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A study on clinical factors affecting animal welfare in veterinary clinics

Tilbe Grecu[1], Yaren Kurt Açıkgöz[1], Turhan Aykut[1], Mehmed Yüksel Halil[2], Emel Ünlü[1], Canberk Balaban[3], Halil Güneş[3]

1. Istanbul University-Cerrahpasa, Institute of Graduate Studies, Department of Animal Breeding and Husbandry, Avcilar Campus, 34320 Avcilar-Istanbul, Türkiye. **2** Trakia University, Faculty of Veterinary Medicine, Department of General Animal Husbandry, Student Campus, Stara Zagora, Bulgaria. **3.** Istanbul University-Cerrahpasa, Faculty of Veterinary Medicine, Department of Animal Breeding and Husbandry, Avcilar Campus, 34320 Avcilar-Istanbul, Türkiye.

Grecu T. ORCID: 0009-0006-4858-1723; Kurt Açıkgöz Y. ORCID: 0009-0003-4859-3650; Aykut T. ORCID: 0009-0008-7122-864X; Halil, M. ORCID: 0000-0002-8862-404X; Ünlü E. ORCID: 0009-0000-6872-3537; Balaban C. ORCID: 0000-0001-7510-7724; Güneş H.ORCID: 0000-0002-4154-7104

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ABSTRACT

This study aims to evaluate several key factors affecting the welfare of cats and dogs in veterinary clinics in Turkey. The main factors influencing welfare in the clinical setting were quantitatively analyzed and included: physical conditions (auditory stimulation, thermal comfort, humidity, etc.), managerial practices (protocols, in-clinic communication, and staff knowledge/experience), clinical procedures (use of analgesics and anesthetics, physical restraint, species-specific practices), and social factors (pet owner-veterinarian interactions, fear of the clinic, social stress). The research was conducted through an online survey with the participation of 412 veterinarians from different cities. Survey questions were examined under four thematic groups. The findings demonstrated that the adequacy of the clinical environment, standardized protocols, and effective communication are primary factors that enhance animal welfare. Furthermore, it was determined that pet owners' attitudes, fear of the clinic, and social stress also have significant effects on welfare. This study emphasizes the need to develop a holistic approach to welfare in veterinary clinics, offering comprehensive improvement strategies at structural, managerial, and behavioral levels.

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Introduction

The concept of animal welfare today is not only an ethical responsibility but also fundamental criterias for evaluating the quality of healthcare services, the behavioral integrity of animals, and the sustainability of human–animal relationships. The increasing integration of companion animals into family life has raised expectations regarding their care, treatment, and quality of life. In this context, veterinary clinics are not only institutions that provide medical treatment but also social spaces where animals may encounter negative experiences such as stress, fear, pain, and uncertainty.

Numerous factors influence the welfare of cats and dogs in veterinary clinical settings. These include the physical conditions of the clinic environment (e.g., auditory stimulation, thermal comfort, humidity), the manner in which personnel approach the animals, the nature of the procedures performed, and the quality of communication established with pet owners. Global standards for animal welfare have also been shaped in this direction. Institutions such as the International Society of Feline Medicine (ISFM) and the American Association of Feline Practitioners (AAFP) have developed guidelines focusing on feline welfare in

*Corresponding Author: Tilbe Grecu
tilbebabakiray@gmail.com

veterinary clinics, providing recommendations for clinic design and clinical practices. The literature frequently reports that cats and dogs show pronounced signs of stress in clinical environments, which can lead to adverse outcomes ranging from behavioral disturbances to physiological risks. However, in Turkey, field-based studies addressing the multifactorial effects of veterinary clinics on welfare remain limited.

This study aims to examine, in a multidimensional manner, the principal factors affecting cat and dog welfare in veterinary clinics in Turkey. The research evaluates environmental conditions, managerial practices, staff approaches, and pet owner–clinician interactions from a holistic perspective. Data were obtained from an online survey conducted with the participation of 412 veterinarians from various cities in Turkey. The survey was designed to cover different dimensions of welfare.

This article evaluates the factors influencing welfare not only individually but also within an interconnected, multi-layered framework. The findings provide opportunities to generate practical recommendations for both clinic design and service provision. Thus, the study seeks to contribute to welfare-oriented transformation processes in veterinary clinics.

Method

Study design: This research was conducted as a quantitative, cross-sectional study aimed at evaluating the factors influencing cat and dog welfare in companion animal veterinary clinics operating throughout Turkey. An online survey method was employed, and the collected data were analyzed using descriptive statistics.

Population and sample: The study population consisted of private veterinary clinics in Turkey providing services to companion animals and the veterinarians employed therein. The sample was determined through purposive sampling; veterinarians from various provinces were reached via email, professional networks, and social media groups. A total of 412 veterinarians voluntarily participated in the study.

Data collection instrument: A questionnaire developed by the researcher, and evaluated for validity and reliability by experts, was used as the data collection tool. The questionnaire was structured to assess various factors affecting the welfare of cats and dogs and was grouped under four themes:

1. Clinical environment and physical conditions
2. Clinical practice protocols
3. Physical restraint and examination methods
4. Social stress factors and pet owner interaction

In addition, the questionnaire included demographic items regarding participants' age, gender, year of graduation, and current province of practice. The data analyzed in this study derive from the section titled "Clinical Factors Potentially Influencing Companion Animal Welfare."

Implementation and ethical considerations: The questionnaire was designed using the Microsoft Forms platform and was initially disseminated in 2023; it was redistributed in 2024 and 2025, ultimately reaching 412 practicing veterinarians. All participants provided informed consent before participation. The research was conducted in accordance with the approval granted by the relevant university's Ethics Committee.

Data analysis

The data were analyzed using SPSS version 25.0. Survey questions were rated on a Likert-type scale ranging from 0 ("not effective at all") to 4 ("very effective"). The arithmetic means of the scores assigned by participants were calculated, and the results were presented in tables and figures. Mean scores of 3 or above indicated that the factor was evaluated as highly influential by participants.

Results

The findings obtained in this research are presented with tables and figures under the headings of clinical environment and physical conditions, clinical practice protocols, physical restraint, examination methods, social stress factors and pet owner communication.

1. Clinical environment and physical conditions

Participating veterinarians evaluated the effect of physical environmental conditions in clinics on animal welfare at a high level (Figure 1 and Table 1). The effect of thermal comfort on welfare was rated at 3.40 out of 4, while the effect of auditory stimulation was rated at 3.32. The organization of treatment areas was evaluated at 3.59, and the comfort level of hospitalization cages at 3.47. These findings reveal that the adequacy of the clinical environment is a critical area that directly affects animal welfare. In particular, it is understood that the functionality of the areas used in treatment and care processes and the comfort provided by cages are decisive in reducing stress levels and supporting animals to have more positive experiences. The average score of the percieved impact of the clinical environment and physical conditions can be calculated 3.45 out of 4, indicating that these factors are perceived as having a very high level of impact on animal welfare.

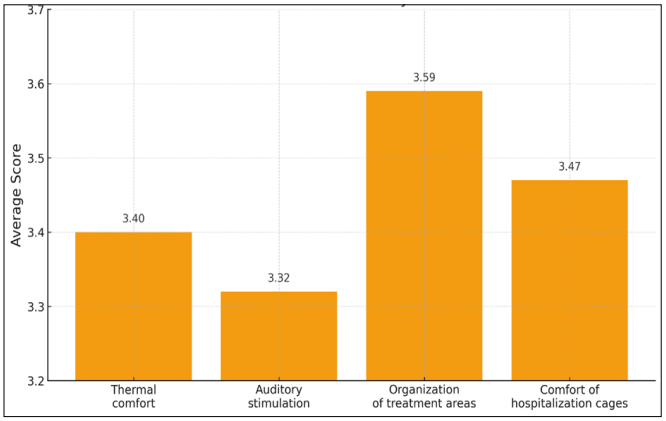

Figure 1. The effect of clinical environment and physical conditions on animal welfare.

Table 1. Values of the effect of clinical environment and physical conditions on animal welfare.

Factors	*n*	x	*s*	Min	Max
Thermal comfort	412	3.40	0.78	2	4
Auditory stimulation	412	3.32	0.77	2	4
Organization of treatment areas	412	3.59	0.73	2	4
Comfort of hospitalization cages	412	3.47	0.79	2	4

2. Clinical practice protocols

According to the research findings, written protocols and procedures implemented in clinics are considered by veterinarians among the structural elements that directly affect animal welfare (Figure 2 and Table 2). Participants evaluated the effect of the presence of these protocols and compliance of employees with these rules on welfare with an average of 3.09 out of 4.

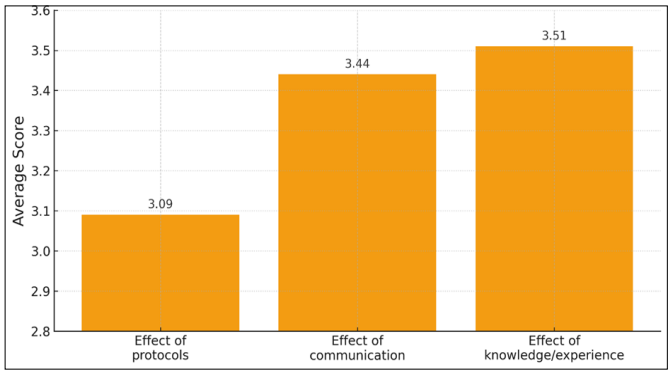

Figure 2. The effect of clinical practice protocols and communication factors on animal welfare.

Table 2. Values of the effect of clinical practice protocols and communication factors on animal welfare.

Factors	n		s	Min	Max
Effect of protocols	412	3.09	0.92	1	4
Effect of communication	412	3.44	0.88	1	4
Effect of knowledge/experience	412	3.51	0.79	2	4

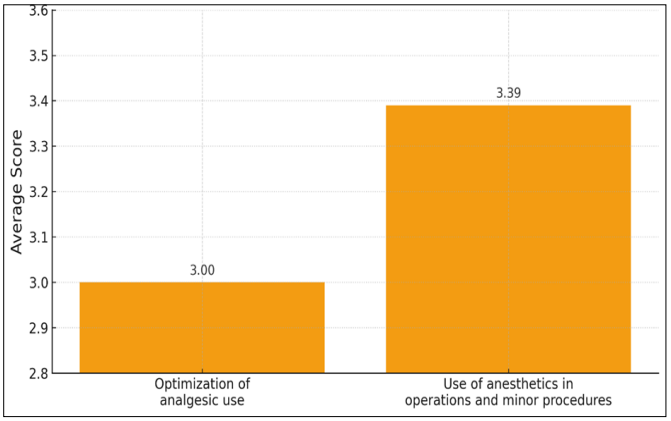

Figure 3. The effect of clinical practice protocols on welfare.

Table 3. Values of the effect of clinical practice protocols on welfare

Factors	*n*		*s*	Min	Max
Effect of analgesics	412	3.00	1.08	1	4
Effect of anesthetics	412	3.39	0.79	2	4

The effect of clear and coherent in-clinic communication on welfare was evaluated at 3.44. Similarly, employees' levels of knowledge and experience received one of the highest average scores, at 3.51.

The majority of participating veterinarians stated that standardizing protocols plays a critical role in increasing the level of welfare. Pharmacological practices also came to the fore among the important determinants of animal welfare (Figure 3 and Table 3). While the contribution of anesthetics used in operations and minor procedures to welfare stood out with a score of 3.39, the effect of optimizing analgesic use on welfare was determined as 3.00. Participants emphasized that pain control and the conscious management of anesthesia should be addressed systematically within clinical protocols. These findings reveal that pharmacological applications used in pain and stress management are an integral part of clinical welfare standards.

Overall, the findings regarding clinical practice protocols show that both structural (protocols, communication, staff quality) and practice-oriented (analgesics and anesthetics) elements received high scores and that these factors are seen as priority areas in improving animal welfare. The average score of the percieved impact of the clinical practice protocols can be calculated 3.29 out of 4, indicating that these factors are perceived as having a high level of impact on animal welfare.

3. Physical restraint and examination methods

According to the research findings, physical restraint methods applied in clinical environments were evaluated by veterinarians with an average score of 3.09 (Figure 4 and Table 4). This finding shows that restraint practices have a significant effect on welfare. In addition, the contribution of adapting practices during examination to different species, such as cats and dogs, to welfare was rated at 3.01.

The results reveal that veterinarians consider practices that take species differences into account not only necessary but also critical in terms of welfare. The findings show that there is strong awareness in clinical processes both for improving physical restraint methods and for popularizing species-specific examination approaches. The average score of the percieved impact of the physical restraint and examination methods can be calculated 3.05 out of 4, indicating that these factors are generally perceived as having high level of impact on animal welfare.

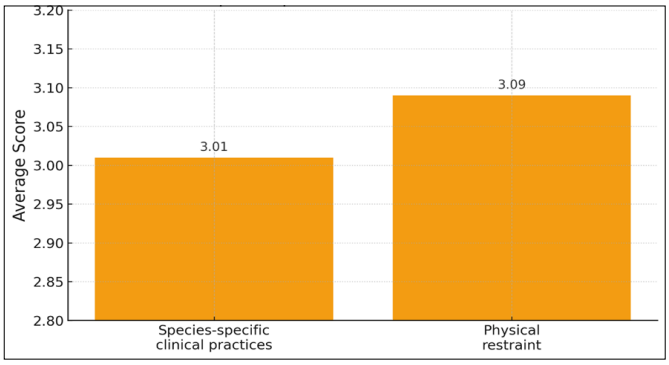

Figure 4. The effect of physical restraint and species-specific clinical practices on welfare.

Table 4. Values of the effect of physical restraint and species-specific clinical practices on welfare.

Factors	*n*		*s*	Min	Max
Species-specific clinical practices	412	3.01	0.92	2	4
Physical restraint	412	3.09	0.96	1	4

4. Social stress factors and pet owner Interaction

According to the evaluations of the participating veterinarians, social stress factors and human–animal interaction stand out as elements that directly affect the level of welfare in the clinical environment (Figure 5 and Table 5). In particular, the recognition of species-specific behaviors was valued at the highest level in this category, with an average score of 3.40.

Similarly, the effect of fear of the veterinary clinic (contact with unfamiliar individuals, perception of an unfamiliar environment, etc.) on welfare was evaluated at 3.28. The quality of human–animal interaction was seen as a positive element in terms of welfare and was evaluated at 3.35.

Participants also evaluated the presence of aggressive animals in the clinical environment as an important source of stress (Avg = 3.48). This shows that social stressors in clinics may originate not only from environmental factors but also from the behaviors of other animals.

These findings reveal that social factors and the human–animal relationship play a critical role in shaping the level of welfare in the clinical environment. Taking species-specific behaviors into account, reducing fear of the clinic, and supporting human–animal interaction come to the fore as priority areas for welfare-oriented clinical practices. The average score of the perceived impact of the social stress factors and pet owner interaction can be calculated 3.38 out of 4, indicating that these factors are generally perceived as having very high level of impact on animal welfare.

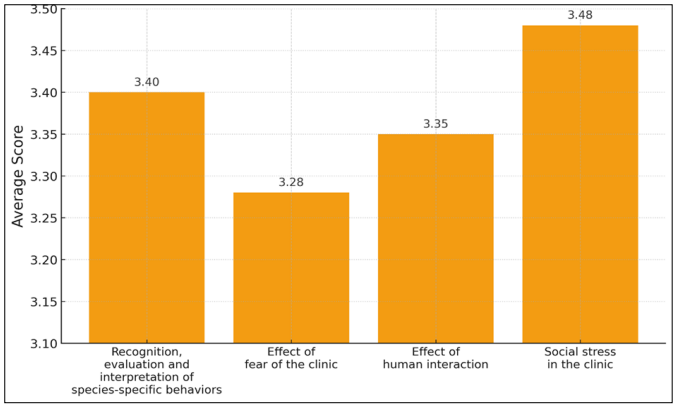

Figure 5. The effect of social stress and human interaction factors on welfare.

Table 5. Values of the effect of social stress and human interaction factors on welfare

Factors	*n*		*s*	Minimum	Maximum
Recognition, evaluation, and interpretation of species-specific behaviors	412	3.40	0.92	1	4
Effect of fear of the clinic	412	3.28	0.94	1	4
Effect of human interaction	412	3.35	0.73	2	4
Social stress in the clinical environment	412	3.48	0.92	1	4

Discussion

The survey results show that the majority of practicing veterinarians in Turkey have a high level of awareness regarding the importance of basic environmental factors and standardized protocols in clinical practices for the welfare of cats and dogs (e.g., thermal comfort, auditory stimulation, consistent use of analgesia/ anesthesia, etc.). According to the evaluation findings, the main factors identified were generally considered important and highly influential by practicing veterinarians. However, it should not be overlooked that in order to optimize animal welfare for cats and dogs in clinics, not only physical conditions but also the psychological stress and fear experienced during clinic visits must be addressed. Recent studies on cats and dogs have shown that practices such as low-stress restraint methods (Squair et al., 2023), proactive pain management (Hellyer et al., 2007), and the use of anxiolytic medications before visits (Erickson et al., 2021; Lamminen et al., 2023) are effective in controlling clinical stress. Although physical conditions are necessary, they are not sufficient on their own; a comprehensive welfare plan should include not only environmental arrangements but also evidence-based behavioral and pharmacological strategies.

The high survey scores given for physical conditions, such as thermal comfort and the arrangement of inpatient cages to be suitable for treatment, indicate the high awareness of many practicing veterinarians on this issue. In light of this awareness, an increase in welfare-friendly approaches and practices in veterinary clinics is expected. As also stated in the guidelines, arrangements such as heated blankets, heated cages, and resting areas supported with pheromones to support thermal comfort and reduce stress have an important place, especially for cats (Rodan et al., 2011). It is noted that cats experience more stress during veterinary visits compared to dogs, and therefore environmental arrangements in accordance with cat-friendly standards, along with the encouragement of routine check-ups, will increase welfare (Babakıray & Güneş, 2024). Cat-friendly clinic programs are an example of progress in this regard. In the future, the number of clinics included in the cat-friendly clinic program in Turkey can be expected to increase. Guidelines have defined the situation where multiple stressors (restraint, unfamiliar odors, confinement, and pain) accumulate and exceed the animal's stress tolerance as "stressor accumulation" (Taylor et al., 2022). Considering that the categorized factors in the findings are each stressors, it can be understood that evaluating these factors individually is insufficient, and when evaluated together, their effect on welfare becomes much greater.

In the survey findings, the high score of the effect of auditory stimulation on welfare is consistent with experimental studies. Research has shown that high noise levels in the clinical environment increase stress markers in cats (respiratory rate and plasma cortisol), while quiet isolation rooms, on the other hand, reduce stress (Girão et al., 2024). Situations that are not always in focus, such as continuously changing the location of cats within the clinical environment, also increase stress levels (Griffin et al., 2020). Another study showed that fear scores during rectal body temperature measurement and the physical restraint in this process were significantly higher compared to the alternative tympanic measurement method (Hanström et al., 2025). These studies emphasize that quiet, warm, species-specific areas reduce physiological stress, but animals may still experience fear during routine procedures. Therefore, although environmental control is fundamental for welfare, it alone cannot eliminate stress.

Clinical practices and associated physical restraint situations were also evaluated among the important stress factors. During these practices, it is important to reduce the patient's stress and prevent stressor accumulation. In a study conducted on dogs, it was observed that 41% of dogs in veterinary waiting rooms exhibited mild–moderate fear and 14% exhibited severe fear during their examinations (Edwards et al., 2019). Other observational studies in waiting rooms revealed that more than half of the dogs displayed multiple stress behaviors such as rapid and shallow breathing, repeated nose licking, and ear retraction (Mariti et al., 2015). Among dogs examined with standard methods and approaches in clinical practices, those examined with low-stress methods and cooperative approaches showed much greater decreases in serum cortisol levels and behavioral stress scores (Squair et al., 2023), highlighting the importance of communication in the veterinarian–patient relationship. Recognition of species-specific behaviors also provides opportunities for improving these relationships. Some behavior problems may lead to different decisions in clinical practices; therefore, relationship management should also be examined in a multifaceted way (Casey et al., 2022). The recognition of different behaviors, such as those caused by pain, behavior problems, or stress-related behaviors, will facilitate clinical processes.

Pain and fear are interrelated. Guidelines emphasize that anxiety and fear can intensify pain perception and that methods which may cause stress and physical

restraint may contribute to pain (Hellyer et al., 2007). In such cases, the use of pre-analgesics or pre-anesthetics may be necessary for examinations or treatment procedures to be performed correctly. Intradermal allergy tests can be cited as an example of this situation. Especially in cats, intradermal tests can cause an increase in serum cortisol levels and may result in test results being misinterpreted, which may justify the use of alternative pharmacological interventions (Hudec & Griffin, 2019). In addition to pharmacological management, relatively simple enrichments such as providing soft bedding, heated blankets, dim lighting, and species-specific pheromone diffusers can also reduce anxiety (Hellyer et al., 2007).

Although auditory enrichment has gained popularity, the evidence remains complex. Some studies have shown that cats in clinical environments are calmer and more compliant when exposed to cat-specific music compared to silence or classical music (Hampton et al., 2019). While some research has indicated that auditory enrichment is more successful in dogs compared to cats, the presence of shelter environments and other multiple variables makes the interpretation of these data difficult (King et al., 2022). These findings suggest that calm, rhythmic music may provide small benefits; however, the primary focus should be on reducing noise and preventing social isolation. Excessive noise, unfamiliar sounds, and loud equipment should be minimized, and a calm clinical environment should be established.

When focusing on stress factors and aiming to minimize the number of stressors, the duration of the visit may be prolonged. However, studies have shown that the use of low-stress examination techniques and pre-visit anxiolytics increases patient compliance, which actually shortens the duration of visits and examinations by preventing struggling and injuries (Riemer et al., 2021). Nonetheless, it is also noted that sedation may mask clinical signs. This situation can be prevented with the selection of correct pharmacological agents or combinations and their proper application (Tucker et al., 2024).

Conducting the survey on a voluntary basis, with high accessibility (e.g., online channels) and broad geographical coverage, provided various advantages; however, the presence of volunteer-based participation in the sample should be taken into account, as respondent tendencies may have had a limited effect on the data, and representativeness should be carefully considered. Furthermore, since the study design did not include direct measurements for collecting observational or ethological data, the effects of clinical practices on animal behaviors were not empirically evaluated. In future research, multi-method designs supported by behavioral observations may increase the depth of the findings. Additionally, since this study focused on data based on clinicians' experiences, the perceptions and contributions of pet owners were not systematically addressed. It should be remembered that animal welfare is a multi-actor structure shaped not only by clinical practices but also by the attitudes, knowledge levels, and expectations of owners. In this context, integrating the perspectives of pet owners into the evaluation process in future studies will further enrich the assessment framework.

Conclusion

In this study, based on the opinions of veterinarians working across Turkey, the main factors affecting the welfare of cats and dogs in veterinary clinics were evaluated. The findings confirm that the physical conditions of the clinical environment, practice protocols, examination methods, and social stress factors play a critical role in shaping animal welfare. Issues such as thermal comfort, the organization of treatment areas and inpatient areas, pre-anesthetic applications, and human–animal interaction were evaluated by participants with high average scores, and this suggests that a certain sensitivity regarding animal welfare is developing in clinics.

The research results indicate that the welfare-oriented approach in clinics is becoming increasingly important, but they also suggest the existence of potential for improvement in areas such as the standardization of practices, the regulation of pharmacological protocols, and the strengthening of communicative processes. In particular, the widespread adoption of low-stress examination techniques, the support of species-specific approaches, and the implementation of measures to reduce social stress factors are among the priority areas for the sustainable improvement of welfare in clinics. The presence of aggressive animals in clinics was also found to be a noteworthy source of stress, indicating the importance of interspecies isolation in patient admission and housing processes in clinics.

This study provides an important perspective on veterinarians' views regarding animal welfare in veterinary clinics in Turkey and offers insights into areas with potential for development. The spread of welfare programs and welfare-friendly practices is possible only through the cooperation of veterinarians. The findings show that veterinarians in Turkey are ready and supportive of practices that will improve the welfare of cats and dogs in veterinary clinics. Awareness on this issue should be disseminated not

only among veterinarians but also among pet owners, the media, and institutions. In today's context, where animal rights are an important topic, discussing animal welfare specifically within healthcare services will be highly meaningful. The survey results have revealed the topics prioritized by veterinarians and have allowed prioritization for areas of focus. The views of the participants on these issues are guiding not only for the improvement of current practices but also for the determination of future policies and professional orientations.

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