

# Epidemiology of Equine Obesity

## Preliminary findings

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## Reasons for the study

Obesity epidemic is the Number 1 public health concern in the World (Haslam DW, James WP. Obesity. Lancet 2005; 366: 1197–1209.). Anecdotal evidence suggests that health of the equine population may be similarly in danger because of high prevalence and increasing trend of obesity like in humans. The aim of the study was to assess, whether a health problem called obesity exists in horses and how common it is.

*“Obesity is excess body fat that increases the risk of health impairment”*

Definition by World Health Organization

## Our approach

- We use a cross-sectional design and will assess 500 non-racing horses and ponies > 3 years located on 40 randomly sampled livery yards in Hertfordshire, Buckinghamshire, Bedfordshire, Essex and Northamptonshire. Numbers presented here are based on 118 subjects whose data has been processed so far
- Body fat is measured using previously validated fat scoring system, where the final score is the mean of scores (0-5) given to 3 body areas (neck, trunk and rump).
- Owners are interviewed using a purpose-designed and pilot tested questionnaire to obtain horse health and management information. Data on owner perceptions, and aims about their horse's body conditions was also collected
- Health records are randomly checked for consistency with owner's veterinarian.
- Management information includes typical exercise practices, grazing and feeding .
- Feeds and hay are measured by weight. Hay samples are obtained and analysed for digestible energy values. Feed energy values are analysed from a sample if they have not been provided by the feed manufacturer..

## What is an obese horse?

There is some evidence that an association between fat and health impairment might exist in the equine species, especially in the form laminitis. We looked at the concurrent clinical disorders and their relationship to fat score. Data was collected on chronic and acute disorders with specific questions about laminitis.



Picture 1: Pictures that are used in the study to measure owner preferences and perceptions

Preliminary results based on 75 horses with health information suggest that

- the risk of laminitis within year of the interview seems to differ between horses and ponies (one-tailed t-test for the difference  $p=0.01$ ). (8% (5 out of 62) in horses and 30% (4 out of 13) in ponies had had laminitis . The effect of body fat to the risk of laminitis may be different in horses and ponies: all horses that had suffered from laminitis were of normal body fat (fat score 3) whereas in ponies 3 out of 4 cases had a fat score of 4 or more. Probably part of the increase in the odds of laminitis , 6-fold per unit increase in fat score (95% CI: 0.9, 47.0;  $p=0.07$ ), is explained by the different risks between these equine subgroups.
- There seems also to be an association between body fat and dermatological conditions (OR 5.06 , 95% CI: 1.06-24.1  $p=0.04$ ).
- Chronic musculoskeletal conditions and body fat are also related (OR 2.5 per unit increase of fat score, 95% CI: 0.9-6.7 ,  $p=0.06$ ) but that may represent reverse causality and further analysis of exercise data and weight change history needs to be taken into account. Also the other associations need to be analysed for alternative explanations once data collection progresses

## The prevalence of obesity?

29.7% (95% CI: 21.6%, 38.8%) of animals had a fat score of higher than 4; this included 16.0% (95% CI: 9.2%, 25.0%) of horses and 83.3% (95%CI: 62.6%, 95.3%) of ponies.

None of the eventers and hunters (15 horses), but 8 (61.5%) out of 13 horses whose main use is hacking, had a fat score of 4 or higher. This is not only an exercise related matter: different types of horses are used for different purposes ( $\chi^2$ -test,  $p=0.002$ ).

Fat score	Horses	Ponies	Total
2 (from 1.5 to 2.5)	5 (5.3%)	0 (0.0%)	5 (4.2%)
3 (from 2.6 to 3.5)	74 (78.7%)	4 (16.7%)	78 (66.1%)
4 (from 3.6 to 4.5)	15 (16.0%)	20 (83.3%)	35 (29.7%)
Total	94 (100%)	24 (100%)	118 (100%)

## How to prevent obesity?

It is the owners and caretakers who are responsible for their horses getting fat; Whilst they were able to visually compare their horse to others of comparable fatness when asked to pick a picture from a set of 4 pictures (see Picture 1 above) which most closely resembled the body fat of their own horse. All 12 owners of horses with fat score 4 chose one of the pictures with a fatter horse, with 50% choosing the fattest one.; they did not necessarily acknowledge that their horse was fat. One third of the owners with a horse in the highest fat score group (4 or above) described their horse as moderately fat or obese and 66.7% described their horse as being in ideal body condition. In addition only one third of the owners of horses with high fat score wanted their horse to lose fat. This was despite the fact that they recognised the possible role of high body adiposity as a risk of laminitis; approximately 66% of all owners associated laminitis with obesity in horses.

High body adiposity will be a complex equation of at least age, breed, type of use, exercise, hay , grazing and owner information and so far, no significant associations with single variables can be presented.

**Acknowledgements:** The Horse Trust, World Horse Welfare, and all horse and yard owners that participate in our study.

