

EVALUATION OF THE QUALITY OF DATA COLLECTED USING A
TELEPHONE QUESTIONNAIRE ON CANINE DIET AND EXERCISE

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The use of questionnaires to collect information regarding pets' diets from their owners is a recent phenomenon. Collection of data on pet dog exercise patterns has not been published previously. This study evaluated the repeatability and validity of questions in a questionnaire regarding diet and exercise patterns in young pet dogs. The initial application of this questionnaire was to evaluate diet and exercise as risk factors for canine osteochondritis dissecans.

MATERIALS AND METHODS

Subject selection and contact

The criteria for inclusion were: 1) that dogs be less than 3 years of age during the period referred to by the questionnaire, 2) that dogs were large or giant breeds previously documented at New York State College of Veterinary Medicine to have been diagnosed with OCD or 3) that dogs were of mixed breed. Dogs that were deceased or that had severely debilitating diseases were excluded. Owners of pet dogs fulfilling these criteria seen at the NYSCVM between February 1989 and April 1989 (repeatability) and May 1989 and June 1989 (validity) were asked to participate. Prior to the interview, a letter was sent informing each pet owner that a telephone interview study on diet, exercise and pet health was being conducted and assuring them of confidentiality.

Questionnaire design

A telephone questionnaire was designed which included questions on basic demographics, brands, quantities and types of foods fed (repeatability only) and usual types and amount of exercise. The dietary section was modified from a previously published questionnaire (Sonnenschein et al., 1991). The multiple choice exercise questions were formulated for this study. The questionnaire was pre-tested extensively. The expected length of the interview was 10 to 20 minutes. All diet and exercise questions in both the first and second interviews referred to a time period approximately 2 months before the first interview (repeatability). For the validity study, the interview referred to current diet.

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Repeatability

Repeatability was examined using the test-retest method. The repeatability of questions with 4 or more ordered categories or that had a continuous response was analyzed using Spearman's rank correlation coefficient since these data were not Normally-distributed. Correlations of 0.5 to 0.7 were considered very good (Willett, 1990). Variables with 3 categories were evaluated using an overall Kappa and a Kappa for each possible dichotomy. Dichotomous variables were analyzed using the Kappa statistic. Interpretation of Kappa was: excellent agreement if Kappa was > 0.75 , fair to good if Kappa was from 0.4 to 0.75, and poor if Kappa was < 0.4 (Fleiss, 1981).

The intake of total calories, calcium, fat and protein and percent of total calories from carbohydrates, fat and protein were estimated for each dog using the Animal Nutritionist computer program (N-Squared Inc. & Durango Software, 1987). Commercial dog and table foods in the program were updated whenever possible. For dog food brands for which nutrient information was unavailable, values for a standard brand for each type and variety of food were used.

Validity

Validity evaluation (for the dog diet only) was done using a 7-day diet record as the standard for comparison. The same telephone questionnaire was used as in the repeatability study but it was administered to a different set of dog owners. Upon completion of the telephone interview, the 7-day record was mailed to the respondent with a stamped, addressed envelope in which to return the record. Follow-up phone calls were made weekly until the record was returned. A thank-you note then was mailed to the pet owner.

The 7-day record consisted of an instruction sheet, example page and 1 page for each day, divided into sections for dog foods, treats, supplements and table foods with headings for brand, type, amount fed and amount left at the end of the day as appropriate.

Nutrients were analyzed using Spearman's correlation coefficient. Interpretation of correlations was the same as for repeatability. A comparison of whether or not the main dog food components of the diet (canned, grocery dry and specialty dry) were fed was made between the 7-day record and the questionnaire using sensitivity and specificity.

RESULTS

Repeatability

One hundred and one pet owners completed both repeatability questionnaires. The overall response rate was 77% (101/131). Among owners who were contacted, 93% participated (101/109). The median time between the 2 interviews was 80 days (range 63 to 135 days). There were 34 (34%) mixed breed dogs and 67 pure-bred dogs (of 15 large and giant breeds). The median age at the time of the first questionnaire was 17 months (range 5 to 42 months). Forty-nine (48%) were males and 52 (52%) were females.

Correlations between the first and second questionnaires for specific components of the diet (total calories, calcium, fat, protein and percent of calories from carbohydrate, fat and

protein) were between 0.73 and 0.83. Data regarding commercial dog food generally were more repeatable than those for table foods. Questions regarding commercial combination and semi-moist foods were the exceptions. The repeatability for most exercise questions was fair to good. The exceptions were the questions for length and speed of walks where repeatability was very poor for both on and off leash walks.

Validity

For the validity study, 36 owners completed both the telephone questionnaire and the 7-day record. The overall response rate was 65% (36/55) with a response rate of 77% (36/47) for owners we were able to locate. There were 15 (42%) mixed breed dogs and 21 pure bred dogs (from 8 large and giant breeds). The median age at the time of the interview was 15 months (range 7 to 37 months). Twelve (33%) were male and 24 (67%) were female.

Correlations between the diet record and the questionnaire for same dietary components as in the repeatability study ranged from 0.53 to 0.81. Grocery and specialty dry dog foods had sensitivities and specificities from 91% to 95%. Reporting of canned food had high specificity and low sensitivity. Reporting of treats had the opposite pattern.

DISCUSSION

Overall, the repeatability and validity of the total nutrient intake estimates were very good. Lack of repeatability in the canine diet may reflect the owner's inability to report his/her own diet. However, poor repeatability in reporting specific table foods is probably not a major concern since they are fed rarely and total nutrient intake seems little affected.

Rephrasing exercise questions with more qualitative answers may improve repeatability. It is also possible that the length and speed of walks on and off leash are so variable that owners cannot determine an average length or speed and instead report information for the most recent walks.

More information is needed on the usual feeding patterns of dogs of all age groups (collected using repeatable and valid instruments) to elucidate the relationships between dietary components and other diseases, including cancer, renal disease and obesity.

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