

Development of a questionnaire to assess the impact of atopic dermatitis on health-related quality of life of affected dogs and their owners

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Conflicts of Interest

None.

Funding

Self-funded study.

Abstract

Atopic dermatitis (AD) is a chronic or chronically relapsing human and canine skin disease that is known to affect the quality of life (QoL) of affected individuals. Several studies have been conducted to develop disease-specific questionnaires and assess QoL in parents of children with AD and in the children themselves. The severity of canine AD is however currently evaluated using only clinical and pruritus scores. Measurement of the QoL of affected dogs and their owners could therefore provide a new tool for assessing disease severity and treatment efficacy. Ninety-eight owners of AD-affected dogs were asked to complete two questionnaires aiming to evaluate the QoL of affected dogs and their owners on one hand and the relationship between them and their dog on the other hand. Statistical analyses were carried out in order to assess the validity of the questionnaires and to select relevant questions for future studies. These analyses resulted in the selection of 13 questions that could be used in further studies aiming at determining the QoL of affected animals and their owners.

Accepted 4 April 2009

Introduction

Atopic dermatitis (AD) is a chronic or chronically relapsing human and canine skin disease that is known to affect the quality of life (QoL) of affected individuals.^{1–4}

Quality of life in humans has been defined by the World Health Organisation as 'the individuals' perception of their position in life, in the context of culture and value systems in which they live and in relation to their goals, expectations, standards and concerns', whereas health-related QoL (HRQoL) has been defined as the 'individuals' subjective perception of the impact of health status, including disease and treatment, on physical, psychological and social functioning'.⁵

Several studies have been conducted to develop disease-specific questionnaires and assess QoL in parents of children with AD and in the children themselves.^{1,4,6–12} In veterinary medicine, QoL is a concept that was initially developed to measure some aspects of nonphysical animal life and to guide decisions about aggressive treatment or euthanasia.^{13–19} At this time, however, there is no accepted definition or methodology for its assessment in companion animals. The discussion is further complicated by the confusing use of different terms such as welfare or well-being.¹⁶ Taylor and Mills recently reviewed these concepts and proposed distinct definitions of QoL and HRQoL.¹⁶ QoL was defined as 'the state of an individual animal's life as perceived by it at any one point in time. It is experienced as a sense of well-being which involves the balance between negative and positive states and any cognitive evaluation of these, where the animal has the capacity' while HRQoL corresponds to 'The individual subjective perception of the impact of health status, including disease and treatment on physical, psychological and social functioning'.¹⁶

In animals, assessment of QoL or HRQoL can only be achieved by proxies (third parties reporting on behalf of the individual), usually the owners, which may lead to bias. Although there is evidence that parents acting as proxies for their children may be suitable, there is no objective measurement of the proxy-animal agreement for animals.²⁰ Additionally, the degree of relationship between the owner and their pet may influence the evaluation. For example, an owner having a dog living in a run outside may not experience the same feelings as a person whose dog sleeps on their bed.

The severity of canine AD (CAD) is currently evaluated using clinical lesion and pruritus scores.^{21,22} Measurement of the HRQoL of affected dogs and their owners could therefore provide a new tool for assessing severity of the disease and efficacy of treatments.

Consequently the aim of this study was to develop a questionnaire designed to measure HRQoL of dogs with AD and the QoL of their owners.

Materials and methods

Questionnaires

Owners of dogs suffering from AD were recruited in Zurich (CF) and Hamburg (ML) and asked to fill in two questionnaires with 10 and 32 questions, including two overall assessment questions respectively. Duration of the disease, CADESI-03 and pruritus score were also recorded.^{21,22}

Questionnaires reflected those established and validated for the evaluation of QoL of children affected by AD and of their parents.^{4,6,7,10–12}

The aim of the first questionnaire was to characterize the owner, accounting for the effects of sex and age, and to assess their link to the dog, and this was scored (owner–pet relation score = OPRS, see Appendix 1) from –8 to +8.

The second questionnaire aimed to evaluate the burden of CAD on the QoL of the owner and on the HRQoL of their dog (Appendix 2). Some questions (i.e. 4, 5, 7, 9, 12–16) reflected those established and validated for the evaluation of QoL of children suffering from AD and of their parents. Other questions (i.e. 1, 2, 3, 6, 10) aimed to assess the impact of CAD on the overall benefit of pet ownership and some (i.e. 17–30) were directly related to the activities of the dog and its well-being.

This second questionnaire was preceded by two overall assessment questions relating to the impact of the dog's disease on the owner's QoL (overall assessment 1: OVA1) and the dog's health-related QoL (OVA2) respectively.

Owners were asked to answer all questions (OVA1, OVA2 and 1–30) with one of five possible answers, each of which was associated with a mark ranging from 0 (strongly disagree) to 4 (strongly agree).

Validation of questionnaires

Content validity of the questionnaires was assessed by asking third parties (veterinarians, nurses and pet owners) to determine whether questions were relevant and adequate for the purpose.

Construct validity was assessed by determining the correlation between overall assessments (OVA1 and OVA2) and the only validated marker of lesional severity of CAD (CADESI-03).²² Correlation >0.22 ($P < 0.05$) was considered adequate.

Statistical evaluation

Both Zurich and Hamburg populations were first compared to assess if results could be pooled for further analysis. To assess if the age or sex of the owners influenced the overall assessment of the burden, these two parameters were compared for both OVA1 and OVA2 using the Mann–Whitney test. In addition, the correlation of both OVAs with the OPRS was tested with Spearman Rank correlation. This test was also used to evaluate the relationship between duration of the disease, CADESI-03 and pruritus scores, and between these disease features and OVA1 or OVA2.

Furthermore, each individual question of part 1 and part 2 was compared with the corresponding OVAs (OVA1 and OVA 2 respectively). The correlation between each individual question and OVA was computed with Spearman Rank correlation. We arbitrarily chose to exclude from further analysis individual questions with mean answer scores below 0.55 or above 3.45, and/or standard deviation below 0.75. Such questions almost always yielded very different answers, with scores of 0, 1, 3 or 4, and thus were not considered discriminatory. Similarly, those questions with no significant correlation with the matching OVA were excluded.

In order to determine whether each individual question was dependent on the OPRS, the correlation between the question score and the mean score of questions evaluating owner–pet relationship was determined with Spearman Rank correlation. Questions that were influenced by the relationship between owner and his/her pet were rejected to avoid bias in subsequent studies. Questions correlating adequately with corresponding OVA and not correlating with OPRS were consequently selected. For all statistical evaluations, $P < 0.05$ was considered significant and Graphpad Instat 3 Software was used (Graphpad Software Inc., San Diego, CA, USA).

Results

Forty-five questionnaires were completed in Hamburg and 53 in Zurich. Distribution of owner's age, sex and OPRS were compared for both pools and no statistical differences were found (data not shown). In addition, mean duration of the disease, mean CADESI-03 and mean pruritus scores were not significantly different between centres (see Table 1). The completed questionnaires were therefore pooled for further analyses.

The 98 questionnaires were filled in by 70 females, 24 males and four couples. There was no statistically significant difference between mean OVA1 and OVA2 scores between men and women (Table 2).

Table 1. Comparison of Zurich and Hamburg populations

	Zurich (n = 53)	Hamburg (n = 44)
CADESI-03		
Mean	52.8	64
SD	50.8	56.4
95% CI	50.8–79.5	56.5–95.1
Duration (months)		
Mean	30	25
SD	30.8	22.5
95% CI	21.9–39.3	18.5–32.2
Pruritus		
Mean	5.7	5.8
SD	2.2	1.9
95% CI	5.1–6.4	5.2–6.4

Mann–Whitney test.

Table 2. Influence of the sex and age of the owners on the overall assessment (OVA) questions

	n	OVA1				OVA2			
		Mean	SD	Median	95% CI	Mean	SD	Median	95% CI
Whole group	98	2.14	1.2	2.9	1.9–2.4	3.13	0.93	3	2.9–3.3
Owner: female	70	2.22	1.24	3	1.9–2.5	3.03	0.87	3	2.8–3.2
Owner: male	24	1.91	1.17	2	1.4–2.4	3.29	1.12	4	2.8–3.8
Owner: couple	4	NA	NA	NA	NA	NA	NA	NA	NA
Age: <30	10	1.8	0.8	1.5	1.2–2.3*	3.2	1.03	3.5	2.5–3.9
Age: 30–60	74	2.05	1.22	2	1.8–2.4	3.08	0.96	3	2.9–3.3
Age: >60	14	2.79	0.89	3	2.3–3.3*	3.36	0.74	3.5	2.9–3.8

Mann–Whitney test. *Significant difference, $P < 0.05$.

Data were divided in three different sets depending on the owner's age (<30: $n = 10$, 30–60: $n = 74$, >60: $n = 14$, Table 2). These ages correspond to different periods of employment activity and, potentially, to different strength of relationship with pets. Overall assessment 1 and OVA2 were compared for these three groups. A significant difference ($p:0.01$) was observed for OVA1 between young owners (<30 years of age) and old owners (>60 years of age). Pruritus and CADESI-03 scores did not differ in both groups (data not shown).

Evaluated correlations are presented in Table 2. There was a significant correlation between the OPRS and OVA1 ($r = 0.26$, $P = 0.01$), but not OVA2 ($r = 0.18$, $P = 0.07$). There was, in addition, no significant correlation between CADESI-03 or pruritus scores and OPRS ($r = -0.04$ and -0.01 , respectively, both $P > 0.05$). Duration of the disease correlated significantly with OVA1 and OVA 2 ($r = 0.14$, $P < 0.001$, respectively, both NS). The duration of AD did not influence the perception of the disease by the owners.

Pruritus was significantly correlated with OVA2 ($r = 0.24$, $P = 0.05$) but not with OVA1 ($r = 0.11$, $P > 0.05$). CADESI-03 scores were significantly correlated with both OVAs ($r = 0.33$, $P < 0.001$ and $r = 0.25$, $P = 0.04$ respectively). Pruritus and CADESI-03 scores correlated very well ($r = 0.49$, $P < 0.001$).

In a further step, questions 1–16 related to the QoL of the owner were analysed and compared to OVA1 (Table 3). Seven questions (1, 2, 6, 10, 11, 13, 14) were answered in a very consistent fashion (i.e. mean score >3.45 or <0.55, and/or standard deviation <0.75). These questions were thus considered neither discriminatory nor useful for further studies. Additionally, question 15 did not correlate with OVA1 ($r = 0.19$, $P > 0.05$) and was not regarded as representative of the QoL of the family. Questions 5 and 9 correlated with the OPRS ($r = 0.23$ and $P = 0.02$, for both questions). On the other hand, six questions (3, 4, 7, 8, 12, 16) were discriminatory, correlated with OVA1 and did not correlate with OPRS, and consequently fulfilled the criteria to be included in future studies.

Questions 17–30 related to the HRQoL of the dog (Table 3). None of them yielded a mean score >3.45 or <0.55, and/or standard deviation <0.75. Questions 17–19, 25, 27, 29 and 30 did not correlate with OVA 2. None of the questions correlated with OPRS (Table 3). Questions 20–24, 26 and 28 were therefore considered adequate for future studies (Table 4).

A questionnaire with two overall assessment questions and 13 more specific ones was developed to evaluate the AD-related QoL of dogs and dog owners (Appendix 3).

Discussion

The aim of the present study was to develop a tool to measure the impact of CAD on the QoL of affected dogs and their owners. After evaluating two questionnaires that originally included 42 questions, 15 of them were deemed adequate and were retained to evaluate the QoL of dogs and owners. These questions may prove useful to better address CAD severity in future studies.

Because not only the owners but also the relationship between the owner and her/his pet could affect the perception of QoL, we first developed a questionnaire evaluating exclusively data from the owner and owner–pet relationship and then compared the results to those from questions regarding the overall assessment. The sex of the owners did not influence perception of the disease. However, there was a significant difference between young and older owners. One possible explanation is that many older people might be retired and might spend more time with their pet, thus building up a stronger perception of the dog's disease. Alternatively, the capability to cope with the daily care of a diseased dog might decrease with increasing age. Thus, the age of owners must be considered when evaluating questionnaires regarding pet's QoL.

Overall assessment 1 was correlated with the relationship between owner and pet as evaluated by OPRS. The closer the owner–pet relationship, the higher the owners considered the impact of their pet's disease on their QoL. This is not surprising, but should be taken into account when evaluating owners' overall assessment of QoL in future studies.

CADESI-03 and pruritus scores were highly correlated, and CADESI-03 scores were also correlated with OVAs. These associations were not unexpected, as these parameters aim to evaluate the severity of the disease. Correlations were, however, never close to full concordance unity, emphasizing that the different parameters measure different facets of the same phenomenon and are consequently all useful to evaluate the severity of the disease.

To create a meaningful and effective questionnaire and avoid obtaining superfluous answers, individual questions should be relevant and discriminatory. One should aim to avoid duplicating or including questions that do not add any further information on the influence of CAD on the dog's or owner's life. As a result, the questionnaire could be used as a tool for treatment selection or to measure the effect of treatment. Each single question was thus evaluated for its discriminatory power and correlation with the corresponding OVA and OPRS. Questions that were often answered similarly by the owners, irrespective of disease severity, are not discriminatory and

	OPRS	Duration (months)	CADESI	Pruritus	OVA1	OVA2
Mean	3.76	28.1	70.7	5.8	2.14	3.13
Standard deviation	1.9	27.2	58.32	2.09	1.2	0.93
Correlation/OVA1	0.26 ($p:0.01$)	0.14, NS	0.33, $P < 0.001$	0.11, NS		
Correlation/OVA2	0.18, NS	<0.001, NS	0.25, $p:0.04$	0.24, $p:0.05$		
Correlation/pruritus			0.49, $P < 0.001$			

Table 3. Correlation between overall assessment questions, owner–pet relation score (OPRS) and clinical scores

Table 4. Comparisons of individual questions with OVAs (overall assessment), OPRS (owner–pet relation score) and pruritus

	Mean	SD	Corr./OVA1	P value	Correlation/OPRS	P value		
Question 1	3.49	0.73						
Question 2	3.699	0.46						
Question 3	3.32	0.77	0.2	0.04	<0.01	NS		
Question 4	1.69	1.18	0.53	<0.0001	<0.01	NS		
Question 5	1.68	1.15	0.26	0.01	0.23	0.02		
Question 6	0.29	0.52						
Question 7	3.02	0.97	0.25	0.01	0.19	NS		
Question 8	1.39	1.02	0.48	<0.0001	−0.1	NS		
Question 9	1.28	1.07	0.48	<0.0001	0.23	0.02		
Question 10	0.24	0.49						
Question 11	0.43	0.64						
Question 12	1	1.09	0.32	0.001	−0.01	NS		
Question 13	0.5	0.68						
Question 14	0.5	0.92						
Question 15	1.02	1.04	0.19	NS				
Question 16	1.94	1.29	0.24	0.02	0.07	NS		
	Mean	SD	Corr. pruritus	P value	Corr./OVA2	P value	Correlation/OPRS	P value
Question 17	1.99	1.26	0.34	<0.001	0.09	NS		
Question 18	1.91	1.26	0.33	<0.001	0.01	NS		
Question 19	0.94	0.88	0.34	<0.001	0.11	NS		
Question 20	2.47	1.23	0.47	<0.001	0.25	0.01	<0.01	NS
Question 21	2.66	1.04	−0.38	<0.001	−0.48	<0.001	0.11	NS
Question 22	3.07	0.91	−0.27	<0.01	−0.29	0.003	0.02	NS
Question 23	2.64	1.06	−0.39	<0.001	−0.3	0.003	0.11	NS
Question 24	1.32	0.1	0.28	<0.01	0.26	0.008	<0.01	NS
Question 25	1.47	1.11	0.34	<0.001	0.12	NS		
Question 26	1.5	1.13	0.42	<0.001	0.23	0.02	0.09	NS
Question 27	3.02	0.8	0.03	NS	0.15	NS		
Question 28	1.93	1.09	0.28	<0.01	0.25	0.01	0.14	NS
Question 29	0.74	1.06	0.08	NS	0.07	NS		
Question 30	1.65	1.19	0.41	<0.001	0.04	NS		

consequently not helpful in the evaluation of the QoL. When discriminatory power and correlation with OVA1 were considered together, questions 1, 2, 6, 10, 13, 14 and 15 appeared to be irrelevant, as they either were answered similarly by the majority of owners or did not correlate with OVA1. All other questions were discriminatory and correlated well with OVA1. Additionally, two questions (i.e. questions 5 and 9) correlated well with OPRS, which implies that OPRS may have influenced the answer. Therefore, these questions should be used in future studies only if OPRS is to be included in the analysis.

The overall owner benefit of having a dog is not affected by the severity of the disease. Indeed, all questions except question 3 relating to this aspect (i.e. questions 1, 2, 6, 10) were associated with a very weak discriminatory power. It is particularly worth noting that very few owners considered euthanasia or regretted having a dog because of his disease. However, a selection bias was probably present in this study, as owners were visiting a referral institution and thus may have been less likely to consider euthanasia than owners attending a general practice.

In contrast, questions related to daily routine (i.e. 5, 8, 9) directly correlated with OVA1 and the severity of the disease. The more severe the disease, the more time, emotional and financial effort are needed for its management and the more impact would be expected on the owner's daily life.

Some questions related to the normal activities of dogs (i.e. 17–20, 23) can be considered objective, and when

such activities are disturbed, the HRQoL of the dog is objectively impaired. Interestingly, however, only two of them (i.e. 20, 23) correlated with OVA2 and therefore were considered relevant. This shows that the activities 'eating' 'playing' and 'walking' are not strongly affected by the disease (i.e. questions 17–19), whereas sleep disturbance (i.e. questions 20, 23) is considered a major burden for the dog. This is consistent with the human QoL questionnaires on the effect of AD. Questions 20 and 23 are closely related. However, the correlation, although high ($r = 0.55$, data not shown), is far from nearing full concordance.

Pruritus was weakly correlated with OVA2. However, all questions evaluating pruritus – except the one about sleep disturbance – did not correlate well to OVA2. Thus, owners appear to only pay specific attention to sleep impairment. Because of the small correlation coefficients observed, the authors decided to remove questions evaluating pruritus. This parameter should be evaluated separately with other tools such as the scale recently proposed by Hill *et al.*²¹

The question regarding the daily routine of the dog (i.e. question 29) did not correlate with OVA2, which suggests that owners did not have to modify this habit because of the disease. Owners do not seem to punish their dog because of the itching behaviour as question 27 also did not correlate with OVA2.

OVA 2, like OVA 1, correlated with OPRS, which may represent a drawback for comparative studies. In fact, these parameters cannot be interpreted outside the con-

text of the OPRS. Interestingly, however, questions with high correlation with OVA2 did not correlate with OPRS and are more likely to be useful in comparative studies.

In summary, this study resulted in 15 questions related to the QoL of the owners and the HRQoL of the affected dog that may be used to further characterize CAD (Appendix 3). The usefulness of the present questionnaire should be tested in studies with affected dogs treated with drugs of proven benefit. Such investigations are warranted before the proposed questionnaire can be employed for clinical or research purposes by veterinary dermatologists.

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Résumé La dermatite atopique est une dermatose humaine et canine chronique ou chroniquement récidivante connue pour affecter la qualité de vie (QoL) des individus atteints. Plusieurs études ont été menées pour développer des questionnaires spécifiques de la maladie permettant d'évaluer la QoL des enfants atteints de dermatite atopique et de leurs parents. La sévérité de la dermatite atopique canine n'est actuellement évaluée que par des scores cliniques et de prurit. La mesure de la QoL des chiens atteints et de leurs propriétaires pourrait fournir un nouvel outil d'évaluation de la sévérité et de l'efficacité du traitement de la dermatose. Quatre vingt dix huit propriétaires de chiens atopiques ont complété deux questionnaires ayant pour but d'évaluer leur QoL et celle de leur animal d'une part et d'autre part, les relations propriétaire-animal. Des analyses statistiques ont été réalisées afin d'évaluer la validité des questionnaires et de sélectionner les questions pertinentes pour de futures études. Treize questions ont ainsi été sélectionnées et pourront être utilisées pour déterminer la QoL des chiens atopiques et de leurs propriétaires.

Resumen La dermatitis atópica (AD) es una enfermedad crónica o crónicamente recurrente de la piel de humanos y perros que afecta la calidad de vida de los individuos afectados. Varios estudios se han conducido para desarrollar cuestionarios específicos de la enfermedad y valorar la calidad de vida en padres de niños con AD y en los niños. La severidad de la AD canina se evalúa actualmente solo basado en los valores clínicos y de prurito. La evaluación de la calidad de vida en los perros afectados y en sus propietarios podría por tanto aportar una nueva herramienta para establecer la severidad de la enfermedad y la eficacia del tratamiento. Noventa y ocho propietarios de perros afectados con AD completaron dos cuestionarios enfocados por un lado para evaluar la calidad de vida de los perros y de los propietarios, y por otro lado la relación entre ellos y los perros. Un análisis estadístico se llevó a cabo con el fin de establecer la validez de los cuestionarios y para seleccionar preguntas relevantes para estudios futuros. Este análisis resultó en la selección de 13 preguntas que podían ser utilizadas en estudios enfocados a determinar la calidad de vida de los animales afectados y de los propietarios.

Zusammenfassung AD ist eine chronische oder chronisch wiederkehrende Hauterkrankung des Menschen und des Hundes, die bekanntermaßen die Lebensqualität (QoL) von betroffenen Individuen

beeinträchtigt. Mehrere Studien sind durchgeführt worden, um Krankheits-spezifische Fragebögen zu entwickeln und um die QoL von Eltern mit Kindern mit AD und die Lebensqualität der Kindern selbst zu beurteilen. Der Schweregrad der caninen AD wird allerdings zur Zeit nur mittels klinischen Werten und durch Bestimmung von Juckreiz-Werten evaluiert. Messungen der Lebensqualität von betroffenen Hunden und ihrer BesitzerInnen könnten daher wichtige neue Mittel darstellen, um die Schwere der Krankheit und die Wirksamkeit der Behandlung zu erfassen. Achtundneunzig BesitzerInnen von Hunden mit AD wurden er-sucht zwei Fragebögen auszufüllen, die darauf abzielten die Lebensqualität von betroffenen Hunden und ihrer BesitzerInnen auf der einen und die Beziehung zwischen ihnen und ihrem Hund auf der anderen Seite zu evaluieren. Statistische Analysen wurden durchgeführt, um die Aussagekraft der Fragebögen zu erfas-sen und um relevante Fragen für zukünftige Studien auszuwählen. Durch diese Analysen ergaben wurden 13 Fragen ausgewählt, die in zukünftigen Studien, die auf die Bestimmung der QoL von betroffenen Tieren und ihrer BesitzerInnen abzielen, verwendet werden könnten.

Appendix 1. Questionnaire about the pet owner and its relationship with the dog: owner–pet relation score (OPRS)

Please fill in this questionnaire before starting with the therapy. Tick the answer that best describes your situa-tion. There are no right or wrong answers. All questions must be answered. Should you have any questions, please do not hesitate to contact the clinic staff.

- | | |
|--|----|
| 1. Where does your dog live most of the time? | |
| a. He is most of the time/always in-house | +1 |
| b. He is most of the time inside but has a free access to a garden | 0 |
| c. He is most of the time/always outside | -1 |
| 2. How many hours a day do you spend together with your dog during which you can <u>yourself</u> observe your dog? | |
| a. Less than two hours | -1 |
| b. Two to four hours | 0 |
| c. More than four hours | +1 |
| 3. Are you feeding your dog yourself? | |
| a. Never | -1 |
| b. Sometimes | 0 |
| c. In most instances | +1 |
| 4. Are you walking your dog yourself? | |
| a. Never | -1 |
| b. Sometimes | 0 |
| c. In most instances | +1 |
| 5. Does your dog sleep in your bedroom? | |
| a. Yes | +1 |
| b. No | -1 |
| 6. How many people are living in your household? | |
| a. I live alone | +1 |
| b. We are two | 0 |
| c. We are more than two people | -1 |
| 7. How many dogs and cats are living in your household? | |
| a. One dog | +1 |
| b. One dog and one cat | 0 |
| c. Two dogs | 0 |
| d. More than two animals (either dogs or cats) | -1 |
| 8. Which of the following statements best describes what do you consider your dog(s) to be to you? | |
| a. My dog is like a family member | 0 |
| b. My dog is an animal | -1 |
| c. My dog is like a child | +1 |

-
9. How old are you?
- Less than 30 years old
 - Between 30 and 60 years old
 - More than 60 years old

10. Are you...?
- Male
 - Female
-

Appendix 2. Please rate all of the statements below. When doing so, please think of your feelings and experiences during the time since the last visit to the veterinarian.

Example how to select your answer:

Strongly disagree	<u>Disagree</u>	Neither agree nor disagree	Agree	Strongly agree
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Overall assessment (OVA) questions:

OVA1. The disease of my dog has impaired my own qual-ity of life or those of my family.

OVA2. The disease of my dogs has impaired his own qual-ity of life?

Section 1 – Questions referring to you or to your family

- My dog makes me feel good.
- It is a pleasure to spend time with my dog.
- Thanks to my dog, I am more active.
- Caring for my dog's skin disease is a major burden to me.
- My dog's skin disease disturbs my sleep.
- I regret having this dog because of his/hers disease.
- The disease of my dog makes me sad.
- My dog's skin disease has changed my normal family life.
- My dog's skin disease has changed my leisure activities.
- Sometimes I think it would be better to put my dog down because of its illness.
- I am seeing friends/relatives less often because of my dog's illness.
- I cannot let others look after my dog because of the skin disease.
- I avoid places where I might meet other dog owners because of the skin disease.

14. I am embarrassed about my dog's appearance and smell.
15. My dog's scratching, chewing or licking is making me aggressive.
16. I have to limit other expenses in order to pay for my dog's treatment.

Section 2 – Questions referring to your dog

17. My dog interrupts playing in order to scratch, lick, bite or chew itself.
18. My dog interrupts walking in order to scratch, lick, bite or chew itself.
19. My dog interrupts eating in order to scratch, lick, bite or chew itself.
20. My dog interrupts sleeping in order to scratch, lick, bite or chew itself.
21. My dog is happy.
22. My dog is playful and active.
23. My dog sleeps well.
24. The skin disease has changed my dog's behaviour for the worse
25. My dog is restless.
26. My dog is tired because of his disease
27. I reprove my dog for its chewing licking and scratching.
28. The treatment itself (shampoos, pills) is a major burden to my dog.
29. I have reduced the frequency or the duration of walking my dog.
30. The treatment causes side-effects to my dog.

Appendix 3. Quality of life questionnaire for further studies

OVA1. The disease of my dog has impaired my own quality of life or those of my family.

OVA2. The disease of my dogs has impaired its own quality of life?

1. Thanks to my dog, I am more active.
2. Caring for my dog's skin disease is a major burden to me.
3. The disease of my dog makes me sad.
4. My dog's skin disease has changed my normal family life.
5. I cannot let others look after my dog because of the skin disease.
6. I have to limit other expenses in order to pay for my dog's treatment.
7. My dog interrupts sleeping in order to scratch, lick, bite or chew itself.
8. My dog is happy.
9. My dog is playful and active.
10. My dog sleeps well.
11. The skin disease has changed my dog's behaviour for the worse
12. My dog is tired because of his disease.
13. The treatment itself (shampoos, pills) is a major burden to my dog.