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Journal of Transportation and Logistics
7 (1) 2022

DOI: 10.26650/JTL.2022.1004738

RESEARCH ARTICLE

Risks in Road Transportation of Sport Horses: the Case of Turkey

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ABSTRACT

Horses are transported more frequently than any other animals (European Commission, 2002), but lack of education and knowledge in and control over their transportation leads to consequences harmful for the development and expansion of the industry. This study investigates the risks of horse transportation and aims to improve risk mitigation by proposing procedures and control systems. This study focuses particularly on racehorses and showjumping horses, considering their volume and the value of the equestrian market. Employing multi-method research, we aim to investigate the risks involved in horse transportation in Turkey and contribute to the related literature by creating a holistic approach with multiple parties involved in the industry. Semi-structured interviews were conducted with coaches, riders, grooms, drivers, a veterinarian, and a company owner in three cities of Turkey. The data revealed seven risk categories in horse road transportation: employee expertise, insurance issuance, horse health and safety, industry qualification, infrastructure, transportation planning, and vehicle design.

Keywords: Racehorses/Showjumping Horses, Risk, Road Transportation

Submitted: 07.10.2021 • **Revision Requested:** 17.11.2021 • **Last Revision Received:** 06.12.2021 • **Accepted:** 17.05.2022

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Citation: Alamdari, E.T., Oflac, B.S. & Gocer, A. (2022). Risks in road transportation of sport horses: the case of Turkey. *Journal of Transportation and Logistics, 7*(1), 19-35. https://doi.org/10.26650/JTL.2022.1004738

1. Introduction

Horse sports are significant and growing industries globally; however, horse logistics is generally neglected (Herold et al., 2019). The International Federation for Equestrian Sports (FEI) organizes more than 800 events every year in Europe in different disciplines (Federation Equestre Internationale, 2021), which necessitate the relocation of over 35,000 horses among European countries (Leadon, 1994). There are around 55,200 active racehorses registered with the Turkey Jockey Club (Turkey Jockey Club, 2021) and 4,080 showjumping horses registered with the Turkey Equestrian Federation (Turkey Equestrian Federation, 2021). Also, there are nearly 1,150 racehorse riders and 7,456 showjumping horse riders registered in Turkey (TJK, 2021 and TBF, 2021).

Animal transportation is a highly specific activity, shaped by the nature and needs of transferred animals. It is a particular sector in logistics operations, requiring special research attention. However, animal-related operations and other specialized animal transportation related areas are generally neglected in the logistics domain. In the animal transportation industry, horses are the most transported animals, for different purposes, such as races, breeding, leisure activities, sale, or slaughter (European Commission, 2002). The distinct characteristics of the horse sports industry and market volume, involving many stakeholders in race, care, training, feeding, and transportation phases, mean that the equestrian market requires specific research attention. This study focuses on racehorses and showjumping horses, which constitute a significant part of the volume and the value of the equestrian market.

The contributions of the study are four-fold: This study (1) explores the transportation risks of racehorses and showjumping horses in all phases of the transportation process, including planning, loading, unloading, and en-route; (2) provides a multi-actor perspective by employing the views from various stakeholders in the horse business; (3) sheds light on the gaps and inadequacies both in policies and applications in emerging countries, which contrasts with the well-developed and structured equine industries in developed countries; and (4) contributes to the animal transportation literature by revealing the road transportation risks for horses. This study also contributes to the specific domain of racehorses' and showjumping horses' transportation, which has received limited attention.

In line with all these arguments, the research questions for this study are as follows:

1) What are the risks of racehorses and showjumping horses' transportation in Turkey?

2) In which areas can the policies be improved?

This paper starts with a review of related literature. Then the methodology part elaborates on the data collection, sample, and data analysis. The study proceeds with the presentation of the findings. Lastly, the implications and limitations of the study are discussed, and future research avenues are indicated.

2. Literature Review

The animal transportation process is characterized by uncertainty due to variations in the conditions of the transportation environment and the needs of animals. Different transport conditions are created due to animal species and their various physiological requirements (Marahrens et al., 2011). In the transportation risk literature, the following road transportation risk factors are highlighted: transfer and packaging risks, lack of adequate and qualified staff and equipment, risks evoked by the conflict between logistics data system and technology, safety risks, risks of waiting time in customs, and infrastructure risks related to logistics (Memis et al. 2020). In our study, we focus on the risks of transporting horses by road. Most previous studies focus on the veterinary aspects, specifically, the effects/risks of transportation on horses' health. While some studies take a more holistic view of animal transportation risks and their drivers (e.g., Padalino 2015; Cregier 1982; Atok and Williams 1994), others pursue a more dedicated view, working on specific aspects (e.g., Mars et al., 1992; Waran and Cuddeford, 1995).

Risks in animal welfare are defined as the possibility of a negative effect on animal welfare and its intensity (Villa et al. 2009). As horses are of high importance regarding their competition performance and monetary value, the sustainability of animal welfare is amongst the most significant issues in the equestrian industry (Munsters, 2013). This can be achieved only by risk assessment and risk management procedures. While risk assessment refers to the determination of risks to the welfare of animals, risk management is defined as the process of recognizing, determining, and controlling risks to an organization's achievements (Villa et al., 2009).

Horses are generally transported on roads in trailers and specially designed trucks, and transportation problems may be related to their exterior and interior design. Since the load is valuable, the vehicles are required to be fully equipped, and to comply with animal safety and health regulations. Several studies exist on horse transportation safety and risks indicating the importance of interior vehicle design and equipment such as partitions, decks, ramps, floor bedding materials, and windows (e.g., Cregier 2009; Cregier and Gimenez 2015; Padalino 2015; Raidal, Love and Bailey 1996). In most cases, bone injuries are caused by inappropriate design and equipment during transportation or in loading and unloading (e.g., Mansmann and Woodie, 1995; Stull, 1997; Whiting, 1999; Hall and Bradshaw, 1998).

Horses from different farms may be transported in the same vehicle, causing the diffusion of bacteria, viruses, and parasites (Boehm, 1998). Among the most important aspects of transportation health are disinfection and clean air in vehicles (e.g., Atok and Williams, 1994; Cregier, 2015), thus, long distance vehicles should be equipped with particular ventilation and temperature monitoring systems (e.g., Leadon, 2008; Padalino, 2015). Furthermore, travel conditions can carry a range of dehydration risk, from mild to severe (e.g., Mars et al. 1992). Even slight dehydration can decrease performance in athletic horses, underlining the importance of this issue (Padalino, 2015). Providing food and water and enabling easy access to appropriate equipment during long-distance transportation is essential to preventing weight loss and dehydration risks (Cockram, 2007).

Apart from the vehicle design and equipment-related risks, in psychological terms, animal transportation is a complicated practice involving numerous potential stressors (e.g., Waran, 1993; Leadon, Daykin, Blackhouse, Frank, and Attock, 1990; Waran and Cuddeford, 1995, Smith et al, 1996). These stressors might lead to serious horse health problems, including weight loss, infections, respiratory diseases, change in heart rate, rise in stress hormone production, the variation of blood harmony, and decrease in the immune system (e.g., Oikawa and Kusunose, 1995; Foreman and Ferlazzo, 1996, Padalino et al, 2016), and in some cases, death due to long journeys (e.g., Oikawa et al, 1995; Racklyeft et al., 2000). Some researchers have investigated psychological stressors (e.g., Baron 1991; White et al., 1991) such as fear and separation from a familiar environment, while others have focused on physical conditions such as vibration, noise, animal density, temperature and humidity changes, trailer motion and road conditions (e.g., Waran and Cuddeford, 1995; McGreevy and McLean, 2011; Padalino, 2015; Houpt and Leib, 1993; Jones, 2003). Moreover, time-based factors such as length of journey and rest times were found to impact horses' stress levels (e.g., Cregier, 1982).

Other potentially crucial issues are transportation planning and documentation, and driver capability. During transportation, a driver's ability in acceleration, braking, and other difficult maneuvers can seriously affect horses' heart rate and stress levels (e.g., West et al. 1993; Cockram, 2007; Gade and Christensen, 1998). To have a healthy journey, it is crucial to ensure appropriate documentation and auditing before loading and after unloading. Lack of en-route information may become a source of risk. Thus, the records of the origin and the owner of the horse, place, date and time of pickup, destination, and estimated time of arrival should be kept for six months as a journey record (Live Transport, 2019), with additional records of safety checks, before-after horse weights, injuries, and any unusual horse behavior such as signs of depression (Cregier, 2009).

According to Šímová et al. (2016), it is essential to ensure optimal quality in animal transportation guided by precise scientific regulations, proportional investment in education and training of staff, enhancement of the quality of equipment, and appropriate deployment of the professional workforce. Moreover, two key points in risk mitigation in road transportation are management-practitioner orientation for the maximization of animal welfare, and better employment of appropriate logistics management.

In light of these arguments, herein, we aim to reveal the risk factors in the racehorses and showjumping horses' road transportation process.

3. Methodology

3.1. Data Collection

Turkey, as an emerging country, has huge potential in the equestrian industry and horse logistics. Racehorses and showjumping horses are significant elements in the horse industry, and this sector constitutes a significant part of the country's economy, with incomes from races and from betting (Aykinon, 2018). However, because the number of studies in Turkey is inadequate, there is a need for road transportation risk identification to improve the safety and quality of racehorses' and showjumping horses' transportation, through eliminating the risks and improving industry-related policies.

Semi-structured interviews and participant observation techniques were used to investigate the risks in horse road transportation. Employing these different data collection techniques enabled triangulation and increased the validity of findings. Semi-structured interviews, to gather information on horse transportation risks, fulfilled the need for exploratory research in the field. In this regard, we prepared an interview guideline and conducted 13 interviews, averaging 60 minutes each. All the interviews were recorded and converted into verbatim data.

In line with our aim of exploring risks on transportation of racehorses and showjumping horses, we conducted judgmental sampling based on the experience and knowledge level of the participants. In this regard, we selected participants directly linked to horses and their stakeholders. Selecting participants from different responsibilities in the horse business enabled us to gain understanding through multiple perspectives (see Table 1).

In addition to the semi-structured interviews, we utilized the participant observation method, which is a technique for investigating events and behaviors of the research site in natural circumstances through directly participating in the related activities (Marshall and Rossman, 1989). Video recording and voice capturing were used for data collection during observations. In total, 100 hours of observations were completed, and the recorded data was analyzed three times. Field notes enabled us to become familiar with and document horse and personnel activities, and transportation incidents occurring in the observation process. Data were drawn from different transcripts and integrated with field notes. Three researchers coded the interviews separately to achieve inter-coder reliability. The multi-method and multi-actor nature of the study helped to fulfill the validity concerns.

Table 1. samples of interviews

#	Participants	Gender	Branch	Location	Experience	Age	Descriptions
1	C1	Male	Racing	Izmir	30	66	Instructor of students, Trainer of horses, Owner, Rider,
2	C2	Male	Jumping	Istanbul	30	47	Instructor of students, Trainer of horses, Owner, Seller
3	CO	Male	Racing & Jumping	Istanbul	25	60	Owner of a transportation company
4	D1	Male	Racing	Izmir	15	60	Driver
5	D2	Male	Jumping	Izmir	20	55	Driver
6	G1	Male	Jumping	Izmir	25	56	Groom
7	G2	Male	Jumping	Izmir	19	32	Groom
8	G3	Male	Jumping	Izmir	9	32	Groom
9	G4	Male	Racing	Izmir	25	35	Groom
10	O1	Male	Jumping	Ankara	20	35	Rider, Horse breeder, Instructor of students, Owner
11	R1	Male	Jumping	Izmir	20	35	Rider, Instructor of students, Trainer of horses, Owner
12	R2	Male	Jumping	Izmir	20	42	Rider, Instructor of students, Trainer of horses, Owner
13	V1	Female	Racing & Jumping	Izmir	10	35	Rider, Veterinarian

3.2. *Data Analysis*

For this study, an abductive approach (Kovacs and Spens, 2005) was adopted, utilizing inductively emerging themes from the data combined with using prior constructs from the literature. Before collecting data, we conducted an extensive literature review to enable the theoretical matching with the existing concepts in the analysis phase. One of the research team had ten years of experience in the horse business, allowing the research to evolve with real-life observations. Building on the literature review, we moved from the basic concepts towards an awareness of emerging arguments, by which the existing frameworks were expanded and reshaped (Kovacks and Spens, 2005; 2006; Timmermans and Tavory, 2012).

Following the thematic analysis steps (Braun and Clarke, 2006), we transcribed the data, and then generated initial codes and then the themes in an abductive manner. More specifically, in the initial coding and subsequent theming processes, we were able to combine data-driven inductive codes and literature-driven theoretical codes as the analysis proceeded. We identified commonalities regarding risks and several interrelated themes were developed from the data inductively.

Following the double-fitting process of the data and the existing literature (Timmermans and Tavory, 2012), we explored newly identified risks in our research context that led to the development of new risk categories.

4. Findings and discussion

The data revealed that the risks for the transportation of horses can be categorized in seven main categories: employee expertise, insurance issuance, horse health and safety, industry qualification, infrastructure, transportation planning, and vehicle design (see table 2).

Table 2. Major and Sub Risks categories

Major Categories	Sub Categories
Employee Expertise	Driver Expertise
	Horse-Care Staff Expertise
Insurance Issuance	Insurance Policy Coverage
	Insurance Cost
Horse Health and Safety	Stress
	Hygiene
	Feeding
	Veterinary Controls
	Horse Training
Industry Qualification	Documentation
	Educational Obligation
	Industry Know-how
	Systematic Auditing
Infrastructure	Farm Infrastructure
	Route Infrastructure
Transportation Planning	Scheduling
	Safety Planning
Vehicle Design	Air Conditioning
	Internal Design
	Equipment and Safety Tools

In Table 3, we present exemplary quotes for the emerging categories. Categories with emerging data were continuously compared with the interview data and cross-checked with the field notes. The findings were then compared with the existing research.

Table 3. Exemplary Quotes

Prominent Quotes	Risk Categories
"We should have an experienced driver; they must be educated and be aware of livestock." (R1) "Expertise is important. There must be an expert with the driver who is familiar with horses and can remain calm in case of problems." (V1)	Employee Expertise
"When you insure the horses, it covers the health issues, but transportation insurance is not covered." (C1) "I searched for an insurance company to insure my horses but none of the companies replied." (O1) "The vehicle insurance does not cover horse insurance; the owners must ensure their horses separately by themselves." (D2)	Insurance Issuance
"There is no disinfection in farms." (V1) "In case of high speed, the horses will be stressed in turns and sudden stops." (V1)	Horse Health and Safety
"It is important to prepare the necessary documents for horse transportation." (R2) "Nobody records and monitors the transportation of horses." (O1)	Industry Qualification
"There is no proper place to give breaks during transportation." (G3) "In case of emergency finding a proper place for unloading the horses is nearly impossible." (C1)	Infrastructure
"Planning proper resting time during a prolonged journey is a must." (CO)	Transportation Planning
"In-vehicle notification systems are essential and should be used to notify the drivers about horses' status inside the vehicle." (D2)	Vehicle Design

4.1. Employee Expertise

This category covers the risks associated with the expertise of the driver and horse-care staff in the horse transportation process. The education and training of driver, groom and other staff are critical to increasing expertise in the areas of awareness, know-how, and leadership skills. Data revealed that in most cases, the driver has the required experience. The driver is required to be knowledgeable about all issues in relation to horses. Likewise, grooms are required to be familiar with the transportation of horses and have knowledge on the role of the driver and nature of the vehicle. Lack of expertise and experienced employees in the process raises risks related to welfare aspects and may lead to potential loss of investment in the market.

Some participants mentioned that employees' compliance with the procedures is important for safe transportation. This requires high levels of awareness gained through training and education. For example, drivers should have regular rest periods on route to their destinations. Long journeys can affect the driver's attention and cause problems for their own safety and the transported horses. Therefore, drivers must comply with the procedures, and follow the rest schedule programs. Noncompliance with the rest procedures may cause accidents due to exhaustion. According to the interviews with the drivers, it is unusual to carry a second driver due to the extra cost.

Besides having an experienced driver in the vehicle, the knowledge level of the accompanying staff is also important. The V1 reported that, during transportation, the availability of authorized people to check the horses and manage their needs is an

important factor in reducing risks. Awareness of the driver is another significant factor in the transportation of horses. V1 highlighted the issue of the competence of staff for loading and unloading the horse, and that they should be trained accordingly. For instance, drivers' technical vehicle checks before loading the horses is one of the fundamental requirements in the prevention of the risks of transportation.

Participants agreed that the driving style should differ from the ordinary truck driving when the load is livestock and that livestock transportation truck drivers must be informed and educated specifically in the transportation of horses. D1 mentioned that the drivers must pass a mandatory certification test, and that education must be multi-layered, with a technical part related to the car and the mechanics of the vehicle, and an animal-related part, as the driver will be transporting livestock that can kick, jump, and even fatally injure themselves. D2 added that they have undergone training on transporting horses provided by FEI.

Such instructive information is very beneficial in improving the driver's know-how, and leads to the safer transportation of horses, but the training should be updated every five years. However, it was pointed out that no training classes have been offered since 2014. V1 claimed that the drivers get certified for transport of animals in general, but not specifically for horses, and they may not know how to handle a horse-related problem. O1 posited that drivers do not take special courses for transporting horses. The drivers and staff learn the process of transportation through their own experience. Since there is a lack of formal training in the transportation of horses, the training of staff was generally left to the more experienced personnel. However, though not all agreed, R2 mentioned that they had specific courses about transporting horses.

4.2. Insurance Issuance

Insurance is necessary for the transportation of horses. Participants highlighted that insurance-related issues are among key risks in horse transportation, either due to the owner's negligence in taking out appropriate insurance for horses, or lack of an insurance company qualified to insure the horses. One of the major problems regarding insurance companies is the inadequacy of coverage. D2 stated that the vehicles are insured as required by law, but that insurance coverage does not include the loss of or harm to the horses themselves. He added that horse insurance covers horse health issues, but the focus on transportation is ignored. C2 noted that the insurance cost is very high for many owners. The insurance cost is around 6.6% of the value of the horse, which is considered a significant amount. As mentioned by the respondents, insurance of the animals is a noteworthy risk.

4.3. Horse Health and Safety

The focus in horse health and safety risks is on monitoring the horse's welfare, anxiety, hygiene, feeding, veterinary management, and training. The data revealed that safety risks are underestimated in relation to horse health, which are caused by the behavior of horses and the staff. It is essential to periodically observe horses during transportation. The grooms and drivers should closely follow and control the behaviors of horses. Most modern vehicles have camera systems for the staff to observe and check on the horses

en-route. If the horse changes its behavior significantly, this could be a clear indication of an aversive situation. Participants mentioned that horses can exhibit different behaviors during transportation, which could result from anxiety. This anxiety can be controlled if recognized, for example by fruit, sugar, or hay.

Transporting different categories of horses in the same vehicle is another reason for horse anxiety. Correct assignment of horses travelling together in a single vehicle according to gender and temperament is critical to minimize behavioral problems, and timely and correct intervention by staff in cases of horse behavioral problems is essential.

Furthermore, managing the level of light inside the vehicle will also help to reduce horse stress. The lighting must be adjusted during transportation to avoid horse discomfort. Loading horses from their familiar environment and correct planning of the number of horses in each journey have positive effects on horse behavior. The move from the barn to a confined place is the source of stress and can result in aversive behaviors. Horses may be angered by close eye contact with other horses, depending on their temperament. Driver participants recommended a suitable design with equipment such as high separators to prevent horses seeing each other. According to participants, horses can display different kinds of behaviors before, during, and after transportation, thus, employing educated and expert staff with knowledge about horse behavior will help to mitigate risks in transportation. Also, it is very important to treat horses with patience and kindness during loading. Unfortunately, the data showed that during the loading process some staff use force on hesitant horses by slapping, pushing, or kicking them.

Most participants also draw attention to the issue of feeding during transportation. Feeding in short journeys is not recommended, apart from some cases where hay is used as a distraction from anxiety. Hay is placed in baskets and is effective in calming horses during transportation. For long journeys, it is better to feed horses with hay during transportation; but, if the horses are going to stay overnight at a rest area, they can be given other kinds of food. Water is also important, but watering has its own difficulties. Changes in water affect the horse's performance (Padalino, 2015) and horses may sense the changes in water flavor or odor. Adding apple juice or other flavors is a solution.

As another aspect of transportation, all participants mentioned that the vehicle must be clean and disinfected. However, the findings indicated that not all drivers take enough care about this. V1 mentioned that it must be enforced as a rule in horse transportation. She stated that supervised disinfection of the vehicle must be done after each journey to prevent the spread of diseases. However, due to lack of knowledge and education, some drivers were less careful than others in this regard.

Training horses for safe transportation is a key issue in reducing the risks of transportation. Some participants believe that before loading, it is better to have horses do some exercises to help them relax and release pent-up energy. Also, the data points out that starting their transport training as foals helps them become accustomed to the process of loading.

Most participants argued that there is no obligation for veterinary control in the transportation process, even for long journeys. Veterinary control is often done merely for bureaucratic purposes, and veterinarians sometimes sign documents required for transportation without examining the horses to fulfill the bureaucratic requirement for periodic monitoring. But in case of problems after unloading, the veterinarian must intervene and take the relevant actions.

4.4. Industry Qualification

Interview participants frequently mentioned problems related to qualification of the industry related to documentation, reporting of statistics, requirement for education, and systematic auditing to protect the interest of the industry and the partners. Participants specifically noted that documentation must be complete, and records of various aspects must be kept, such as origin, destination, and ownership of animals, as well as the date and time of departure and expected duration of the journey. This information should be stored for a certain period of time and shared by an inspector if needed.

There is a discrepancy in the required documents in the transportation of racehorses and showjumping horses in Turkey. Most participants explained that for transporting racehorses from a hippodrome, a veterinarian needs to sign the documents regarding the health of horses, and that the number of trucks and information related to the horses are registered before loading. In contrast, there is no need to inform and prepare documents when transporting horses to and from horse riding clubs. Many participants see no need for additional documentation and recording for these horses.

In addition, the need for auditing and control for the horse transportation process is highlighted as another critical issue. Service quality in the industry needs to be improved by more effective certification and auditing. O1 added that rules are needed to ensure that transportation documents are certified by the Ministry of Agriculture and Livestock, kept under record in an official system, and made available for research purposes to minimize the risks of transportation.

4.5. Infrastructure

Participants consistently complained about the lack of boarding ramps at farms. Moreover, based on the statements, it is challenging to find a proper place for the horses to have time out of the vehicle on journeys. Most of the participants emphasized the lack of areas for resting or emergencies between the cities where competitions are regularly held. V1 noted that lack of proper loading ramps at farms is an important problem. Observations also showed that no ramps are available at showjumping farms, and instead, open rear doors of trucks are used for all loading and unloading activities.

The solution for this problem is to build special horse farms in the cities. V1 and several other participants mentioned that resting areas should be built close to the race venues. These areas should have the necessary equipment and infrastructure for improving the unloading, loading, and resting operations of horses.

4.6. Transportation Planning

Participants discussed that planning is a critical risk category in horse road transportation, such as arrangement of journey breaks, scheduling the travels according to competition programs, weather conditions, and appropriate time of the day. According to the coaches, it is better to send the horses to the destination a few days before the competition to rest and adapt them to the new environment. Providing the destination facility with schedule planning and other relevant information is considered essential, so that horse facilities will be ready before horses arrive at the destination, e.g., boxes, hay, water, and bedding.

Transportation planning is important for safe and secure transportation of horses. To ensure a safe and secure journey, driver's compliance with traffic procedures, availability of backup drivers in case of emergency, and obeying the traffic rules and speed limits should be considered while preparing a transportation plan. Participants agreed that the drivers' deviation from the resting procedures cause problems in horse transportation. Coaches and grooms repeatedly raised their concern about planning based on resting procedures for horses during transportation, emphasizing that those horses need rest, especially during long journeys.

Drivers must obey the traffic rules and regulations and strictly follow the driving time limits. According to the Turkish Traffic Law, a truck driver shall not drive more than 8 consecutive hours. To prevent adverse consequences and provide safe and secure travel for both the staff and the horses, stops at certain periods must be planned. A certified driver obeying the traffic rules, speed limits, and other traffic- and driving-related limitations are essential for assuring secure and safe transportation. The responsibility of the driver for the vehicle should never be transferred to unqualified people.

4.7. Vehicle Design

Vehicle design is emphasized as a critical aspect that affects the entire temperament and physical status of horses. The vehicle must be designed according to the standard length and height, and should include the necessary components to balance temperature, humidity, and level of environmental pollutants during the journey. Also, vehicle ramps, the quality and size of dividers, and other vehicle design elements affect horse welfare during the journey. The findings indicated that more effective design standards could be enforced for horse vehicles.

Safety is a key element in the design of the vehicle. Appropriate vehicle equipment design plays an important role in the transportation of horses. For instance, ramp design and the elevation level of ramps should comply with safety standards to prevent injuries during unloading and loading operations. Flooring or protective vehicle equipment would ensure a safe journey for the horses. The floor is required to be covered with hay, straw, or a plastic mat.

Dividers between horses provides greater safety for horses. The dividers inside the vehicle must be made of specific materials such as sponge material (in upper parts), and plastic mats (in lower parts). Proper insulation in vehicle design is also crucial to avoid environmental distractions such as external noise, rain, or extreme temperatures.

Climate in vehicles is generally controlled by windows and vents. There must be appropriate openings on the top and the sides of the vehicle to control the climate and allow ventilation. Airflow inside the vehicle should be controllable because it is a major problem for horse health. The findings reveal that the usage of air conditioner systems is not common in Turkey due to the risk of spreading diseases.

While designing the vehicle, special consideration should be given to the interior space arrangement. Almost all participants mentioned that the vehicle must have enough space to accommodate the horse, but it must be restrictive enough to limit movement since this can be problematic for vehicle stability and other horses. Participants pay extra freight rates for transporting their horses in smaller numbers, as horses with behavior problems can kick or bite the others.

During the journey, several precautions can be taken to avoid en-route injuries. Leg and ankle bandages or sponge-like floor bedding materials are commonly used in the industry. Most participants observed that facing horses in the direction of movement helps them to maintain their balance during transportation and prevents falling during accelerations.

Some participants mentioned the importance and necessity of notification devices to warn other drivers about presence of horses inside. They also stated that the use of technology facilitates the maintenance of horse welfare during transportation.

5. Conclusion and implications

The transportation of animals is known as a process involving risk (Marahrens et al., 2011). The transportation of racehorses and showjumping horses is a crucial issue with potentially significant impacts on sport horse welfare and performance. This study provides both practical and theoretical contributions to the issue of road transportation of horses in Turkey. This study reveals the risk points in transportation by examining all phases of road transportation (planning, loading, unloading, and en-route), and therefore provides a comprehensive view of risks. Through the identification of risks in horse transportation in Turkey, risk mitigation strategies can be facilitated. A multi-actor perspective contributes to the generation of policies to improve sport horses' welfare. This study contributes to the animal transportation literature in general, and more specifically, to the racehorse and showjumping horse transportation domain.

The vehicles carry a range of safety equipment and provide a comfortable environment for horses (Kentucky Horse Council, 2020). However, our data revealed that most trailers do not comply with the standards in Turkey. In addition, our study found infrastructural inadequacies, such as inadequate or non-existent ramps in farms, causing injuries during loading and unloading stages of transportation. Disinfection of the trailer can decrease the amount of material that is hazardous for horses. Participants confirmed the importance of cleanness and disinfection of the vehicles, as cited in the literature (e.g., Padalino 2015; Atok and Williams 1994). However, based on the findings, some gaps in this respect need to be addressed by policy and regulation enforcement. Moreover, although access to en-route veterinary service is a significant aspect (Cregier, 2009), due to financial

concerns, we found that most carriers do not comply with the recommended policies, and that, unfortunately, some horse owners are not even aware of this necessity.

Proper route planning and time scheduling can prevent dehydration, fatigue, and other transportation-related diseases (e.g., Boehm, 1998; Tinker et al., 1997). In scheduling and planning, it is important to consider breaks and durations. Transportation time should not surpass 12 hours, and breaks must conform to recommended rules (regular stops every 4 to 6 hours for checking, one day rest after 6 to 12 hours in a road journey) (Center for Equine Health, 2018). As Padalino et al. (2018) urged, there must be control points during the journey with specialists to enforce the welfare of animals. We found many violations in the resting times of horses, and the problem of resting area availability in Turkey. The existing areas have multiple issues and inadequacies in terms of required equipment, and the staff needed to monitor the horses during unloading, loading, and resting.

Another important factor during transportation is the driver's ability and behavior. Drivers must pass a required certification test to transport horses; however, the participants said that the majority of the problems occur because of a lack of proper driver training and experience. More frequent training services can be provided to enhance drivers' capabilities in horse transportation, in line with previous studies (e.g., Terrestrial Animal Health Code, 2011; Tarrant, 1990).

The absence of insurance and documentation for transporting sport horses emerged as new risk categories in Turkey. The literature revealed that proper documentation and planning are important in transporting horses (GOV.UK, 2013). It is crucial to have a complete travel itinerary and obtain the required documents and the necessary signatures from authorized officials before loading, and to have these documents authenticated after unloading. Our data reveal that proper documentation is not always completed as required by law. In fact, findings revealed that most horse transportation is done without authorized signatures. Participants insist on more frequent and stricter auditing in road transportation of horses. Unfortunately, excessive bureaucracy gives rise to documentation problems. Additionally, findings also pointed out the insurance problem in the industry. The insurance system for animals in Turkey is outdated. Data showed that there are two main deficiencies in the sport horse transportation insurance system in Turkey: the limited coverage and the high cost, meaning inadequate insurance services for sport horse transportation. Few companies are willing to pay 30% of the value of a horse as an insurance fee in case of harm, but it is responsibility of the owner to insure the horse (Koru Insurance, 2021).

Taking a holistic view of the findings, Turkey, as an emerging country, has its own issues in the equestrian industry. In contrast to other comprehensive studies in the field (e.g., Padalino, 2015, Padalino et al, 2018), our findings highlight the inadequacies and gaps in implementation. Most of the revealed risks are in infrastructure, qualification, documentation, and insurance areas. Although in Turkey, animal welfare regulations and policies regarding transportation exist, findings revealed a considerable policy implementation and auditing gap. More comprehensive legislation on transportation regulations and management can help to reduce or eliminate the risks created by

transportation, and welfare of horses can be improved through the proper implementation of policies. Findings suggest that, for the sport horse transportation industry in Turkey, a more transformative approach to policy adaptation is required. These policies point out important issues in vehicle design, routing, and scheduling, infrastructure, insurance, and documentation.

Peer Review: Externally peer-reviewed.
Author Contributions: Conception/Design of Study- E.T.A., B.S.O., A.G.; Data Acquisition- E.T.A., B.S.O., A.G.; Data Analysis/Interpretation- ; E.T.A., B.S.O., A.G. Drafting Manuscript- E.T.A., B.S.O., A.G.; Critical Revision of Manuscript- E.T.A., B.S.O., A.G.; Final Approval and Accountability- E.T.A., B.S.O., A.G.
Conflict of Interest: Authors declared no conflict of interest.
Financial Disclosure: Authors declared no financial support.

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