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A DEMOGRAPHIC APPROACH TO EQUINE DISEASE IN THE NORTHERN UK THROUGH A SENTINEL PRACTICE NETWORK

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On constate un manque d'informations démographiques élémentaires sur le cheval au Royaume-Uni. Les seuls chiffres disponibles sont ceux du minitère de l'Agriculture, de la Pêche et de l'Alimentation (MAFF), qui consigne dans son recensement annuel le nombre de chevaux élevés sur les terres agricoles. Les statistiques du recensement de 1994 indiquent qu'il y avait 244.699 chevaux en Grande-Bretagne, dont 30.427 en Ecosse et dans les cinq comtés anglais les plus septentrionaux. Pourtant, ces chiffres ne représentent pas une bonne estimation de la population équine globale, étant donné que beaucoup de chevaux sont élevés sur des terres qui ne sont pas destinées à un usage agricole et commercial. De plus, si l'on s'intéresse à la santé du cheptel équin au Royaume-Uni, on observe que malgré une recherche abondante sur la situation propre à chaque maladie, il n'y a pas de données disponibles pour comparer l'importance relative des maladies qui affectent les chevaux. Une étude de trois ans a donc été conduite pour combler ces lacunes. Un recensement des praticiens vétérinaires en équine, en Ecosse et au Nord de l'Angleterre, a été établi pour évaluer la taille et la distribution de la population équine. Le taux de réponse a atteint 91%, et la population équine de cette région a été évaluée à 96.248 individus (plus de trois fois l'estimation du MAFF pour la même région). A la suite de quoi, un échantillon de ces vétérinaires praticiens a été sélectionné pour constituer un réseau de sentinelles. Une étude représentative, à partir de données correspondant à des cas individuels et récoltées sur une base saisonnière, a été entreprise pour établir la prévalence relative des maladies équines. Les cinq catégories les plus importantes en terme de prévalence parmi les problèmes sanitaires des chevaux, rangés dans l'ordre décroissant étaient : les problèmes musculo-squelettaux, les problèmes liés à des blessures mineures, les problèmes dermatologiques, gastro-intestinaux et respiratoires. Par ailleurs, les propriétaires de chevaux identifiés avec les cabinets sentinelles ont été suivis pour valider les estimations de la population et pour fournir des données concernant la gestion et l'utilisation des chevaux. Le logiciel GIS a été utilisé pour traiter, analyser et présenter ces données dans le souci de parvenir à une connaissance intuitive et globale du statut sanitaire de la poupulation équine à grande échelle.

INTRODUCTION

The last census of horses kept in Great Britain was taken in 1934, when the estimated total number was 1,278,341 (Urquhart, 1983). Since that time, as the internal combustion engine has replaced the horse as the main source of power in both transport and agriculture, there has been little interest in the British equine population as a whole. The Ministry of Agriculture, Fisheries and Food (MAFF) began taking an annual census of farming and livestock in Britain in 1866, and horses were included from 1870 onwards (Ministry of Agriculture Fisheries and Food & Department of Agriculture and Fisheries for Scotland, 1968). Today, the MAFF census records the number of holdings on which horses are kept and the total number of horses kept, and these are the only published figures relating to demographics of the British equine population. Analysis of MAFF census returns for 1994 suggests that there were 244,699 horses kept on 43,048 holdings at that time, with 30,420 horses on 6,394 holdings in Scotland and the five northernmost English counties. However, these figures are inevitably inaccurate as estimates of the size of the total equine population as many horses are kept on land which is not used for commercial agricultural purposes.

Veterinarians in first opinion practice are major sources of data relating to the occurrence of disease among animal populations (Traub-Dargatz *et al.*, 1991). Formally established networks of sentinel primary care medical practices, reporting data relating to disease occurrence among people, have been in existence since the 1970s, and have been shown to yield a great deal of accurate and relevant information (Green *et al.*, 1994; Senturia *et al.*, 1994). Though rare, there are examples of the use of networks of sentinel veterinary practices in the US to gather data for the investigation of specific equine disease syndromes and health management (Cohen *et al.*, 1995; Slater *et al.*, 1995; Kaneene *et al.*, 1996). However, in the UK there are no data comparing the relative prevalence and importance of diseases affecting horses.

A three year study, supported by the Home of Rest for Horses, was conducted through a network of sentinel veterinary practices in Scotland and the five northernmost English counties to address these deficiencies in knowledge of the equine population.

MATERIALS AND METHODS

The names and addresses of all first opinion practices providing veterinary care to horses were taken from 'The Directory of Veterinary Practices 1992' (The Royal College of Veterinary Surgeons). A census of these practices

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was undertaken to record the number of horse owning clients registered with each practice, the number of horses owned by these clients for which the practice provided veterinary care and the geographical area covered by each practice. A sample of twenty five practices, which had responded to the census, were contacted by telephone and recruited to form a sentinel network. A series of four surveys, employing mailed questionnaires, were conducted through these practices and horse owners registered with them :

- Phase I Practices were asked to complete a short questionnaire concerning the quantity and nature of equine work undertaken in their practice. In addition, they were asked to supply a list of the names and addresses of all horse-owning clients registered with their practice.
- Phase II A simple, short questionnaire concerning numbers, management and level of activity of horses was mailed to every horse-owner registered with a practice which responded to phase I of the study.
- Phase III Practices which had responded to phase I were asked to complete four sets of ten case sheets, one set each quarter, over a period of one year. One case sheet was completed for each of the first ten horses seen, for whatever reason, after the set of case sheets had arrived in the mail.
- Phase IV A stratified random sample of horse-owners, who had responded to phase II, were asked to complete one general questionnaire concerning management of all their horses and one fact sheet for each horse owned.

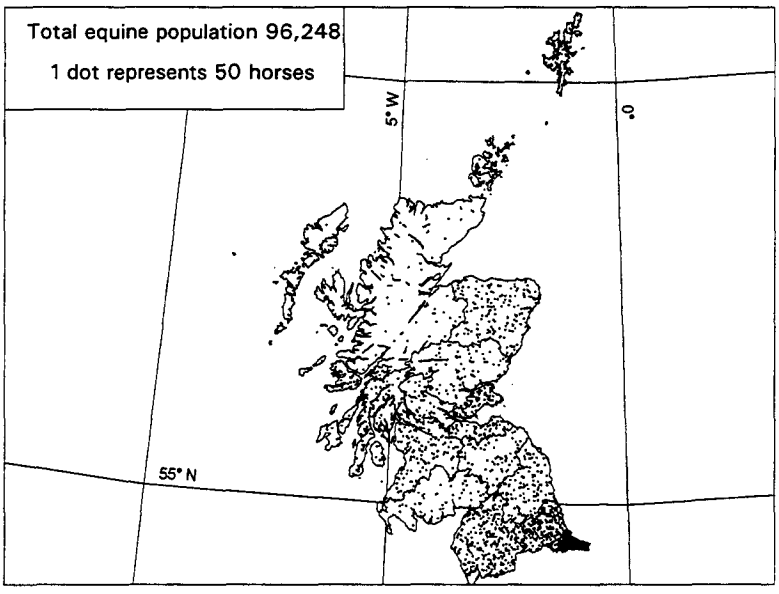
Data from the study were entered into a series of tables held in a Microsoft Access® database and were exported into Microsoft Excel® for preliminary analysis. MapInfo Professional® Geographical Information System (GIS) software was used to create maps and present spatially referenced data from the study.

RESULTS

Of 188 veterinary practices contacted in the census, 17 were either no longer in business or no longer provided veterinary care to horses. One hundred and fifty five of the remaining practices responded giving a response rate of 91%. The response rates to the ensuing phases of the study were: phase I, 88%; phase II, 40%, phase III, 75%; phase IV, 71%.

Preliminary analysis of results from all phases of this study suggest that there are 26,013 horse owners in the study area keeping 96,248 horses. It was most usual for horse owners to keep small numbers of animals, with 70% keeping three or less, though these owners accounted for only one third of all the animals owned. The geographical distribution of the equine population of Scotland and Northern England is shown in Figure 1.

Figure 1
The geographical distribution of the equine population of the Northern UK



The mean ± SD age of the population was 11.0 ± 7.5 years with 50% of animals male and 50% female. Thoroughbred or Thoroughbred cross were the commonest breeds comprising 30% of the total population. Overall 50% of owners kept their horses on private premises and 50% kept them on shared premises. In terms of management, 69% of horses grazed at least half of their time with 10% always grazed. Twenty nine per cent of horses were stabled for most of the time and a further 2% were permanently stabled and never grazed.

The most popular equestrian activity was hacking, involving 24% of horses kept by respondent owners, closely followed by breeding and riding / pony club events involving 20% and 18% of horses respectively. Endurance riding and point-to-point appeared to be the least popular activities, each involving only 2% of horses kept by respondent owners.

Of 547 equine consultations reported of a period of one year in phase III, 178 (33%) were for routine procedures such as vaccination, certification, castration and pregnancy diagnosis. The category of disease diagnosed in the remaining 369 cases is summarised in Table I, expressed as the overall percentage of non-routine cases seen.

Table I
Categories of disease diagnosed - percentage of 369 non-routine equine cases seen in a survey of first opinion veterinary practices in the Northern UK over one year

Disease Category	Overall % of Cases
musculoskeletal	42
injuries	15
dermatological	9
gastrointestinal	9
respiratory	7
reproductive	5
metabolic	5
neoplastic	1
miscellaneous	7

DISCUSSION

A knowledge of the population size is essential for epidemiologic studies in order to provide a denominator for the quantification of disease rates. Furthermore, when considering diseases, especially infectious diseases, among specific groups of animals of the same and other species, knowledge of the size and proximity of reservoir populations is essential for assessments of disease transmission and persistence. Through a series of mailed questionnaire studies of veterinary practitioners and horse owners the size of the equine population of Scotland and Northern England has been estimated at 96,248, more than three times the number recorded in the MAFF annual census in the same area at the same time. In addition, the age, breed and sex structure of the study population have been described which, to the authors' knowledge, has not been done previously for the general equine population of any region of the UK. The figure for the total population may be an underestimate of the true population size, as it was not possible to account for those animals belonging to people who are not registered with any veterinary practice.

It is well recognised that management factors can affect the occurrence of disease. In this study the percentages of the equine population experiencing different management practices and involved in different activities have been documented and these novel data constitute baseline reference information which may be used in future studies investigating the association of management factors with equine disease. In addition, the study has shown which are the most prevalent and important diseases affecting horses in this area which may suggest areas of priority for future research funding.

At the time of writing, this study is being extended to the remainder of the UK. At the completion of the extended study, there will exist a much more comprehensive database of information relating to the general British equine population than has ever been previously available. Efficient and timely delivery of information generated by this study to those involved in keeping horses and those involved in teaching, research and policy making will increase knowledge and improve awareness regarding the general equine population. As a result, resources may be targeted on the most important problems leading to an overall improvement in equine health and welfare.

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