), and in owners/riders competing in eventing compared with dressage ( $P<0.005$ ). Respondents with more riding experience were less influenced by price ( $P<0.05$ ), but respondents with BSc, MSc, PhD or BHS (or similar) qualifications were more influenced by price than those without a qualification ( $P<0.05$ ).

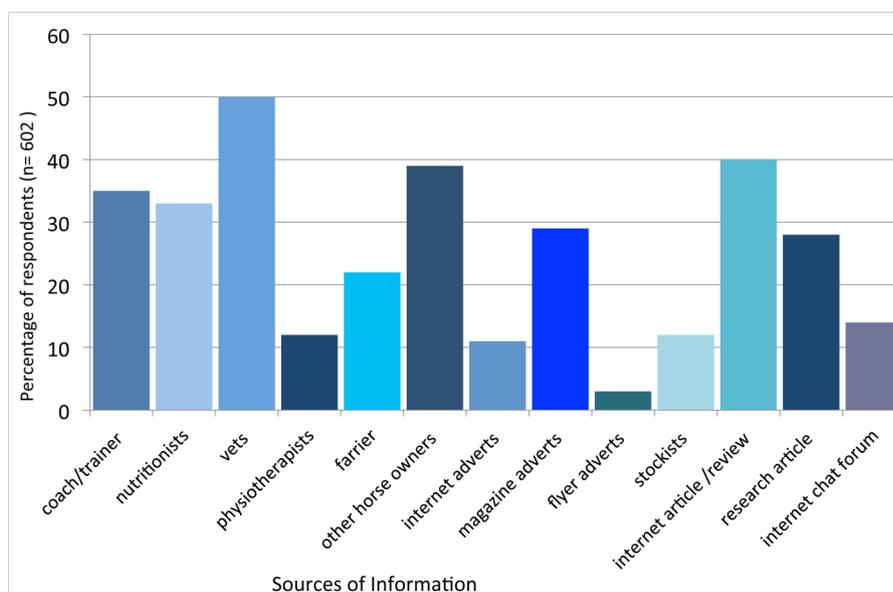
## DISCUSSION

The results of this study showed that horse owners consult a range of information sources before purchasing a supplement. In the 21st century, there are a large variety of information sources available, ranging from friends to professionals, and magazines to the web (Hesse and others 2005). Supplements may improve the health and nutrition of the horse, but poor choice could negate these benefits. An understanding of owner's decision-making and the factors that influence their choice of supplement is important to optimise knowledge transfer and dissemination of evidence.

This study showed that the most frequently consulted source of information for event and dressage owners/



**FIG 1:** Sources of information used by owners/riders of eventing and dressage horses (n=602) to obtain information on nutritional supplements from an online questionnaire



riders was the veterinary surgeon (49.8 per cent) and that respondents also ranked their vet as the most reliable and influential source of information when choosing a nutritional supplement for their horse. This compares to the results of a survey of 67 owners in the USA in 2009 where 53 per cent of owners used vets, 40 per cent trainers, 15 per cent feed stores and 10 per cent the internet (Hoffman and others 2009) as their source of advice on equine nutrition. A potential selection bias in this study was the use of an online questionnaire, which differs from previous studies into equine nutrition (Hoffman and others 2009) or posted

questionnaires (Ireland and others 2011), which may have excluded owners/riders who do not use the internet or computers frequently (Stanton 1998). The demographics of our respondents shows that 40 per cent of respondents were aged 35–54 years; the average age of competitive dressage riders is 38.2 years (British Dressage, personal communication), suggesting that the age distribution was similar.

Most of the existing research into factors influencing choice of supplements is from human supplement use. A study of supplement use in elite young UK athletes

**TABLE 2:** Ranking of reliability of sources of information for decision-making in choosing nutritional supplements by owners/riders of dressage and eventing horses (n=608)

Answer options	Rank 1	Rank 2	Rank 3	Sum of total responses irrespective of ranking
Vets	214	128	52	394
Nutritionists	148	116	56	320
Research studies	103	53	42	198
Coach/trainer	64	91	80	235
Other horse owners	30	42	82	154
Manufacturer/advice line	13	34	31	78
Farrier	10	40	34	84
Internet	5	19	51	75
Stockists	4	8	26	38
Physiotherapist	2	21	26	49
Flyer advertisements	2	2	33	37
Magazine	0	8	19	27

Participants were asked to rank which options they considered to be the most reliable source of information on nutritional supplements using a ranking of 1–3 (1 being the most reliable)

**TABLE 3:** Ranking of influence of sources of information for decision-making in choosing nutritional supplements by owners/riders of dressage and eventing horses (n=596)

Answer options	Rank 1	Rank 2	Rank 3	Sum of total responses irrespective of ranking
Vets	184	118	56	358
Coach/trainer	110	78	71	259
Research studies	100	35	40	175
Nutritionists	83	91	58	232
Other horse owners	50	56	72	178
Internet	19	33	38	90
Manufacturer/advice line	16	26	33	75
Farrier	10	37	39	86
Stockists	6	7	21	34
Magazine	5	7	22	34
Physiotherapist	4	20	23	47
Flyer advertisements	1	4	23	28

Participants were asked to rank which options they considered to be the most influential source of information on nutritional supplements using a ranking of 1–3 (1 being the most reliable)

identified the most frequently consulted sources of information as health professionals, nutritionists and physiotherapists, followed by coaches (Petroczi and others 2008). A study that explored female supplement users and non-users found that books and magazines were the most popular source of information for both groups. Supplement users also consulted health experts and doctors/health practitioners more frequently compared with non-supplement users (Conner and others 2003). The current study identified that other horse owners, internet, coach/trainers and nutritionists were frequently used as sources of information; however, no comparisons were made with horse owners who did not feed supplements.

Participants identified other horse owners as the main source of information used for their most recently purchased supplement, despite identifying vets as their main and most influential source of information. The discrepancy between the results, that is, the major influencers versus the actual behaviour, might be due to bias in responding to the questionnaire (based on respondents being aware of veterinary involvement in the study) or may reflect the accessibility of different sources for advice (there is likely to be a lower level of contact between an owner and their veterinarian compared with an owner and other horse owners and coaches/trainers). The availability of information is different for animals compared with the situation in human medicine (Nieper 2005, Petroczi and others 2008): athletes often have close contact with health professionals, the health professionals are usually independent and healthcare and advice is also available at no cost through the National Health Service within the UK. Many of the information streams available to horse owners, for example, vets and nutritionists, are based within profit organisations. Accessibility and non-commercial pressure might explain why horse owners use 'other people' as a common source of information, and why commercial bias was mentioned frequently in the free text sections. Welfare charities and the British Horse Society, both non-profit knowledge-sharing organisations, were not ranked by respondents in this study.

The current research also showed that an owner's/rider's background can have an effect on the information they choose to inform their decision-making, including their education, age, competitive discipline and riding experience. The level of education was significantly related to the use of research papers as a source of information ( $P<0.05$ ). Studies into human nutrition and knowledge indicated that the level of nutritional knowledge increased with level of education (Parmenter and others 2000, Moreira and Padrao 2004), but it was not clear if the knowledge was obtained from research papers. A higher level of education, a low body mass index and being  $>50$  years of age was correlated with consistent supplement usage (Li and others 2010). The current study of event and dressage owners/rider showed an effect of age, with people under the age of

34 significantly more likely to use their coach/trainer as a source of information compared with people over the age of 35 years ( $P<0.05$ ). Possible explanations are that younger people may have more contact with their coach and trainer or that they are more likely to be influenced by people they perceive as more experienced; young human athletes are also most likely to use their coach/trainer as a source of information (Nieper 2005). Previous studies into human demographics and nutrition suggest that gender also influences information sourcing (Parmenter and others 2000, Li and others 2010), with females being more likely to seek sources of information on the use of nutritional supplements to help them with their decision (Nieper 2005). In the current study, there was no significant association with gender, but the very small proportion of male respondents in the questionnaire (3.9 per cent) means that this factor requires further investigation to determine any effect.

When respondents were asked for other influencing factors, then price was the most influential factor on decision-making (69.6 per cent), followed by research backup (57.5 per cent), personal recommendation from a friend (55.6 per cent) and availability (51.3 per cent). It should not be assumed that a lower price influences purchase as often consumers may believe that a product's price and marketing quality gives it its perceived value (Chang and Wildt 1994); hence, higher price supplements may tend to be sold via the vet (prices for joint supplements – retail webstores £19.99–£40.80 for 100-day supply v £44.80–£91.30 from UK vet websites (Google search)). People with more riding experience were less influenced by price, and owners with BSc, MSc, PhD or BHS qualifications were more influenced by price than those without a qualification ( $P<0.05$ ). This is different to the retail high street environment where it has been shown that high knowledge respondents are more influenced by brand name, while low knowledge respondents are more influenced by price discounts (Grewal and others 1998). Dixon and others (2011) found that the persuasive effects of nutrient claims and sports celebrity endorsements on human product choice were negated when parents had referred to the nutrition information panel. This is also relevant to equine nutritional supplements as a number of these are promoted or supported by high-profile competitors. Price and marketing are therefore important in terms of decision-making, but the previous studies suggest that when consumers consider the nutritional data, they tend to make the most appropriate choice.

In the free text sections of this study, there were strong views that vets should be more involved in transferring information about nutritional supplements; however, there were also strong opinions that vets have commercial bias and promote certain companies or supplements. Most respondents, who had received advice from their vet, found this helpful and would like more information from vets. There were also opinions that although owners/riders would like vets to be more

involved they do not think they know enough on nutrition-related issues or have the time to focus on equine nutrition advice. Key themes in this section were that owners would like the vet to incorporate nutrition and feeding management as part of the health check for yearly vaccinations, to provide written literature about nutritional supplements and/or education on nutrition, but without endorsing a product or brand.

This study has shown that dressage and eventing owners and riders use a variety of sources of information when selecting nutritional supplements for their horse. Vets were identified as the most influential and reliable sources of information; however, when it came to purchasing a supplement, participants were more likely to have taken advice from fellow horse owners. This discrepancy needs investigating further using a variety of techniques and interviews to investigate the decision-making process and also evaluate different options for improving knowledge dissemination.

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