

RISKS IN ROAD TRANSPORTATION OF HORSES



ELNAZ TAGHIZADEH ALAMDARI

JULY 2019

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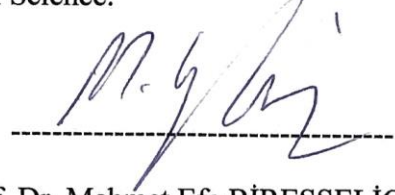
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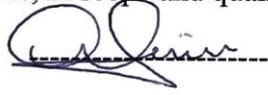
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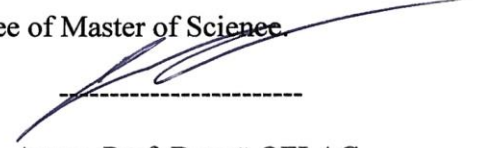
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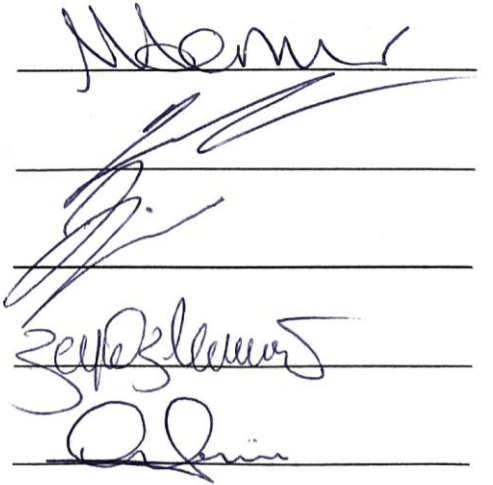
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ABSTRACT

RISKS IN ROAD TRANSPORTATION OF HORSES

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Logistics Management

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This study investigates the risks of horse transportation in Turkey. Lack of education and control in horse transportation by official organizations lead the horse industry to be done without adequate sensitivity. So, the consequences harmfully affect the development and expansion of the industry. Qualitative research methodology enables to identify the risks of horse transportation in this emerging market. This study analyzed the phenomenon with two main research questions. A semi-structured-interview-based method was used. The interview consisted of 13 main questions, but numerous follow up questions were also asked. There were 13 participants in the study comprised of coaches, riders, grooms, drivers, a veterinarian and a company owner in three different major cities of Turkey. The data revealed eight risk categories: employee-related, equipment-related, financial-related, safety-related, horse-related, industry-related, infrastructure-related, transportation-related, and vehicle-related. The risks identified by the stakeholders can be eliminated through training and a little investment. Experienced staff reduces the risk factors significantly. In conclusion, the horse

business is an emerging economical area, and informed decisions should be made for the future of the market. For this reason, financial support should be introduced to the market.

Keywords: Horse, Risk, Transportation, Turkey, Road.



ÖZET

ATLARIN YOL TAŞIMACILIĞINDA RİSKLERİ

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Bu çalışma Türkiye'deki at taşımacılığının riskleri hakkındadır. Eğitim eksikliği, kontrol ve resmî kurumlar tarafından gerekli uygulamalar yapılmadığından at taşımacılığı olması gerektiği şekilde yapılamamaktadır. Bunun sonucu olarak at endüstrisinin gelişimi ve genişlemesi kötü şekilde etkilenmektedir. Nitel araştırma yöntemleri araştırmacılara gelişen piyasaların risklerini ortaya çıkarmada etkin yöntemler sunmaktadır. Elinizdeki araştırma at taşımacılığı risklerini iki araştırma sorusu etrafında incelemiştir. Yarı-yapılandırılmış görüşme metodu kullanılmıştır. Görüşmelerde katılımcılara 13 tane soru ve değişik tamamlayıcı sorular sorulmuştur. Bu araştırmaya Türkiye'nin üç değişik şehrinde binicilik hocası, binici, seyis, şoför, veteriner ve taşıma şirketi sahiplerinden oluşan 13 katılımcı katılmıştır. Yapılan araştırma sonucunda çalışanlar ile ilgili, malzeme ile ilgili, finans ile ilgili, güvenlik ile ilgili, at ile ilgili, piyasa ile ilgili, altyapı ile ilgili, taşıma ile ilgili ve araç ile ilgili olmak üzere sekiz risk kategorisi ortaya çıkmıştır. Bütün paydaşlar tarafından ortaya konan riskler eğitim ve az bir yatırım ile ortadan kaldırılabılır. Tecrübeli çalışanlar risk faktörlerini göz ile görülür ölçüde ortadan kaldırılabılır. Sonuç olarak, at endüstrisi Türkiye'de gelişen ekonomik bir alandır. Dolayısıyla bu piyasanın geleceği için bilinçli kararlar verilmelidir. Bu sebepten ötürü yeni finansal destek at endüstrisine girmelidir.

Anahtar Kelimeler: At, Risk, Tařımacılık, Trkiye, Yol.





To My Parents

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Elnaz TAGHIZADEH ALAMDARI

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ABBREVIATIONS

C1	Coach 1
C2	Coach 2
CO1	Company Owner 1
D1	Driver 1
D2	Driver 2
G1	Groom 1
G2	Groom 2
G3	Groom 3
G4	Groom 4
O1	Owner 1
R1	Rider 1
R2	Rider 2
V1	Veterinary 1
WWII	World War II
FEI	Federation for Equestrian Sports

CHAPTER 1

1. INTRODUCTION

Horses have been domesticated and selectively bred by humans for about 5000 years. They are socially organized and have been utilized by humans for transport and work, but more commonly now they are used as companion animals for pleasure and competitive sports (Victoria, 2018). Horse sports are one of the popular sports in the world. There are various kinds of competitions; for example, horse show jumping, dressage, racing, driving, conformation, showmanship, eventing, vaulting, and so forth. Each has its own specifications like training, caretaking, and competitions. Among others jumping and race are two very well-known competitions. These horse-related activities also have paved the way for many different services such as logistics, warehousing, and veterinary services and create markets.

Turkey, as a European-Asian country, can have a huge potential in horse logistics. The UN's Food and Agriculture Organization Corporate Statistical Database (FAOSTAT) estimated the world's horse population as 59 million in 2017 (Clarkson, 2017).

There are around 75,000 active racing horses registered to Turkey Jockey Club (TJK), and 3,300 show jumping to Turkey Equestrian Federation, (TBF). Around 15,000 horses are kept in professional horse riding and racing stables; of those 5,500 are race horses, 4,000 are foals, 5,000 are pregnant mares and 500 are stallions ¹. This horse population creates a significant amount of income at various levels by involving many stakeholders in care, sheltering, training, feeding and transportation of horses. There are 1,150 riders

¹ (Turkey-Beautiful Horses Country, 209)

and 2,800 show jumping horses and 74,763 racehorses registered in Turkey (TJK, 2018 and TBF, 2018). The races take place in major cities of Turkey such as Istanbul, Izmir, Adana, Diyarbakir. For this reason, horses are being transported frequently.

Logistics have essential components in the horse business market. For instance, sporting horses are transported in various ways; such as by road, by air or specially designed jet stalls in aircrafts around the world (European Commission, 2002). Not all horses are necessarily transported. Horses raised for slaughterhouses usually transferred in short distances. Likewise, horses used for work are also unlikely to be transported (European Commission, 2002). Transporting horses from one place to another vary in cost depending on the distance. Transporting horses within the country usually cost less than transporting them internationally. Additionally, other factors like handling time, wait time, overnight stays, tolls and size of stall change the total cost of equine transportation services ².

Equine transportation is associated with diverse serious health disturbers causing economic losses. Many horses travel frequently all along their life and transportation is one of the major causes of injuries, health disorders and economic losses for horse breeding and the wider equine industry. The recent practices aimed at reducing transport stress are still limited (Padalino, 2015). However, too many problems are related with transportation stress (Friend, 2001). Transport stress in horses is caused by many stressors such as noise, vibration, imbalance, ventilation, isolation. These factors influence horses both mentally and physically by affecting horses' behavior and health in pre-transport stages, in-route and after transport (Padalino, 2015).

² ("what is the cost",2019)

Apart from stress, injuries are also reported as a major health problem during transportation of horses (Atock, Williams, 1994). Road accidents are the main cause of injuries during transportation. It is mostly associated with 'poor' vehicle design or improper driving and loading (e.g. overloading).

This study covers the risks of show jumping and racehorses in road transportation, and employs views from all the stakeholders in the horse business (e.g. riders, owners, drivers, grooms). In light of all their input; transportation risks are explained, and several solutions are suggested.

1.1. Aim of the Study

Animals can be transported by plane, trucks, trains or specially designed vehicles. Among the animals, horses are transported more frequently for various reasons than any other livestock. The aim of this study is to investigate the risks involving show jumping and race horses in road transportation. Due to being valuable animals, the transportation of horses is a risky business. Through investigating risks, more strategies can be developed for risk mitigation in transportation.

By this way, the logistics processes in animal market and the quality of the animal transportation systems are aimed to be improved. Thus, the overall aim of this study is to explore the risks of horse transportation, and to present resolution strategies.

1.2. Significance of Study

Horse business constitutes a part in the country's economy. Racehorses and show jumping horses are significant elements in horse industry. However, the number of studies on the transportation of show jumping and race horses in Turkey is not adequate.

This study significantly fills this gap by focusing on show jumping and race horses. The horse transportation risks are identified, and many contributions are provided with the detailed outcomes found.

The results may also be applied to other livestock transportation systems. Because the problems related to the transportation of horses are similar to the transportation of livestock. Incorporating all the stakeholders' views, such as veterinaries, horse owners, drivers, and other partners, this study provides the perspective of all parties involved in the industry.

1.3. Research Questions

The research questions for this study are as follows:

- 1) What are the risks of horse transportation in Turkey?
- 2) What are the risk resolution strategies?

1.4. Scope of the Study

This study starts with the transportation of livestock and continues on horse transportation. It will elaborate on the risks involved in the transportation of show jumping and race horses. The research covers the logistics process in road transportation. These stages involve loading and unloading of horses and waiting during transportation. Also, other aspects such as feeding, safety, and health related to the transportation of horses are also discussed in detail.

The first chapter presents the introduction. The introduction is designed in four sections, which introduce the study, aim, research questions, and scope of the study. The

second chapter examines the literature review. The literature review is written in three sections. The first section covers the horse transportation, and the second section talks about transportation-related risks of horses. The subsections of the second part explore the vehicle-related risks in the transportation of horses, and horse related-risks, while also discussing the risks involved in the process of transportation. Diseases related to transportation, injuries incurred during transportation, climate, and ventilation are defined in the last parts. Lastly, in the third part, the significance of the study is explained in detail. The methodology is described in the third chapter. The fourth chapter features the analysis data derived from interviews. The study concludes with the fifth chapter, which presents contributions and suggests for further studies, and limitations.

CHAPTER 2

2. LITERATURE REVIEW

Horses have been domesticated, raised and trained by mankind for about 5000 years. They are socially organized and have been utilized by humans for the purpose of transportation and work, but nowadays most are used as a partner for people in pleasure and leisure. So, horses especially show jumping and race horses are often relocated from one place to another.

2.1. Horse Transportation

The transportation distances traveled by farm animals throughout their lifetime are generally short, and they mostly travel for slaughter. Farmers have a legal responsibility to ensure that the animals are transported in a way that will not cause injury or unnecessary suffering. In the case of transporting animals, the people responsible must be aware of new rules and regulations regarding the transportation of animals. The rules are used for improving the welfare of animals during transportation. In some cases, the increase in the number of animals in farms has, by extension, led to a considerable rise in transportation (Aradom, 2013).

The European laws are imposed on farmers, livestock, and equine haulers to control the welfare of animals during transportation. Additionally, people who transport live, vertebrate animals for the purposes of ‘economic activity’, business or trade are also included in the scope of law to ensure the animal movements are in compliance with the

related regulations. Commercial pet breeders, markets, and slaughterhouses must also follow the same laws and regulations.

There are some rules for controlling the transportation of livestock. Recommended measurements are planned to reduce the duration of travel to a minimum. Carrying out regular checks on the animals and the related safety issues in the loading and unloading process are crucial. Having rule-abiding people in charge may help avoid fear and injury during transportation. Also, utilizing vehicles with proper floor space and sufficient height is another area of concern for livestock transportation³. To summarize, some rules and regulations are in place in order to control the transportation of these livestock. Since most of the animals are transported for food, it becomes a necessity for the European Union (EU) to regulate the food market.

Livestock transport has a history dating back to the Ice Ages where small, round boats made of wickerwork named coracles were used (Stark, 1945). Travelers like Marco Polo (1254-1324), Ibn Battuta (1304-1369) narrate that horses were transported to India by Yamani coracles. Other nations used waterways to carry horses for different purposes. Ancient Egyptian and other Mediterranean people commonly used waterways to ship livestock, including horses. Persians, Greeks, and Romans had particularized horse transports; some features of which were integrated into medieval ships for the purpose of war. By 1912, horseboxes were fitted to motorcar, thus ushering in the motorized transportation of horses. In World War I, motorized transportation was used for the benefit of war, and later used for private purposes such as sporting events (Cregier, 2015).

Horses are transported more than other animals for different purposes. According to European Commission (2002), competition, breeding, leisure activities, sale or slaughter

³ (“Live transport: Welfare regulations,” 2012)

can be considered as common purposes for horse transportation. Horses also have been transported for producing and saving special spices. Transportation for breeding purposes nowadays has become a great business.

According to Atock and Williams (1994) using horses as leisure animals have risen in the last fifty years. People who are not from a rural community and do not possess any inherent knowledge of horses have begun taking an interest in horses, yet these people know little about the needs of the species or the optimum methods of care. While horses are moved for a sale, they needed to be transported from the origin to the auction destination. In case of sale, they are either redirected to their new destination or sent back to their home town destination. So, choosing the method of transport used for moving the horse depends on for what purpose it will be used.

The International Federation for Equestrian Sports (Federation Equestre Internationale, FEI) organizes more than 250 events every year in Europe in various disciplines. These sporting competitions results in the relocation of over 35,000 horses among European countries (Leadon, 1994). In Germany, around 50,000 sport horses travel more than two hours per travel (Lindner, 2000). According to Jones (2003), Japan Racing Association (JRA) published that there were nearly 33,500 road transportation operations completed between 1993 and 1997 each year for racing purposes. Therefore, we can conclude that horse transportation operations are high in number worldwide.

There are various ways of transporting horses. The most common way is road transport using trailers and specially designed vehicles. Longrigg (1972) pointed out that the first transportation activity of horses on land appeared in the 18th century for carrying race horses of Queen Anne with leather slung pumpkin-shaped carriage. Most of the horse transportation took place on land. Waran (1993) stated that horse transport began some 3500 years ago by sea and almost 300 years ago by roads. Friend (2001) mentioned that

constructing new roads between the States after World War II made road transport popular. Also, the 1960s and 1970s are known as the "Trailer Age", because different kinds of trailers were designed and manufactured.

Roads are not the only way of transporting horses on land. Since many states already have been using railroads for a long time, transporting horses via train also is an option. Judge (1969) mentioned that rail transport was common from the mid-nineteenth century to the mid-twentieth century. For this purpose, different ways were designed and used. Transporting by train has its own advantages and disadvantage. On one hand, train offers a safe and sound environment for transporting horses, as wagons provide horses with plenty of room for movement, and may offer some solution for some transport-related risks. On the other hand, travel by trains is mainly bumpy, distressing and, often, prolonged waiting times at stations for loading and unloading causes stress for horses. However, transporting by rail is preferred for its low cost in horse transportation.

As another option, airway transportation is also being used in horse transportation. International Air Transportation Association (IATA) issued official guidelines for horse transport. It has been reported that many horses are transported for different purposes such as breeding, competition, racing or export by air. Wood (2017) stated that horse owners spent \$8,000 to \$30,000 dollars for air transport in 2017. Similarly, since transporting horses safely is an essential component in equine care, the air transport and land transport may provide similar comfort levels. However, the main difference between them is related to the cost and efficient use of time.

Lastly, transport is being used as the cheapest way for transporting horses sea. Pryor (1982) specified some special design ships with special ramps for loading to carry huge numbers of horses. Later Cregier (2015) mentioned that regular ships were used as an important mean of transportation until the late 19th century to carry horses. Giovagnoli

(2008) stated that sea transportation was mainly used for horses transported from South America to Europe for slaughterhouses. In our study, we focus solely on road transportation within Turkey for horses.

2.2. Horse Transportation Risks

Animals are exposed to some risks when they move from one place to another. In literature, there are some studies focusing on livestock transportation risks. Many studies have explained risks related to drivers in animal transportation. Patherick and Phillips (2009) stated the structure of the floor, animal density in the vehicle, and paying attention to the rest times during transportation are important factors for long transport durations. Additionally, Cockram (1994) added that drivers' skills and vehicle design are also important for providing animals comfort during transportation. Padalino (2015) posited that physical and mental stressors during transportation create stress. To support this, Adolfo and Maria (2014) mentioned that animals are exposed to many stress factors during transport such as physiological challenges in many areas, including housing, feeding, training, competitions, transport, management, type of activity and the human-horse relationship (McGreevy and McLean, 2010).

Nielsen (2011) stated that the condition of animals before and during the journey is related to duration, distance, and feeding deprivation in the period of transportation. Rest is avoided in specific species due to the vehicle movement and thermal comfort of animals inside vehicle. Waran (1993) also noted that transportation is a complex procedure because it involves different kind of stressors like handling, loading, confinement temperature changes, and separation from familiar environment.

Road, air, and sea are three main mediums for transportation of horses. All transportation styles involve specific risks.. In the literature, these risks are discussed in

three categories: 'Vehicle-Related' (VR), 'Horse-Related' (HR), and 'Transportation-Related' (TR). Additionally, 'climate conditions', 'Disease' and 'Injuries' are also risks that are mentioned .

Terrant (1990) considered the road transport as a mixed function combined from multiple components. It is possible to make activities such as handling, loading and unloading free from risks involved in horse transportation such as separation from familiar environment, vibration, imbalance, high temperature and humidity, insufficient ventilation, exposure to gases from vehicle diesel, urine, feces, deficiency of food and water, (Natalie, Waranav, Drerek, Cuddefordb, 1995). To verify the risks, as Cregier (2009) mentioned, observations can help to recognize the horses' appetites, dehydration levels, resting behavior, ease of movement, depression, injuries, and weight loss.

2.2.1. Vehicle Related Risks

Horses are transported on roads mostly in trailers and specially designed trucks. Land transport of livestock is a process that begins before the physical journey and ends sometime after its completion . Since the load is expensive, the vehicles must be fully-equipped for the job. The requirements should include safety regulations and welfare of the horses. Some writers ⁴ stated that the hauling vehicle should have suitable physical structure, and offer comfortable environment, and safety. For this reason, the physical environment of the trailers like brakes, lights, and doors must be fully working and should comply with the relevant safety regulations. Additionally, trailers must also provide a comfortable environment for horses; in this context, the flooring, vents, and windows must be designed according to the horse's comfort. Safety comes first, so the emergency requirement of all trailers must also be satisfied.

⁴ ("Tips for distance hauling," 2011)

In this regard, trailer's brakes and tire pressure must be safe. The requirements of a trailer for transporting horses are listed as follows: enough water and flavoring, enough hay for feeding during the trip, equine first aid kit, blankets if the travel is in winter, extra ropes, spare halters and trailer tie, fire extinguisher, and beading.

There are two main types of horse trailers: 1) a bumper pull trailer which is popular for shorter hauls with smaller tow vehicles and 2) a gooseneck trailer which offers more stability during adverse weather conditions and has a higher weight-carrying ability. Additionally, Renshaw and Nottingham (2012) classify trailers as stock, ramp, hauler, slant, or straight load⁵.

The easy access of side doors and specification of fold-down windows make slant load trailers popular. Furthermore, they have partitions that make the separation of horses easier. Partial or full models are the two types of partitions used in trailers. Partial partitions prepare more space for horses to move and control their balance during travel. Full partition, on the other hand, is used when transporting stallions or a mare with foal. Full partition helps the foal to be transported safely and securely without risk of being trampled by other horses. Walls and partitions of most trailers are covered with padding to avoid injuries and wounds on horses during transportation (Padalino, 2015). Cregier (2009) added that there are some risks in partitions like biting, kicking and falling down.

Transportation problems can be related to the exterior and interior design of trailers. As Cregier (2015) noted, trailers must not have openings that cause horses to hurt their heads and hoofs. The wooden or metal structure of the trailer, especially the deck, partitions, sides and roof parts, must be heavy enough to avoid the injuries. It may lead to horses having their head or hoofs stuck inside them as a result of accidents, quarrels with other horses, or loss of balance. Interior material should be smooth against incidents

⁵ ("Tips for distance hauling," 2011)

of potential head contacts with the roof to minimize horse injuries. Additionally, Fowler (1995) mentioned that divider interiors could pose injury risks if the dividers break or snap, and cause harm on head or legs.

Cregier (2009) points out the risks of half partitions, where horses may fall down and get stuck under the partitions. Using bars or ropes as dividers in the trailer can be hazardous, because the horses will have enough space to kick each other or may try to escape through underneath them and fall from beneath the ropes. To avoid annoying noises caused by chains and snaps, the ropes or chains must be wrapped to prevent rattling, banging, and clanking throughout loading, transit, and unloading processes.

Trailers must have good insulation against rattles and drafts. Screening should be used for preventing insects, dust, cigarettes and other harmful external elements from entering the trails. Cleanliness of trailer partitions and ramps are important because dirty trailers can cause diseases. According to Sharon (2012), trucks should be clean and disinfected, and Atok and Williams (1994) concluded that cleaning the transport vehicles will help to reduce the incidence of shipping fever. Plus, keeping the lights on in the trailer is recommended during night travel.

Ramps are another important aspect of transporting horses. According to Hall and Bradshaw (1998), the most stressful part of transportation is loading and unloading. Leg injuries associated with the ramp during loading process are very common (Mansmann, Woodie, 1995). Padalino (2015) stated that the trailers normally have rear and/or side ramps for loading and unloading. To reduce the stress and to improve safety during loading and unloading, platforms are built on trailers. The platform allows the horses to face away from the direction of travel, control their balance with their heads during transit, and enable hind-quarter resting.

In addition to the density, the balance of horses in vehicles also plays an important role. Freedom of neck and head movement is an important factor for maintaining balance. Normally in a horse standing still the forequarter carries almost 65% of the body weight. Robert (1990) mentioned that the horse maintains its balance by changing its position by standing on alternating legs. Position of legs in transit time may help the horse to find its balance. Also, it can help to maintain its upright position during transportation to avoid tiring.

Horses are transported via trailers need proper bedding on the floor. Bedding is expected to work as a cleaning and comfort layer. Bedding should absorb moisture and decrease the probability of slipping⁶. There are some materials that can be used for bedding. Renshaow (2012) states that rubber mats provide safe flooring. Also, sand, sawdust, oat straw, or wood shavings can be used as bedding materials, and with additional minerals added to the bedding materials, it is possible to control the ammonia odors from urine in long time transit. In addition, shipping boots and bandages could also be beneficial for horses. Legs and tails of horses must have bandages; also, horses should be covered with rugs. However, in some shipments, using these materials can be avoided, as they can cause panic and high body temperature (Cregier, 2009).

Hay in trailers affects the air quality, so it is better to avoid using them. According to Hotchkiss, Reid and Christley (2007), moistened hay or pallets should be prepared instead of dry hay. If the hay is prepared during the journey it is better to moist the hay, then replace it on the vehicle floor to reduce the risk of dust. Additionally, Raidal, Love and Bailey (1996) encourage using hay, because the horses could eat during transportation with a lower head position, which enables reduced respiratory problems.

⁶ ("Tips for long distance Hauling,"2011)

2.2.2. Horse Related Risks

Transportation of horses involves physical and emotional aspects. Stress in horses is considered as one of the significant transportation problems. As Waran (1993) states, the transportation of animals is a complicated practice involving numerous potential stressors. Some acute features in transportation process such as handling, separation from familiar physical and social environments, loading, unloading, confinement, vibration, changes in temperature and humidity, inadequate ventilation, and often deprivation of food and water may have an influence on horse stress levels.

Generally, psychological factors affect stress during transportation (White, Reyes, Godoy, Martinez, 1991). However, Jones (2003) believes that physical aspects such as the trailer motion, noise and road conditions also play an essential role (Jones, 2003). Stress causes health problems in horses such as infections, respiratory diseases, change in heart rate and so forth (Oikawa, Kusunose, 1995). Foreman and Ferlazzo (1996) point out that the welfare of animals can be reflected by physiological responses to the various stressors such as rise in stress hormone production, variation of blood harmony and decrease in the immune system.

Management of horses during transportation is crucial for reducing stress and decreasing the occurrence of disease-related problems (Atock, Williams, 1994). Experience from previous travels, horse's temperament, the direction of horses during travel, providing suitable conditions for head movement, and other factors such as driver's skill, proper ventilation, and placement of windows may affect stress levels of horses during transportation (Fazio et al., 2013). In addition, Cregier (1982) believes that the duration of the journey and the process of transportation are also among the stress factors involved in the journey for the horse.

Horses that are subject to stress during transportation can face different kinds of diseases such as pneumonia, colic, diarrhea, and laminitis. Also, stress during transport might change the energy metabolism in horses and influence their performance in competitions. Training the horses to peacefully load and unload, during transportation will also help decrease the level of stress ⁷.

Baron (1991) states that many horses exhibit fear during loading, and this may cause health problems for their handlers. Horses display strange behaviors due to fear such as moving backward, pulling back, pawing and turning sideways. A nervous horse may screw its hay or other eating staffs and face choking hazards Cregier (2009). In some cases, they might even try to bite or kick other horses due to sense of fear or insecurity.

Stress-driven body weight loss is another horse-related risk. Warana and Derek (1995) agree that transportation is a physically stressful activity and causes weight loss and fatigue during long journeys. Horses can lose 0.45 to 0.55% of their body weight per hour during transportation. There are several reasons for weight loss such as reduction of water intake and sweating. Healthy horses can restore to their original weight in 3 to 7 days following transportation; However, for horses with shipping fever, this duration can be longer ⁸.

According to Waran (1993), despite provision of sufficient food and water during transportation, weight loss is mostly observed after the journey. Combination of factors such as decrease in food and water intake, energy consumption, and body liquid loss due to sweating lead to weight loss (Smith et al., 1996). Additionally, Key and Hall (2009) added that horses are less enthusiastic to feed in an unfamiliar environment and sources.

⁷ ("Transporting horses ", 2013)

⁸ ("Transporting Horses by Road," 2013)

Horses show their satisfaction level by displaying different behaviors such as stopping, moving forward, freezing, backing off, running away, vocalizing and lying down during transportation (European Commission, 2002). Anxiety, refusing to be loaded, flight responses, kicking, pawing, scrambling and stereotypic behavior are amongst the most frequent transport related behavioral responses (Attock, Williams, 1994).

Whiting (1999) concluded that inconvenient orientation and loss of balance could cause injury during transportation. According to Stull (1997), if the horses are allowed to face backward, they fall down less and avoid getting in contact with partitions. In accelerations and decelerations, horses face backward in order to reduce shifts in their body weight. Otherwise, horses force their neck and head, resulting in a sense of discomfort and stress (Cregier; 1980, Barbara, et, al, 1994). Therefore, with their heads facing backward, they are able to relax and balance themselves better with less stress.

Water is important for every creature. Horses will lose water during transportation and thus water deprivation will cause certain problems. Houpt and Leib (1993) mentioned that, horses should be provided with water at least every 2 to 4 hours, especially in hot temperatures and extended road transportation. Padalino (2015) argues that, despite the availability of water, some horses might still experience dehydration problems during journeys. This, in turn, can lead to some other problems. According to Mars, Keisling, Ross, Armstrong, and Murry (1992), travel conditions identify the range of dehydration condition from mild to severe. The desire for drinking water may also be influenced and pacified by the stress of travel. Dehydration result in performance decrease in athletic horses, and consequently, even slight dehydration is highly important for competition horses that travel to the place of show or race (Padalino, 2015). Provide more water during

transportation is also suggested in warm weathers, high humidity, or when the horses sweat for any reason⁹.

Providing food and, most importantly, water during long-distance transportation is one of the essential concerns (Cockram et al., 1997). Reduction in food leads to weight loss. As feeding is important, it must be taken into consideration during transportation. Food must be prepared for the whole journey and there should be enough food for all horses¹⁰. So, vendors should have appropriate tools like buckets, electrolytes, feed and so forth ready in the vehicle. Horses should be able to eat hay during travel. In addition to weight loss issues, chewing during travel help keep the horse amused and satiated (“Tips for distance hauling,” 2011).

It is important to keep the horses enthusiastic during long journeys by drinking water to prevent dehydration. Water is also important in avoiding colic because it helps to extract the food. Some horses are hesitant to drink water due to various reasons, such as vibration on water caused by the vehicles’ engine. Watering when the engine is off prevents water from splashing onto bedding inside the vehicle and making the exterior slippery¹¹. Horse caretakers should remember that some horses look for clean, transparent and odorless water (Cregier, 2009).

Some horses are reluctant to drink water from other sources. It is better to bring domestic water in order to maintain their habits. If domestic water is not available, then getting horses accustomed to flavored water is recommended before transportation. It can be done by adding flavor to the water every day starting one week before the trip. In this

⁹ (“Transporting horses “, 2013)

¹⁰ (“Safe Trailering”, 2012)

¹¹ (“Transporting horses “, 2013)

way, adding flavor to the water at the same proportion during the trip will provide a solution to the aforementioned water problem¹².

Animal welfare is important (EuropeanCommission, 2002). Welfare is amongst the most important issues in the equestrian industry and horse-related activities. According to Munsters (2013) welfare is an essential factor not only in other animals, as it is also of major importance in the equestrian industry and all types of horse-related activity. Poor welfare usually causes death during transportation or handling. Welfare is evaluated by observing behavioral actions and defining physiological mood changes. Both measures have their own advantages and disadvantages. Some studies (Kaneene and Whitney, 1997; Pritchard, Lindberg, Main and Whay 2005) mentioned that the environmental effect on equine health is the essential factor of welfare. Economic limitations can also be a reason of poor welfare in horse transportation (EuropeanCommission, 2002).

To protect horse welfare during transportation, decreasing transportation stress is an important factor. Cockram (2007) suggested that it is better to pay more attention to the quality of transportation instead of the duration of transportation in relation to transportation demands. One of the behavioral measures of welfare in transportation is the amount of aggressive behaviors, which results from social mixing rather than transporting itself. Also, the behavioral, physiological, biochemical, and pathological changes in body condition can be utilized as measures for the welfare of animals.

2.2.3. Transportation Related Risks

One of the important factors influencing the horse's welfare during the transportation is driving style. West, French, Kemp, Elander (1993) stated that the drivers' ability effects

¹² ("Tips for distance hauling," 2011)

the vehicle movements, accelerations, braking, cornering, and any other difficult maneuvers. The ability of the driver as the style in controlling the vehicle and driving are two essential items. According to Giovagnoli et al., (2002), horse heart rate associated with muscular activity expands to care balance during transportation and is intimately related to the experience of the driver. Also, it is suggested that vehicle condition such as suspension, tire pressure, and road quality are crucial factors in determining the magnitude of transport stress.

Horse transportation involves different type of problems like shipping fever, weight loss and injuries during transportation, loading and unloading (Cregier, 2015). Similarly, Padalino et al, (2016) states that transportation is a stressful phase for horses and might lead to serious health problems. Also, many studies agree that road transportation is a main factor of stress in horses. (Waran and Cuddeford, 1995, Smith et al, 1996, Schmidt et al, 2010). Some other researchers (Anderson et al., 1985; Oikawa et al, 1994; Racklyeft et al., 2000) mentioned that stress-related diseases, and even in some cases, deaths have been reported due to prolonged journey.

According to Leadon, Daykin, Blackhouse, Frank, and Attock (1990), transportation contains too many stressful factors. Some aspects such as vehicle interior temperature, humidity, and environmental pollutant levels can be changed affectedly. Padalino (2015) concedes that horses in the vehicle might perceive the process to be unfamiliar due to traveling buddies, staying in confined space, restriction of movement, acceleration and deceleration, ascending and descending, change in water taste, vehicle vibration, strange noises and so forth.

The route of road transportation must also be carefully selected. Timing of transportation should be arranged to avoid extreme heat and cold. It is better to transport during the night in hot seasons as it will be cooler than day times. Also, in night times,

traffic is lighter than during the day, and there will be fewer stops during transportation. Refueling can be easier and faster, and horses can feel more relaxed during the evening. The route of transportation must be planned with regular stops at every 4 to 6 hours to check on the horses and watering them. Prearranging veterinarians along the selected route is advised in case of an emergency during transit.

Prolonged hours in transportation can be problematic due to dehydration, fatigue, transportation-related diseases or energy consumption, and decrease in food consumption. Transportation duration per day should not exceed 12 hours from the time the horse has been loaded. After 12 hours, horses should be loaded off and kept in stables for more than 8 hours. In fact, one day rest is advised after 6 to 12 hours of road journey. In case of transporting horses over 12 hours by road or plane, 2 to 3 days of recovery time is required ¹³.

Transported horses should be land trained for providing safe loading and unloading. In most cases, problems occur during the loading and unloading process, and this signifies the lack of relevant horse training¹⁴. Waran (1993) also believes that loading is one of the stressful stages of transportation. Loading fear stems from entering a confined space, the height of the ramp, and the vibration while driving over the ramp (Haupt and Leib, 1993).

However, unnecessary breaks will increase threatening behaviors like aggression while the vehicle is on the move (Gade, Christensen , 1998). According to Nielsen et al, (2011), an alternative way to reduce aggressive behavior during breaks is to keep a sufficient amount of food and water available in the vehicle until reaching the break area. Unloading areas may be chosen as break spots for feeding and watering for practical reasons or because legislation dictates it (e.g. EU, 2004). However, getting off and on the

¹³ (“Transporting horses “, 2013)

¹⁴ (“Transporting horses “, 2013)

vehicle can be very stressful for animals (e.g. Broom et al., 1996) and may increase the risk of injury (Minka and Ayo, 2007). In addition, if these break spots are in an environment that is new to the animal, it will involve mixing with unknown conspecifics. An alternative solution could be that innovative ways of providing accessible food and water in the vehicle are developed, so breaks can be taken simply by stopping the vehicle for a period of time in a sheltered area to allow the opportunity to feed and drink, as well as proper rest (Nielsen, Dybjaer, Herskin 2011). Normally 20 minutes of breaks should be given for every 4 hours of travel time. These breaks provide an opportunity for horses to relax inside the vehicle. Keeping the horses in the trailer when parking at unsafe rest stops, such as beside highways or gas stations, should be preferred. Parking the truck in a shaded place and opening the windows or vents for refreshing the air inside are recommended during hot seasons. During cold seasons, the blankets of horses must be checked regularly as it is vital to closely monitor the horse's body heat. While parking at brakes, the horse's health must be monitored against colic, stress, heat, cold and dehydration. Horses should be provided with water and hay in every stop.

Documentation and planning are also important in the transportation of horses. To have a complete journey, having documents prepared in advance, getting the necessary signatures from authorized officials before loading, and checking them after unloading is crucial. The origin and the owner of horse, the place, date and time of pick up destination, and estimated time of arrival must be thoroughly documented and should be kept for a period of six months as journey record¹⁵. Additionally, Cregier (2009) added that, in order to measure the safety of the journey, the weight of the horse should be recorded before and after transportation. For appropriate documentation, preparing a checklist is recommended for each journey. Horse behavior should be monitored regularly

¹⁵ ("Live transport", 2012).

throughout transportation. Additional professional help may be required if a horse becomes extremely agitated. Any depression or injury in horses should be noted and appropriate first aid action should be taken wherever needed ¹⁶.

2.2.4. Disease

Horses, show jumping horses in particular, are transported frequently in long distances for competitions. The stress caused by air, land and sea transport is a major reason for respiratory diseases, which, in turn, lead to shipping fever and diarrhea etc. (Atock, Williams 1994). In some cases, transportation causes diseases to spread (European Commission, 2002). Spreading of disease during and after transportation is a serious equine health concern. Horses are sometimes transported together from different farms in the same vehicle, and this enables the spread of bacteria, viruses, and parasites. To avoid disease-related problems, loading from different farms or various ages must be carried out with due care. Trucks should be disinfected before reuse and if transportation is a must, it should be done in winter time. (Boehm, 1998)

Mansmann and Woodie (1995) noted that prolonged journeys pose risks such as acute colitis, laminitis, transit tetany, shipping fever, and mild azoturia, while short journeys and other numerous means of transportation could also result in injuries and health problems. Cregier (1982) mentioned that horses traveling frequently suffer from problems such as disrupted feeding patterns, weight loss, and fatigue. Tinker et al., (1997) mentioned diarrhea, dehydration, and colic among important diseases.

Shipping fever is one of the common diseases found in horse transportation. This illness is a respiratory infection that leads to increased signs of depression, loss of

¹⁶ (“Transporting horses“, 2013)

appetite, fever, increased respiratory rate, nasal discharge, and coughing. Despite every effort to avoid shipping fever or other transport-related diseases, horses may become ill within a few days after transportation ¹⁷. It is important to avoid transporting horses even with slight signs of illness. Padalino (2015) says that horses must be examined before transportation and the necessary electrolytes and antioxidants such as Vitamin E, C and selenium should be prepared, and their environmental conditions inside the vehicle should be improved to limit the problems associated with post transportation.

2.2.5. Injuries

Broken bones are one of the commonly occurring injuries during transportation. In most cases, the bone injuries happen during loading and unloading, and are unfortunately caused mostly by untrained staff (EuropeanCommission, 2002).

Horses in the last quarter of their pregnancy or near their due date must be avoided transportation because of transportation-related injury risks. Also, horses with broken bones should be kept under veterinary control while transporting (Cregier, 2009).

Darth (2014) observed that trailer injuries come second after injuries occurring in paddock or yard. Leg injuries related to ramps during loading are very common. Certain types of abrasion seen in horses during transportation are rubbing poll to the halter or muzzle and tail to the vehicle. Using specific protections like a head bumper, soft covering around the halter, or using bandages on the tail can help to avoid these kinds of injuries. Leg injuries are commonly caused by loss of balance after rapid accelerations or cornerings, so, shipping boots and bandages on legs offer additional protection for horse legs during transportation. If the boots are being used for the first time, the horse may

¹⁷ (“Transporting horses“, 2013)

kick or stomp them. While using bandages, it is important to ensure that they are fastened securely. Otherwise, they may cause slipping and the horse may fall down ¹⁸.

Using long tie-ropes are also suggested to allow the horses to lower their head, but it should be kept in mind that horses can harm or bite neighboring horses in the vehicle. Wither wounds may occur due to contact with the ceiling of vehicle. Other problems such as vertebral fracture and dislocation are also reported in horses due to facing forward and use of short ropes during rapid and extreme accelerations (Mansmann, Woodie, 1995). Transporting horses that are familiar with each other is suggested because of the hierarchy within the groups. Also, caution should be exercised about the order of transportation, and two timid and nervous horses should not be put together ¹⁹.

2.2.6. Climate

Humidity and hot weather can have a great impact on the horse's welfare, mainly when the weather conditions change unexpectedly. Therefore, to avoid high temperature during transportation, the following methods may be considered: (a) avoiding transporting horses in the hottest time of the day, (b) ensuring proper ventilation of the vehicle, (c) providing enough space in proportion to the number of horses, (d) preparing enough water and electrolytes ²⁰. Also, in order to ensure species- and age-related climate condition for transportation, onboard climate control systems can be utilized (Nielsen, Dybjaer, Herskin 2011). For each journey, in case of emergencies, plans should be developed against extreme transportation. That should be planned for every horse transportation

¹⁸ (“safe trailering”, 2012)

¹⁹ (“safe trailering”, 2012).

²⁰ (“Live transport”, 2012).

journey, because an ordinary, normal condition could become a critical situation (“Live transport”, 2012).

According to Cregier (2009), in hot weather conditions during parking without unloading placing the trailer in direction of breeze is recommended to cool the horses down. For long stops, shading must be used to cover the vehicle on both the ceiling and the sides. Waran et al., (2007) recommends opening the ramps and windows during rest stops. The risk of heat stress increases when keeping multiple horses in the same hot environment. Throughout journeys in cold weather, use of warm blankets should be considered and the openings must be regularly checked.

2.2.7. Ventilation

Vehicles which are used for long journeys should be equipped with particular ventilation and temperature monitoring systems. Any temperature change on the system must be observed and recorded to maintain interior temperature, and controllable ventilation system ²¹.

There are some issues about air quality that influence the respiratory system of horses during transportation. The ideal temperature for the vehicle is between 10° C and 25° C. Also, direct air blow on horses must be controllable (Cregier, 2009). Leadon (2008) argues that the air normally enters the vehicle from the windows and blows down to the floor, losing its quality. Thus, the air inside the vehicle becomes contaminated. Good ventilation is an essential factor to keep horses cool and provide clean air during the journey ²². Additionally, Padalino (2015) pointed out that animals produce CO₂,

²¹ (“Live transport”, 2012)

²² (“Safe trailering”, 2012)

ammonia and microorganisms, which make the vehicle a threat to their health. Consequently, a good ventilation system in a vehicle is not only necessary for air quality but also for preventing bacterial infections in animals

Horses are sensitive animals and their huge size makes their transportation difficult. The reason is that changing location by vehicles has a profound impact on their behavior. Placing in different replenishment areas, changing their food or intake water and weather conditions will lead to different results. And these changes will vary in different places and for different horses. It is impossible to develop the study without any acquaintance with the horses and transportation regulations regarding livestock in Turkey. Unfortunately, most of the transports are done by unprofessional carriers, or their facilities are not safe against or prepared for the risks on horse transportation. In some rare cases, the owners have their own vehicles that are safe for horses. Long term transportation without due consideration will have major effects on the horse's mental and physical health. But this matter remains largely unaddressed and people avoid admitting it for their own sake.

In light of all the literature review, the researcher concluded that there are three different risk categories in the transportation of horses. These categories are horse related-risks, vehicle-related risks, and transportation-related risks. In addition, disease, injuries, climate conditions are also regarded and discussed among the risks. The first part briefly talks about the transportation of animals and proceeds to discuss the transportation of horses.

The livestock transportation dates back to the Ice Ages. Different nations used various ways to transport animals. Horses are transported more frequently than other animals for leisure activities, breeding, slaughter, and so on. Various means of transportation such as road, train, air, and sea are used for carrying the horses between destinations.

The second part, briefly reviews the risks of transporting livestock and comprehensively talks about transportation risks involving horses. Transportation is known as a combination of multiple functions and involving various contributing risks such as loading, unloading, separation from a familiar environment, deficiency of food, injuries and so on.

The third section attends to the vehicle-related risks. Vehicle-related problems are associated with the physical aspects. In this regard, the hauling vehicle must have suitable physical structure, a comfortable environment, and offer safety. For this purpose, the third section explains floor, bedding, material, design of the vehicle, ramps, density of the vehicle, enough openings.

In the horse-related risks section, emotional aspects of transportation are deliberated. Stress is one of the important factors which effect on horse behavior; psychological factors mostly affect the stress during transportation include vibration, noise and road conditions. Stress leads to different health problems the horses such as respiratory disease, infections and so forth. Researchers agree that transportation is a physically stressful activity and causes weight lost (Warana and Derek, 1995). Feeding contains food and water distraction as an additional cause for horse-related risks such as dehydration and weight loss. Behavioral problems are another element of horse-related risks that can cause problems for handlers and horses alike. Horses display various behaviors that indicate their dissatisfaction with the transportation. Additionally, orientation and loss of balance might cause injuries and problems for horses. Finally, welfare is defined as an important issue in the transportation of horses.

Transportation-related risks are mentioned as a major factor that influences the horse welfare. Too many factors are related to risks of horse transportation. Among them is the driver's ability to control the vehicle. Vehicle design also plays an essential role in horse

transportation. Planning for the journey according to day or night time or competition schedule, duration of the journey, as well as rest time management are fundamental parts of the transportation risks. Documentation and record-keeping of results are useful for the next travels and should be considered in transportation as well.

Diseases, injuries, climate change, and ventilation are analyzed as a separate category, because all of them coincide with all the other categories. A disease can spread during transportation from ill horses to the healthy ones, so, disinfection can be used as a solution. Also, shipping fever is mentioned among the common diseases in transportation, which causes respiratory problems in horses.

For injuries, broken bones are one of the common injuries during transportation. Injuries related to unsuitable ramp, improper vehicle design, or proper protective equipment for horses like bandages are caused injuries in transportation. High temperature and extra humidity can have a great influence on horse welfare. Therefore, providing suitable conditions such as coordination of the number of horses or maintaining good ventilation are recommended. Transportation of horses is important because it generates economic welfare. So, in conclusion, this study identifies the risks involved in horse transportation and the solutions to minimize and permanently eliminate them. There are also other risks that would be identified in future studies.

2.3. Literature Gap

Race horses business contributes to the welfare of the country in the form of paying taxes to the government and donations to local charities. According to the law (Inheritance and Tax Law), 20% of the winning bet goes to the state treasury (Aykinon, 2018). 18% of the organization revenues go to value-added tax, 7% of the income goes

to entertainment tax and 3% of the collected money goes to public funds such as defense, education and NGO's²³.

The jumping horse business also generates income for various stakeholders. For instance, veterinary services are hired or paid monthly to take care of the horses, while grooms are paid to tend to the needs of horses and receive a regular salary of minimum wage insurance with full benefits. The third business component that deals with horses is marketing. Horse owners buy tools for their horses in various capacities such as horseshoes, hay, feed, horse hygiene products and so forth.

As mentioned in the previous paragraphs, jumping horses generate money and taxes, and thus their health is important in keeping these funds alive. Therefore, any risks threatening their welfare during, before and after transportation are important and should be investigated further. Having reviewed the literature, we found and categorized several risk factors.

²³ (Türkiye Jokey Kulübü, 2011)

CHAPTER 3

3. METHODOLOGY

The methodology of this study is to obtain and understand the risks of horse transportation in Turkey. Interviews with professionals in the horse industry provided valuable data for understanding the risks of horse transportation. In this section, research design, data analysis and sampling parts are explained.

3.1. Research Design

This study focuses on the risks of horse transportation and tries to contribute to the related literature by expanding on the defined risks. In order to conduct the study, a qualitative research methodology was endorsed. Qualitative research methodology helps to understand why and how a phenomenon takes place. In general, qualitative research is anxious about cases more than variables and focuses on generating a deeper understanding (Maudsley, 2011). According to Zubin, Austin, Sutton, and Jane (2014) qualitative research comprises distinctive opportunities to understand complex situations where there is personal doubt and several distinct understandings. The qualitative research may not provide absolute answers to such complicated questions, but it can yield a better understanding and a foundation for further focused work. Qualitative methods describe how human behavior relates to the outline of the social structures in which the actions take place (Flick, Von Kardorff, Steinke 2004). Adi (2019) describes qualitative research as a market research method, which focuses on finding data from

open-ended and informal communication. This method not only attends to “what” people think but also considers “why” they think.

Qualitative research has generally been employed in fields such as sociology, history, anthropology, and business research. Qualitative data provides a source of well-grounded, rich descriptions and explanations of processes in identifiable local contexts, with the chronological flow, consequences and may derive fruitful explanations (Miles and Huberman, 2009).

According to Denzin and Lincoln (2008), qualitative research contains a variety of different methods such as case studies; personal experiences and life stories, interviews, observations, historical, interactional, and visual texts that define usual and problematic moments and meanings in people’ lives. In this regard, some researchers (e.g. Becker 1986, Gupta and Ferguson 1997, Keller and Keller 1996) explained qualitative research as a series of demonstrations including field notes, interviews, conversations, photographs, recordings, and memos to the self.

In this regard, we employ a qualitative approach to interpreting and investigating the perceived risks in horse transportation through utilizing semi-structured interviews and participant observations.

3.2. Data Collection

Qualitative research may be directed in lots of ways. In this study, different the data collection techniques were employed to answer the research question: (a) Interviews, (b) Participant Observations, and (c) Document collection. In this regard, triangulation in data collection phase was achieved.

Interviews are used to gather descriptions of the real-life-world with respect to interpretation of the described phenomena (Kvale, 1983). Since this research is a field study application, semi-structured interviews were widely used for data collection. The semi-structured interview is mostly used in the absence of any opportunity to gather information other than interviewing someone for investigating the notions (Bernard, 1988). In the semi-structured interviews, the interviewer and respondents participate in a formal interview.

Qualitative data analysis helps in understanding the research objective by illuminating the outlines and themes of the data. In this regard, the interviewer progresses a list of questions and themes covered during the conversation. The interviewer follows the guide, but is able to change the guide when required, and follow other interesting outlines in the conversation. In the scope of this study, the interview schedule was developed, and 13 interviews were completed. The main interview questions consisted of 13 themes. The list of interviewees can be found in the “sample” section below (Table 3.1).

A single interview took an average of 60 minutes. All the interviews were recorded and converted into verbatim data and transcribed. Two other professionals coded the interviews in order to achieve inter-coder reliability. Reliability is attached with the replicability and dependability of findings (Kirk and Miller, 1986; Rafules and Moon, 1996). Validity is concerned with the accurateness of outcomes (Rafules and Moon, 1996) and “appropriateness” of the tools, methods, and information. So, reliability is an essential requirement for validity. Reliability and validity are the concepts for attaining consistency in qualitative research.

Participant observation is a method used for discovering the behaviors of the people under study in the natural circumstances through participating in those activities. Schensul and Lecompte (1999) define participant observation as "the process of learning

through exposure to or involvement in the day-to-day or routine activities of participants in the researcher setting" (p.91). Marshall and Rossman (1989) describe observation as an organized explanation of events, behaviors, and objects in the selected social situation. The researcher used an mp3 player and a cellphone for recording the data. An Mp3 player only recorded the voices, but cellphone recorded features as video or as motion pictures. The researcher completed 100 hours of observations in total. The recorded footage was watched three times. The observation notes were used in the coding and analysis of the data. Since the researcher has horses and is active in the business for about 10 years, she has extensive experience in horses and their transportation. The researcher spent 15 hours observing people especially for loading and unloading processes. The researcher used field notes during the process of qualitative fieldwork to memorize and document the horse behaviors and related personnel, activities, and incidences to analyze the data.

The researcher did an extensive online search on newspaper databases (Independent, Times and etc.) to find out news items. More than 2000 news items and documents were analyzed. The topics investigated were related to horse welfare, car accidents involving horses, horse performance in different countries, standards of transportation and so forth.

3.3. Sample

Since the aim is to elaborate risks on transportation of competition horses, the participants were selected from among people who were in relation with horses and their stockholders. Twelve interviews were conducted with purposive sampling. In purposive sampling, judgmental and selective sampling is done based on the information, experience and knowledge level of the participants in the researched area. The participant ages ranged between 30 to 60 years old. There were 12 male and 1 female participants (see table 3-1). Please note that the participants' names in this study are pseudonyms.

Table 3-1 Samples of the interviews

#	Participants	Gender	Branch	Location	experience	Age	Descriptions
1	C1	Male	Race	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	Race & Jumping	Istanbul	25	60	Owner of transportation company
4	D1	Male	Race	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	Race	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	Race & Jumping	Izmir	10	35	Rider, Veterinary

3.4. Data Analysis

According to Creswell (2014), researchers who use qualitative research honor the inductive style, focus on the individual meaning and simplify a complex problem. In order to elaborate on the research topic Creswell (2014) suggests 1) collecting data from the participants' settings, 2) analyzing the data inductively, 3) building the arguments from particulars to general, 4) making interpretations of the meaning of the data. Interview questions were written with the help of the advisor. All the interviews were recorded,

transcribed, coded and categorized. After codes were identified, all the data were analyzed and reported. Coding is one of the best ways to compress the data into easily understandable ideas for a more well-organized data analysis process. Coding in qualitative analysis simply involves categorizing the data into concepts, properties, and patterns. Open coding, axial coding, and selective coding are the methods in coding to abstract the nature of the description and to evaluate textual content. Open Coding includes line by line classification of thoughts based on their properties. Axial coding comprises identifying connections between the open codes found. Selective coding figures out the fundamental story that links all the data (Gallicano, 2013)

This research uses qualitative data analysis techniques to answer the research question. After transcribing the interviews, the researcher started coding immediately and repeated the process for each new interview. Codes were assigned and categorized, and memos were written during the analysis process.

3.1. Validity and Reliability

Two main parts of data validation are validity and reliability. Data validation is one of the supporting elements of a successful research. Since data is at the core of the study, it is extremely fundamental to ensure that it is not inconsistent. The validity is ensured throughout the entire data analysis. Firstly, it is about the accuracy of the method, and secondly, the procedures are shaped. First is validity, which is all about methods, and the second is reliable and trustworthy results. To measure validity, and reduce and increase the reliability of findings, the following practices are performed for validity of the study; appropriate time scale was selected for the study, then numerous staff and owners in horse industry were selected. The study integrated semi-structured interviews and participant observations.

In this case, the respondents were not pressured in any way to select specific choices amongst the answer series. The interviews were reviewed and documented. Various services in horse transportation were studied, and related database for the study was created. For the reliability of the study, all of the interviews are recorded in good-quality and transcribed in detail. Multiple coders analyzed the obtained data to make sure whether the codes and themes are coded the same way as in the analysis. The coding and clarification process is patterned by two academicians who confirmed the findings. Research findings and specific conclusions are reported through the argumentative configuration of interpretants.

CHAPTER 4

4. DATA ANALYSIS AND FINDINGS

Of the qualitative research techniques for analyzing the data, deductive approach is used for this study. In this regard, the data was grounded on a structure determined by the researcher. The research questions were used as a guide for grouping and analyzing the data. At first, the key findings were reported simply under each main theme by using appropriate verbatim quotes to explain the findings, and then the open codes were identified. All the codes are cross-checked with other interviews. When a new question came up, the researcher did another interview and elaborated on the problem. Then, the open codes were expended to figure out the first-order codes. An advance determination was made through these classifications, which stimulated the data concerning a more theoretical coding scheme. Categories were created by accommodating the theoretical codes. Tables 4.2 to 4.10 indicating a particular horse's road transportation risk factors were marked and unified according to the main parallel specifications.

4.1. Findings and Discussion

Based on the data, the following results were obtained. The data revealed that the risks for transportation of horses can be categorized into nine main categories. These are employee-related, equipment-related, financial-related, horse-related, industry-related, infrastructure-related, safety-related, transportation-related, and vehicle-related (see table 4.1).

Table 4-1 Major and Sub Risks categories

Major Categories	Sub Categories
Employee-Related	Driver expertise
	Staff expertise
Equipment -Related	Equipment availability
	Equipment safety
Financial-Related	Insurance
	Cost covering
Safety-related	Safety of driver
	Security of journey
Horse-related	Horse anxiety
	Horse health
	Horse feeding
	Veterinary management
	Horse training
Industry-related	Horse industry qualification
	Industry auditing
Infrastructure-related	Farm infrastructure
	Route infrastructure
Transportation-related	Planning of transportation time
	Planning for healthy travel
Vehicle-related	Climate control inside the vehicle
	Vehicle design

Categories with emerging data were continuously compared with the data from the interview and cross-checked with the field notes. Findings were discussed in relation to existing research. Under the light of these categories, the following explanations and data came up.

Table 4-2 Employee-Related Risks

First-Order Code	Theoretical Code	Categories
Awareness of driver, Driver education, Expert driver, Self-education of staff and driver	Driver expertise	Employee-Related
Awareness of groom, Combination of education and expertise of staff, Consciousness about importance of horses and signification, Education of staff, Experience of staff, Observing and control by staff, Self-education of staff, Availability of authorized people	Staff expertise	

Table 4-3 Equipment-Related Risks

First-Order Code	Theoretical Code	Categories
Appropriate vehicle design according horses' specifications, Appropriate vehicle equipment design, Lighting for clear observing the horses	Equipment availability	Equipment -Related
Appropriate safety equipment's for horses to avoid injuries, Flooring equipment to avoid slipping, Appropriate vehicle design by using sponge for protection, Appropriate vehicle design to avoid bumping head to the vehicle, Customize safety equipment's for horses,	Equipment safety	

Table 4-4 Financial-Related Risks

First-Order Code	Theoretical Code	Categories
Lack of proper insurance for horses, Lack of insurance company in horse transportation	Insurance	Financial-Related
Deficiency in covering costs	Cost covering	

Table 4-5 Horse-related Risks

First-Order Code	Theoretical Code	Categories
Adjustable light system, Appropriate treatment to horse during loading/unloading, Appropriate treatment to horse during transportation, Appropriate space inside the trailer, Classification of horses based on characteristics specifications, Classification of horses based on gender, Decrease the stress level to avoid lose weight, Drug treatment, environmental destruction	Horse anxiety	Horse-related
Disinfection of vehicle, Hygiene for odor, Take off horse shoe	Horse health	
Customize journey break for watering, Managing feeding program, Variety of drinking water quality	Horse feeding	
Appropriate drug treatment, Veterinary control, Periodic control of horses by veterinary, Veterinary control before releasing and entering to the farm	Veterinary management	
Habituate to transportation	Horse training	

Table 4-6 Industry-related Risks

First-Order Code	Theoretical Code	Categories
Awareness of horse owners, Lack of documenting, lack of education, Lack of education and qualify to grow up the horse industry, Preparing documents, Record the statistics of journey, Registration for releasing the horse from farm, Service quality certification and auditing, unacceptable high custom duties for imported horse transporting vehicle	Horse industry qualification	Industry-related
Observing the transportation process and control by professionals and government	Industry auditing	

Table 4-7 Infrastructure-related Risks

First-Order Code	Theoretical Code	Categories
Availability of proper ramp in farm,	Farm infrastructure	Infrastructure-related
Availability of resting farms in route, deficiency in governmental projects	Route infrastructure	

Table 4-8 Safety-related Risks

First-Order Code	Theoretical Code	Categories
Arrangement of rest hours, Arrangement of journey breaks	Safety of driver	Safety-related
Driver's alignment to traffic procedures, Expert support, Responsibility of driver, Interference of backup driver in case of need and emergency, Speed limitation, Obey the traffic rules,	Security of journey	

Table 4-9 Transportation-related Risks

First-Order Code	Theoretical Code	Categories
Managing travel time according season, Managing travel time according horse behavior, Time management of journey according competitions	Planning of transportation time	Transportation-related
Adopting to new places and resting, Customize journey break to avoid losing weight, Customize proper rest during journey	Planning for healthy travel	

Table 4-10 Vehicle-Related Risks

First-Order Code	Theoretical Code	Categories
Ventilation management,	Climate control inside the vehicle	Vehicle-related
Appropriate loading density to obtaining enough space, appropriate vehicle design according horse specification, appropriate vehicle design by considering the direction of travel, appropriate vehicle design to obtain balance and avoid sitting, design standards infrastructure, domestic vehicle design problems, availability of protection equipment's in vehicle ramps,	Vehicle design	

4.1.1. Employee-Related Risks

Doing business with the wrong people is always a risky affair. And having correct people in the right position always reduces risks. The main employee-related risk is the misunderstanding of horse transportation. Table 4.11 illustrates a lack of training and leadership, which triggers high-level risks. This also leads to a potential loss of

investment in the market. Employee-related risks are the uncontrollable and unexpected aspect to what people do.

According to the data, employee-related risks are divided into two main categories; they are ‘driver expertise’ and ‘staff expertise’. Driver expertise can be analyzed under driver’s awareness, education, and self-education. Staff expertise contains two main subcategories; they are ‘availability of expert staff’ and ‘staff know-how’.

Table 4-11 Quotes for Employee-Related Risks

Risk factor	Power quotes
Driver expertise: Any risk factor related to driver’s awareness, Driver education, Expert driver, Self-education of staff and driver.	“Usually there are two drivers in the vehicle and generally one of them is experienced.” “Drivers must be educated and be aware about livestock”
Staff expertise: Any risk factor related to availability of expert staff, driver know-how and staff know-how.	“We can find an experienced driver” “In our culture mentoring system is important, we should listen to and follow experts.” “There must be an expertise staff with driver”

Some participants believe that drivers’ compliance with the resting procedures must be paid attention to by staff. Coach 1 mentioned that *“There must be a rest time every 3 to 4 hours.”* The drivers must have rests on the route to the destinations; also, Rider 1 added that *“In long distances, the driver could drive for 16 hours.”* These long journey hours are too long for the driver’s safety and cause essential problems for both them and the horses inside the truck. According to Coach 2; *“Drivers must have a resting schedule; each driver cannot drive a truck for more than six hours and must be replaced by another driver.”* This means that the drivers must have responsibility and follow the resting schedule programs. Noncompliance with the resting procedures

may causes accidents due to exhaustion. According my interview with the drivers, they travel with no support driver often due to high costs

Besides having an experienced driver in the vehicle, a knowledgeable accompanying staff is also important. According to Veterinary 1, *“The groom intervenes in case of problems, because most of the drivers have no knowledge of horses.”* Veterinary 1 said that availability of authorized people during transportation to check the horses and their management needs is an important factor to reduce the risks of transportation. In addition, awareness of driver is another significant factor in transportation of horses. Veterinary 1 added that the consistency of staff for loading and unloading the horse is essential, so they are supposed to be trained for transporting the horses. Veterinary 1 concluded that *“There usually are two drivers in the vehicle and one of them is an expert driver.”* Thus, the second inexperienced driver should regularly consult with the expert one.

Coach 2 mentioned that *“An expert driver does not perform any adverse functions.”* The driver of a horse truck must be aware of the fact that driving style differs from the ordinary truck-driving when the load is a livestock. Drivers should be more careful in highways while turning around corners when transporting livestock. An expert driver who follows the journey plan is essential; Rider 1 said that *“an experienced driver should be available.”* In this way, many risks will be reduced. Participants agreed that livestock transportation truck drivers must be informed and educated in transportation of horses.

Driver 1 said that the drivers must pass a mandatory certification test in order to transport horses. This education must be multi-layered: the first one is about the technical part which is related to the car and the mechanics of the vehicle; second part is about the animal because the driver will be transporting a livestock which can kick,

jump, and even die. Driver 2 supports this idea saying, *“They teach us how to load and unload horses, how to drive the truck, how to assort the horses inside the vehicle and so on.”* and added that they have undergone training on transporting horses provided by FEI.

On the one hand, such instructive information is very beneficial in improving the driver’s know-how and leads to safe transporting of horses, but the trainings must be repeated in every five years. However, the training classes have never been offered since 2014. On the other hand, Veterinary 1 claimed that the drivers get certified for animal transporting, but it is not about horses, so, in case of a horse-related problem they do not know how to handle it. Owner 1 posited that *“The drivers do not take special courses for transporting horses. The drivers and staff learn the process of transportation on their own through experience.”* So, gaining experience on their own could result in loss of jobs, money and lives.

In contrast, Rider 2 mentioned that they had particular courses about transporting horses. These courses include all the aspects of horse transportation. He strongly supports the idea of hiring an expert driver for carrying horses. Data revealed that in most cases there can be an experienced driver behind the wheel and the driver is supposed to be knowledgeable about all these issues. Likewise, grooms are supposed to be familiar about the transportation of horses, the driver, and the vehicle. Groom 1 said that *“There must be a groom inside the truck, who is familiar with horses and can remain calm in case of problems.”* As seen from the data, the staff expertise is a significant issue in case of problems, like Rider 1 noted; *“In our culture, mentoring system is important.”*

Groom 2 and Groom 4 mentioned the importance of self-education in the business. Since there is a lack of training in transportation of horses, the training of

staff was mostly handled by experienced personnel. Company Owner noted that the drivers learn on the job. Technical vehicle checks before loading the horses is performed by drivers and this is one of the fundamental requirements of know-how that can prevent the risks of transportation.

4.1.2. Equipment-Related Risks

Transferring horses in a safe way is our top priority. For this reason, eliminating equipment related risks is a must. Equipment related injuries are at a low level but should still be analyzed before the transportation (see table 4-12).

The design of the vehicle and flooring seem important. Padding the sides of the vehicle provides a comfortable environment for the horse. Additionally, using a long-enough rope enables the horse to reach hay on the floor. Using hay in the vehicle keeps the horse busy and provides a slip-free floor. Sometimes horses can lie or fall. Hay or saw dust, in this case, increases the horses' comfort, but in most of my observations, there were small amount of saw dust, which did not cover the whole surface.

Coach 1 noted that *"The trailers should not have chains; instead, they could have some flexible plastic ropes like those used in Europe."* Chains can cause serious injuries to horses. Horses can injure themselves, as well. Coach 1 suggested using leg and ankle bandages to avoid injuries. However, some horses are hesitant about wearing bandages. In this case the groom should put the bandages on inside the box. Some horses hit back if they feel a sudden movement and their shoes can hurt their feet. If the sidings and flooring are made of sponge-like material, such injuries can be prevented.

Trailer design is another risk eliminating factor; not all trailers can carry horses and not all standard trucks can carry livestock. The participants agreed that dividing the trailers into boxes is beneficial. The walls of the boxes should be covered with an impact absorbing material. In this regard Coach 1 said *“the thicker the protective material, the better.”* In addition, the trailer must not be divided with ropes.

Table 4-12 Quotes for Equipment-Related Risks

Risk factor	Power quotes
Equipment availability: Any risk factor related to equipment availability.	“We do not use ropes as a separator inside the vehicle” “Notifications are used to notify the others about horses inside the vehicle”
Equipment safety: Any risk factor related to horse safety equipment availability.	“The vehicle design is such an important factor” “The rope length must be long enough to allow the horse to eat hays”

Appropriate vehicle equipment design plays an important role in transportation of horses. There must be notifications on the back of vehicles to warn the outside drivers about the horses inside. Despite these notifications, the drivers could face unexpected external driver intrusions. Some outside drivers, after reading the sign on the back of the trailer, sound their horns to display their excitement. It is a cultural concept, but it could be solved by educating people. Inappropriate road conditions give horses anxiety.

4.1.3. Financial-Related Risks

Financial-Related Risks usually occur when people make poor decisions. Insurance is a necessary consideration in transportation of horses. As shown on Table 4.13, participants complained that Financial-Related Risks are mainly come hand in hand with insurance-related issues.

One of the major problems regarding the insurance companies is that they fall short in covering costs. Driver 2 mentioned that the vehicles are insured as required by law, but that insurance coverage does not include the loss or harm of the horses. Coach 2 notifies that *“horse sports are expensive, and the cost of insurance is high, and thus, because of financial problems nobody wants to insure their animals.”* The insurance cost is around 6.6% of the price of the horse, which is a huge amount. However, some owners like the military make it obligatory to insure horses. Rider 2 mentioned that the *“Military services buy insurance for the horse transportation and it is mandatory.”*

Table 4-13 Quotes for Insurance-Related Risks

Risk factor	Power quotes
Insurance: Any risk factor-related insurance necessity, insurance policy	“When you insure the horses, it covers the health issues, but transportation insurance is not covered” “I searched for an insurance company to insure my horses but none of the companies replied” “In our military service the horses have insurance” “The vehicle insurance do not cover horse insurance; the owners must insure their horses separately by themselves”
Cost covering: Any risk factor-related to covering costs	“The insurance cost is too high” “The owners do not want to pay the insurance cost”

As understood from the data that insuring the animals is a noteworthy risk. Governmental organizations pay attention to this detail, yet private organizations usually do not consider or afford insurance for the animals. Groom 4 promoted having insurance for the animal by telling a story about an accident that involved a vehicle and a horse. Groom 4 said *“a few years ago, one of the vehicles carrying a valuable horse had an accident and the horse was severely injured. The horse was not insured, so the owner did not receive any compensation for the animal.”*

4.1.4. Safety-Related Risks

Participants described how safety and security risks threaten the horse transportation industry (Table 4.14). Safety and security are among of the greatest concerns in the horse industry.

Participants agreed that the drivers' deviation from the resting procedures causes problems in horse transportation. Drivers must obey the traffic rules and regulations and strictly follow the driving hour limitations. According to the Turkish Traffic Law, a truck driver shall not drive more than 8 hours at 24 hours intervals. Groom 1 noted that a certified driver is essential, and they should obey the traffic rules, speed limits and other traffic- and driving-related limitations. Company owner supported this idea by choosing drivers who have a good driving record and extensive experience in transporting livestock. So, the drivers should have enough expertise for carrying horses and as Groom 2 mentioned, *“Speed limit should be 80 km/h, most of the noncompliant drivers exceed the speed limit to carry out more transportation jobs and earn more,”* they should not be greedy.

Table 4-14 Quotes for Safety-related Risks

Risk factor	Power quotes
Safety of driver: Any related risk factor Driver compliance with the resting procedures,	<p>“There must be rest hours for horses”</p> <p>“Arrangement of journey breaks based on the duration of the journey”</p>
Security of journey: Any related risk factor Alignment to resting procedures of horses, Compliance with the traffic procedures, Availability of backup driver	<p>“After starting the journey, you must stop and give some rest to the horses inside the vehicle”</p> <p>“In case of high speed, the horses will be stressed in turns and sudden stops” “The speed limit must be minded”</p>

Coaches and grooms repeatedly mentioned their concern about resting procedures for horses during transportation. Horses need rest especially during long journeys. So, in order to prevent adverse consequences and provide safe and secure travel for both the staff and the horse, the driver must stop at certain intervals. As Coach 2 said, *“the driver should stop at certain intervals during the transportation.”* Another negligent behavior on drivers’ part is that they transfer the responsibility of the vehicle to other non-suitable drivers or staff. As Rider 1 mentioned, the responsibility of the driver is very important; *“the driver should not give the responsibility of the vehicle to uncertified people.”* He explained that the hired drivers must be the only ones to drive the vehicle. In case of a problem, it is not fair to trust other people. Veterinary noted that the groom must deal with the driver, the vehicle, and of course, the horse; and if the groom is not compatible and is easy-going, eventually problems come up.

4.1.5. Horse-Related Risks

Horse-Related Risks arise from the activities of people who are responsible for horse transportation. The main focus in horse-related risks revolves around monitoring the horse's welfare, anxiety, health, feeding, veterinary management, and training. Table 4.15 illustrates the participants' idea on the horse's safety and security. The data revealed that the interviewees in general underestimated Horse-Related Risks resulted by horse behavior and consciousness of staff before and during the transportation.

Observing horses periodically during transportation is one of the musts and the grooms and drivers should be aware of it. Nowadays most of the vehicles have camera systems and the staff can observe and control the horses technologically. If the horse changes its behavior significantly, then this could be an obvious indication that the animal is having an aversive situation. Participants mentioned that horses can exhibit different behaviors during transportation, which could result in anxiety. To eliminate anxiety, risks participants agreed to trick the horse by using enticing fruits, sugar or hay. Rider 2 recommended loading another horse along with the anxious horse to the vehicle in order to make the interior feel safe. Veterinary mentioned that *“the staff can put hay in front of the horses during transportation to amuse them.”*

Assortment of horses is another way to cope with the horse anxiety problems. Rider 1 advise that; *“classification according to verity of gender and temperament of horses during transportation plays an important role.”* This idea is confirmed also by Coach 2 and Driver1. For this purpose, expert staff in loading is an essential factor in correct assortment of horses to avoid behavioral problems. Presence of educated staff for transporting horses by preparing them in an integral way before the journey, awareness about horse behavior, and intervening in cases of accruing behavioral problems are essential items that mentioned by the highest number of the participants.

Managing the light inside the vehicle will also prove helpful in reducing the stress. The light must be controlled during transportation to not cause discomfort to horses. Groom 2 confirmed this idea and added *“Turning the light on and off will cause anxiety in horses.”* Loading horses from a familiar environment and customize the number of loaded horses in proper quantity is a significant point to control the horse behavior, Rider 2 agreed to this idea and added that *“separating from the barn and entering a confined place is the source of stress and display of aversive behaviors.”* Horses may be angered by establishing eye contact with each other. It can be related with their temperament. Driver participants recommended having suitable design to prevent from seeing each other. According to participants, horses can display different kinds of behaviors before, during and after transportation. In this case, possessing information about horse manners and employing educated and expert staff will be helpful in mitigating risks in transportation. Also, loading with patience and treating horses with kindness is always the best way. Most of the participants also draw attention to the subject of feeding during transportation. Feeding in short journeys is not recommended apart from some cases where hay is used as trick for amusement.

Hay is placed in baskets, and while eating them, horses will not pay attention to the process of transporting. For long journeys, it is better to feed horses with hay during transportation; but, if there are some rest areas and the horses are going to stay overnight, they can be given other kinds of food. In this regard Coach 1 said *“If there is no resting area on the route, you cannot feed grain to your horse.”* He means that transporting is similar to training, except it takes longer and makes horses more tired. If you feed seed or other heavy feeds to your horse, its welfare will be in danger.

Water is also important, and watering has its own difficulties. Changing water affects the horse’s performance, and this report is in line with the literature on transfer

Table 4-15 Quotes for Horse-related Risks

Risk factor	Power quotes
Monitoring of horse welfare during transportation: Any risk factor related to observation and traceability of horse welfare by staff, technological tracking of horse welfare	“Observing the horses via the vehicle’s camera” “using illumination for clear visibility of horses inside” “every 100-150 km check of horses by staff”
Horse anxiety: Any risk factor related to vehicle lightening availability, appropriate treatment of horses, vehicle space design, Assortment of horses, veterinary management, road infrastructure, vehicle isolation design, horse training for safe transporting, design of the vehicle for horse’s tranquility	“it is good to use high separators inside the vehicle to avoid eye contact” “it is better to have illumination inside to dispel the fear felt by horses during loading” “loud external voices will affect horses” “in case of problem, using drugs to calm the horses down is useful” “the horses must be classified according their gender” “good behavior is a must in the horse industry”
Horse health: Any risk factor related to hygiene, safety of horses	“there is no disinfection in farms” “each driver cleans their truck after unloading horses” using special flooring material to control the odor”
Horse feeding: Any risk factor related to schedule feeding, water quality	“Before loading horses, hay is placed inside the vehicle” “Using some flavors to change the water quality”
Veterinary management: Any risk factor related to obligation of veterinary control, veterinary treatment,	“it is essential to have a veterinary available in the truck for long journeys” “veterinary performs treatment in case of problems”
Horse training: Any risk factor related to horse training for safe transportation,	“The horses are become accustomed to transportation from young ages” “to alleviate the stress due to transportation, the horses need to have prior training” “different horses have different duration of habituation in transportation”

of flavor to the destination. Coach 2 mentioned that “*Horses avoid drinking variety waters.*” The reason can be the flavor or odor of unfamiliar water, or in some

cases, stress. As a solution, one of the participants added apple juice to the water, after which, they drank it. But according to other participants the horses are adapted to drink all kinds of water, because they travel to different cities for each competition, and it is very hard to monitor their water intake. So, they are better accustomed to drink water from every source.

Disinfection of the trucks is always related with the horse's welfare. All of the participants accept that the vehicle must be clean and disinfected, but drivers do not pay attention to this fact all the time. Veterinary mentioned that it must be enforced as a rule in horse transportation. She noted that the disinfection of the vehicle must be supervised and done after each transport. This order will help to avoid spread of diseases. The driver admitted that he always cleans the vehicle, but mainly has it disinfected once every month and added, "*I do not have the time to disinfect the vehicle after each transport.*" Owner 1 also stated "*I never ask the driver to disinfect the vehicle*". He explained because of some educational issues and lack of knowledge, the drivers will not perform disinfection and they do not see it as an essential issue for horse welfare.

Horse training is another significant concern in transportation that can intersect with horse-related risks. Some participants claim that for loading horses, it is better have horses do some exercises before loading to help them unwind and release pent-up energy. Also, the data points out that starting their training as a foal is the best way to help them become accustomed to loading more easily. In some cases, participants recommended using different training methods proves helpful in familiarizing horses with loading. Owner 1 tried to put the vehicle inside the arena along with hay to feed them inside for a few days with open doors, and allowed the horse to be around the vehicle. After doing so, the horse noticed the feeds, and without any fear or being

forced, entered into the vehicle. This activity helped and proved very useful for gain the horse's trust. Coach 2 notice that; *“Training horses for safe transportation is a key issue in reducing the risks of transportation.”*

Accustoming horses to transportation through various methods has been tried by most of the participants and has solved a great amount of the problems associated with transportation. Most of the participants claimed that there is no obligation for veterinary control in transportation process, especially in long journeys. But veterinary added that *“veterinary control is done for bureaucratic purposes.”* According to her, veterinaries sometimes sign documents required for transportation without examining the horses, so there will not be any checks in case of problems and disease. In contrast to this idea, one of the riders said that each horse have its own veterinary. He means that the horses are constantly monitored, so there is no need for a veterinary check before or during transporting; but after unloading, if there is a problem, the veterinary will interfere and take the relevant actions. For example, they inject special drugs to prevent dehydration.

Since it is out of the scope of this research, the following results were also glinted from the data. The injection treatment is used by some of the participants to calm down the stressed horses and ensure their safe loading. Despite these methods, during loading process some staff use force on hesitant horses, slap them wildly, push them forcefully, and kick them. These are nontechnical problems for loading and unloading the horses such as kicking, pushing, slapping, shouting etc. These methods are not technical so, their solution is not technical either. These problems can be solved through education, human awareness and patience.

4.1.6. Industry related Risks

Interview participants frequently linked documenting the journey with persuasion capability practices across transportation of horses. Thus, industry related-risks were shaped around the interviews. Exclusively, the quotes in Table 4.16 illustrate the lack of documenting and recording the journey statistics.

Participants specifically noted that documentation must be complete, and aspects like origin and ownership of animals, departure and the destination as well as the date and time of departure and expected duration of journey must be recorded. It is better to keep this information for a certain period of time and make it available to an inspector if requested.

There is a shortcoming in qualification documents in transportation of horses in Turkey. Most of the participants explained that before transporting race horses from a hippodrome, a veterinary signs the documents regarding the health of horses. Also, Company owner confirmed that for race horses, the number of trucks and information related to the horses are registered before loading, while Rider 2 claimed that “*There is no need to inform and prepare documents for horses when transporting from horse show riding clubs.*” He added that we all know our own horses, and there is no essential need to prepare any documents and keep them under record.

Some others have a different idea and prefer to trace the journey statistics and pay attention to keep the travel documents under record, as the transportation of livestock is question, which is a vital issue. Owner 1 added that transportation documents must be certified by the Ministry of Agriculture and Livestock, kept under record in an official system, and their use should be allowed for research purposes to minimize the risks of transportation. Problems surrounding distant education emerge in the quest for economic success and filling the gap of industry-related risks.

Table 4-16 Quotes for Industry-related Risks

Risk factor	Power quotes
Horse industry qualification: Any risk factor related to interest of owners, qualification documentation and statistics, obligation of education, education level, availability of qualified transportation partners, governmental rules	“some owners do not possess any know-how regarding the transportation of their horses” “it is important to prepare the necessary documents for horse transportation” “nobody records and monitors the transportation of horses”
Industry auditing: Any risk factor related to systematic control and improvement	“there must be an official system in place to control and oversee the transportation process”

Regarding how transportation companies focus on transporting horses, Owner 1 said *“Obligation of horse transportation companies is an essential issue.”* The transporters must be aware of the health and importance of the animals inside the vehicle. Most of the participants believe that excluding the careless drivers from next transportation must be considered. By saying so, they announced that all the staff and owners must be aware of the horse’s welfare and be mindful of the safety issues. The ability of the driver is another aspect that Groom 4 mentioned through the following words: *“Choosing the wrong driver waste our time and causes horses to become anxious.”* He explained how during one journey, a non-expert driver lost the way, and instead of a 7-hour travel, they arrived at the destination in 10 hours.

Veterinary told a story about transporting horses to another city in Turkey, where the new owners arrived with a transporter van, which is in no way suitable for transporting an animal. According to the Veterinary’s’ story, they put the horse inside the van, but after 15 minutes they came back because the horse kicked the doors of the

transporter and they could not keep driving, so they return to the farm. This kind of consciousness factors will affect the horse welfare.

4.1.7. Infrastructure-Related Risks

Participants consistently regret that the lack of ramps in farms, especially in show jumping farms, and proper places for unloading horses on routes remain a complicated problem for horse industry (see Table 4.17). Most of the participants emphasized that there are few places or farms between cities where competitions are held regularly for resting or emergencies.

Safety equipment in loading and unloading is another topic of contemplation in transportation of horses. Veterinary noted that there is a severe lack of available proper ramps in farms to load and unload the horses safely. According to my observations, ramps were not available in any of the show jumping farms and they used the rear doors of trucks for all loading and unloading activities. To solve the problem of unsafe ramps, participants mentioned that they use hay or stand around the ramp to prevent horses from slipping down or escaping. Groom 3 said that *“there are no ramps in Turkish farms.”* He mentioned that ramp design in farms are disregarded, which leads to problems while loading and unloading horses. Coach 2 supported the Groom 3’s idea by saying *“unfortunately, because of the lack of ramp in farms or riding clubs, horses are loaded and unloaded in inconvenient places like parking lots.”* He claimed that there is no regard for horse welfare.

In literature, there are mentions of unloading and loading horses during waiting and in resting spots, but the data reveals that there is no way that a horse can be unloaded and loaded in a resting area. For instance, participants stated that such a thing is impossible (Nielsen, Dybjaer, Herskin 2011).

Table 4-17 Quotes for Infrastructure-related Risks

Risk factor	Power quotes
Farm infrastructure: Any risk factor related to farm ramp design	“Ramps in farms are a must for loading and unloading”
Route infrastructure: Any risk factor related to rest area infrastructure,	“There is no means to unload the horses during transportation” “there are no stops in long journeys” “in case of emergency, finding a proper place for unloading horses is almost impossible”

Considering the distances between the cities where competitions are held, the longest distance is about 900 km between Istanbul-Adana. The solution for this transportation problem is to build special horse farms on the routes between cities. This idea was proposed by Veterinary. She also mentioned that the places need to be available during race seasons. Other participants also strongly agreed to this idea. One of the grooms mentioned that *“When stopping on the road, unloading horses is very difficult.”* What he means is that staff is needed to monitor the horses. Also, in cases of unloading, horses must have proper boxes to relax inside; otherwise unloading and walking horses, and then loading them again will be a waste of time and require extra effort for the staff. The other groom added that in some vehicles the equipment is placed in back side of the vehicle, so in limited time it will be hard to unload and reload both the equipment and horses and . Therefore, management of resting areas is a perfect idea.

4.1.8. Transportation-Related Risk

Carrying horses by any means of transportation can be another source of adverse consequences. Transportation can lead to the development of behavioral and

health problems due to physical and mental stressors during or after travelling by road. Table 4.18 shows the transportation-related risk factors. The interior vehicle temperature, humidity and level of environmental pollutants may change affectedly during the journey.

Scheduling time of travel according to competition programs, the weather conditions, or day and night time are taken into consideration by the participants. According to coaches, it is better to send the horses to the destination a few days in advance of the competition. This will help horses to rest and adapt to the new environment. Providing the schedule planning and other relevant information to the destination is an essential. Horse facilities such as box, hay, water and bedding must be made ready before horses arrive at the destination. Thus, they will be able to feel relaxed after a long journey.

Table 4-18 Quotes for Transportation-related Risks

Risk factor	Power quotes
Planning of transportation time: Any risk factor related to schedule travel	“A rest program must be included in the journey” “Managing travel time according to the season” “Travelling according to the competition program”
Planning for healthy travel: Any risk factor related to horse’s health	“Programing Journey break to avoid losing weight” “Planning proper resting time during a prolonged journey”

Travelling in day or night time is decided by the coach or the owner. For instance, Groom 3 disagreed with traveling in day time under hot weather, and Groom 2 added that it is better to transport at night and arrive at the destination in the morning, gaining

an extra day. Company owner, based on personal experience, stated that travelling in day time is safer because the driver's awareness capability will be greater than that during night time. He also added, *"Before each loading we check the weather conditions, especially in winter seasons, and make our program accordingly"*.

4.1.9. Vehicle-Related Risk

Majority of the behavior-related problems in horses are associated with the vehicle design. Horse's orientation inside the vehicle, ramp design, quality and size of dividers can affect horses. Horses might exhibit anxiety when approaching the vehicle or moving onto the ramp, regardless of their level of experience. However, minimum design standards for horse transportation vehicles are taken into consideration in Turkey.

Vehicle design is indicated as a vital aspect that affects the entire temperament and physical behavior of horses. Design of the vehicle must be according to the standard length and height, and also should include air conditioning to control the interior climate. Safety is a necessity in design of the vehicle and essential for avoiding the use of any hazardous materials. The vehicles in Turkey are mostly customized in reference to foreign ones and are regulated by drivers. The drivers claim that they utilize all the aspects of safety in design and try to include all the required standards.

Almost all of the participants mentioned that the vehicle must have enough space to accommodate the horse's size, but it must be restrictive enough to control the horse's movement, since extra movement will prove problematic for vehicle stability and the other horses. In this regard, Rider 1 mentioned that he chooses the vehicle to be used for transporting horses based on the vehicle size and interior separators. Rider 2 said that the density of vehicle is an important factor, and that sometimes they pay

extra freight rates for transporting their horses in smaller numbers, as some of their horses have behavior problems and can kick or bite the other horses around them. This is why they leave a box empty to avoid the injuries.

Table 4-19 Quotes for Vehicle-related Risks

Risk factor	Power quotes
Climate control inside the vehicle: Any risk factor related to vehicle ventilation	“the windows and vents will open during ventilation, but in reference to the direction of the wind”
Vehicle Design: Any risk factor related to assortment of horses, horse orientation in the vehicle, interest of owners, space limitations in the vehicle, standardization of vehicle design, vehicle ramp design	“choosing the vehicle depending on the size of horses” “facing the horse in the direction of vehicle movement is better” “design of the vehicle is the most important factor in horse transportation”

Customizing vehicle design for achieving balance and horse orientation during transportation was discussed by participants. Loading horses in a vehicle designed in counter travel direction will result in behavioral problems. Moving backward is used as a punishment for horses, and thus, placing them in counter travel direction causes a sense of mistreatment. Rider 1 mentioned that “it is better to carry horses by facing them in the movement direction of the truck.” This helps to control the balance during transportation and prevent falling during accelerations. Unlike most participants, Company Owner explained that “*if you load the horse facing backwards, it will prove helpful during accelerations*”. This position will help prevent the horse’s head from hitting the surface of the vehicle, and only the rear part of the horse will be affected.

The safety of horses in trailers is also important. Putting dividers between horses provides an extra safe environment for horses, and therefore, for the journey.

This result suggested by Driver 1 is also in line with the literature and complies with other participants in many ways, as Company owner says the design of the dividers inside the vehicle must be made of special materials. He exclaimed, *“I always used sponge material in upper parts and plastic mats in lower parts.”* In his sentiment, the material of the mat helps absorb the pressure of strikes in case of kicking. Driver 2 is concluded this sentiment by saying, *“the upper segments in head area are higher than the withers parts”*; so, it is used to prevent eye contact between horses. However, three of the participants claimed that no precautions are taken in vehicle design in Turkey. For instance, Groom 4 said that the trailers are not designed in compliance with the standards.

Replacing the facilities of horses inside of the vehicle such as tack and food among other things must be organized in a safe mood, and this is strictly associated with the vehicle design. In this regard, Coach 2 said, *“the facilities placed in vehicles must be on the front side of the vehicle”*. This provides ease when unloading horses in case of a problem, and also the facilities do not cause injuries or fear in horses due to falls.

Climate control in vehicles is mostly done by opening windows and vents. Veterinary mentioned that *“lack of ventilation management will accrue in relation to poor vehicle design”*. Rider 2 said that there must be appropriate openings on the top and the sides of the vehicle to control the climate and allow ventilation. According to Driver 2, the openings are used by taking the weather conditions into consideration. Company owner mentioned that the windows will open according to the number of horses inside.

According to Groom 4, using heater in vehicles is not recommended, because Rider 2 noted that horses never died due to cold weather except in WW II, so their

tolerance to cold weather is extremely high. Coach 2 notifies that wind inside the vehicle should be controllable, because it is a major problem for horse health. In this regard, the windows must be opened on one side to prevent wind. Rider 2 also mentioned that “use of *air conditioner systems is forbidden in horse transportation*”, by which he means that air conditioner is a problem that leads to diseases. Coach 2, however, said that “*air conditioner can be used with proper design.*” He is of the opinion that to avoid straight collision of cold air breeze, just the path of the air flow needs to be changed so that it does not blow directly on the horses. This is not a must, but can be used as an alternative.

According to Coach 2, there must be proper insulation in vehicle design to avoid environmental distraction noises. Driver 1 supported this idea by saying distracting noises from other vehicles, or heavy rain and thunder must be kept in check through good insulation. Coach 1 also mentioned that high temperature can be kept in check by good insulation in vehicle design to prevent sweating in horses. Rider 2 claimed that in cold seasons, horses should be covered with a thin blanket; but in some cases, falling blankets may cause further problems. As a solution, Coach 2 suggested that it is better to control the interior climate of the vehicle by considering proper ventilation and openings to prevent sweating and sense of discomfort during transportation.

The floor supposed to be supported with hay, strew or plastic mat. For instance, Rider 2 mentioned that the bedding supposed to be strewed to prevent slipping and unwanted odor. Company owner further noted that rubber mats are useful, whereas Driver 1 disagreed saying that strew is not preferred by the horses; “*when horses see strew, they just kick it away. But instead of strew, it is better to use hay*”, Driver1, in his interview, proclaimed that hay is better than mats in two ways: 1) horses eat and

spend some time playing with hay, and 2) the hay does not spread around and stays in place.

Veterinary participant said that the ramp is important, because it causes horses to slip and injure themselves. Mr. Mehmet supported this idea by saying that the elevation degree of the ramp is highly important in safe loading and unloading of horses. In Groom 4's idea, "*the degree of ramp elevation must be zero for easy transportation.*" He said that it is better to have a minimum degree to prevent injuries and problems. According to Driver 2, its vehicle has a technological ramp. This ability makes it possible to load and unload horses in places without proper ramp. Also, Driver 2 mentioned that "*there are protections on the sides of the ramps to prevent horses from falling down the sides*".

Groom 1 mentioned that "*physical injuries occur more frequently usually when horses become stressed and kick back.*" For this reason, he said it is better to remove the horseshoes before loading the horse. Rider 2 disagreed with this idea and claimed, "*removing horseshoes may lead to other problems.*" His idea was that without horseshoes, kicking will cause greater harm on the hoof.

CHAPTER 5

5. SUMMARY OF THE FINDINGS AND CONCLUSION

This study aims to address the risks in road transportation of horses in Turkey. In this regard, risk factors related to vehicles including floor surface, design, ramp angle, stocking density, factors related to horses including behavior, feeding, health problems, and factors related to transportation including time managing, insurance and documenting were identified. Findings showed that, in Turkey, all horse transportation activities are carried out by road. Unfortunately, a considerable amount of those activities cannot be regarded as safe or said to focus on health and general welfare of horses.

5.1. Theoretical Implications of the Study

The results of this study present significant theoretical implications. The findings showed how the risks involved in horse transportation affect the behavior and health of horses. Horses are transported more frequently than other animals for different purposes; these purposes include competition, breeding, leisure activities, sale or slaughter. Most of the horses become familiar with transportation since their foal period. Many horses that have never been transported throughout their lifetime are tolerant to being loaded on and confinement in a vehicle. For safe transporting of horses, the trucks, especially trailers, must be customized. In the literature, the trailers supposed to maintain certain standards and must be designed in accordance with horse anatomy. The vehicles should be fully-equipped with safety tools and provide a comfortable environment for horses²⁴. However, our data revealed that trailers do not

²⁴ (“Tips for distance hauling,” 2011)

have any standards in Turkey. Unfortunately, most of the transports are done by carriers that are not professional and mostly have unsafe facilities. Some of the owners have their own vehicles that are safe for transporting horses.

With regard to safe transportations, there are some practices for loading, transit and unloading. Ramps are one of the important tools for loading and unloading horses. Most of the leg injuries and broken bones are related with the improper or lack of ramps during the loading and unloading processes. The data showed the unavailability of proper ramps in farms. Participants mentioned that they use hay bales around the ramp to avoid the horses from escaping from the sides.

In literature, inappropriate orientation can cause physical and psychological problems during transportation. According to researchers Stull (1997) and Baron (1991), if the horses are allowed to face backward, they fall down less and avoid coming in contact with partitions. The orientation of horses during transportation is discussed by participants. However, they mostly believe that it is better to carry the horses facing the flow of the traffic (facing front).

Literature mentioned that, horses can be loaded and unloaded during waiting times in rest areas (Padalino, 2016), but findings indicate that there is no place that horses can be unloaded in Turkey. The main problem for loading and unloading the animal during resting times is the lack of staff and suitable place. There needs to be sufficient staff to monitor the horses during unloading, loading and resting. Having no available tools and facilities cause waste of time and effort.

One of the important factors that affect horse welfare during transportation is the driver's ability and style. The driver's experience and training are two main categories in horse transportation. Drivers must pass a mandatory certification test in order to

transport horses. However, interviews with the participants showed that majority of the problems occur due to lack of proper training and experience.

The literature mentioned the importance of having a veterinary accompanying the horse during travel (Cregier, 2009). Having an experienced veterinary service in the vehicle can facilitate the loading and unloading processes. This service can also help deal with horses with difficulties. However, the participants claimed that there is no veterinary available in vehicles because of the cost considerations in Turkey. Additionally, horse owners are not aware of the importance of having a veterinary during the journey for the horse welfare.

The literature points out the importance of disinfecting the vehicles (Sharon, 2012). The hygiene of the tools is strongly connected with the horse welfare. It is well-known that dirty trailers can cause diseases. Disinfection of the trailer decreases the amount of unwanted and hazardous material that the horse could inhale. Participants in this study accepted the significance and importance of cleanness and disinfection of the vehicles. Participants also mentioned that the drivers do not pay enough attention to the cleanness of the vehicle. Moreover, they agree that drivers cannot be forced to clean the trailers. The solution is to enforce this process by law.

Existing in literature, Cregier (2009) notes that providing safe access for handlers to reach and control the horses inside the vehicle must be considered during loading and unloading process. Otherwise, it can lead to dangerous situations for the handlers. Drivers' safety and security is one of the main risks discussed in analysis. Unfortunately, handlers do not pay due attention to the safety procedures during transportation. Also, another risk is the deviation of drivers from the resting procedures and travel plan during the transportation.

Proper ventilation is a vital factor to keep horses cool and to provide clean air during the journey. The literature discussed providing indirect fresh air, pumping out unwanted odor, venting out dust, and increasing the air quality by ventilation, Leadon (2008). The vehicles must have particular ventilation equipment to control the interior temperature. According to the participants, the climate control inside vehicles frequently done through opening windows. Lack of ventilation systems in trailers is related to the poor vehicle design. Majority of the participants do not support using air conditioning inside the vehicle; they think that the cold air breeze would cause health problems. In this regard, customizing the air conditioning system in addition to the breeze flow direction could be a solution.

Unlike humans, horses can hear high frequency sounds, which can disturb and frighten them (Padalino, 2015). Sounds like dog barking, sounds from other vehicles and machinery could increase the stress and decrease performance in horses. So, trailers must have good sound insulation systems. According to the participants, there is no consideration in vehicle design regarding noise insulation in Turkey.

Literature exhibited that proper documentation and planning are important in transporting horses²⁵. Having a complete travel itinerary, preparing required documents, and obtaining the necessary signatures from authorized officials before loading and checking them after unloading are crucial. Participants agreed that proper documentation is not completed as required by law. Most of the horse transportation is done without authorized signatures. Participants claim to have more and strict auditing in this process. It is the high level of bureaucracy that gives rise to said documentation problems.

²⁵ (“Live transport”, 2012).

Another missing requirement in transporting horses is insuring the animals in Turkey. In most of the European countries, it is mandatory to insure the animals, the vehicle and the travelling staff (Cregier, 2015). However, only the vehicles are insured by law in Turkey, but this policy does not cover the animal and the staff. Insuring the animal and the staff is arbitrary. Participants claim that since not all the owners are aware of the importance of the insurance, they do not buy the necessary coverage. The owners are hesitant because extra coverage costs extra money.

In conclusion, we found that some risks appear clearly in horse's road transportation in Turkey. These main categories can affect horse welfare and performance in competitions. The problems are mostly seen in vehicle design with regard to the insulation of irritating sounds, ventilation, staff access in case of problems, vehicle safety equipment like ramps, and inappropriate orientation of horses during transportation. Lack of rest areas between destinations and access to veterinary in long journeys are another main risk. The importance of driver and staff education, and refreshing their knowledge is not taken into consideration according to the survey. Lack of proper and careful disinfection was clearly identified during the interviews and observations. Preparing documents before loading and unloading the horses and the lack of insurance for horse transportation are another important risk category that was identified in this study focusing on Turkey.

Coupled with the risks determined in line with the literature review and interviews, some other risks are also taken into consideration based on my observations while collecting information. The lack of professional designers in Turkey prompted the industry to use foreign vehicles. Trucks supplied from other countries are too expensive and not everyone can afford it. The lack of special materials for designing in Turkey is another problem in producing standard vehicles. Another main problem

is the lack of proper rest areas between cities where the competitions are held. According my observations, during the trips I could not find any special rest areas in Turkey.

5.2. Managerial Implications of the Study

This study highlights the importance of transport regulations for livestock in Turkey. Numerous risk factors are introduced in transporting horses in this study. Stakeholders need to take these risks into consideration and proactively generate resolution strategies. Horses are sensitive and huge animals to transport; thus, changing their location also changes their behavior significantly. One should be aware of the fact that transporting horses for different competitions, changing their food, water and weather conditions will affect their performance and welfare. Also, one should be aware that changing their location change their behavior significantly.

Training is important in the horse business, so stakeholders including owners, grooms, drivers, coaches and veterinaries should be licensed properly. To develop the study, having knowledge about horses and the regulations for transporting livestock in Turkey is necessary.

There is an insurance system for animals in Turkey. However, this system is outdated and needs to be updated. Animal rest stops should be built for proper transportation of horses. The horse business is expanding in Turkey. Like any other growing economic sector, horse market should also get enough talent and financial support from the public. Only in this way will the industry grow and feed the sub-industries. Participants added that having an association that regulates horse

transportation and promotes the horse industry is essential. So, these risks must be taken into consideration and proactively solved.

5.3. The Limitations of the Study and Further Studies

In this study, we focus on horses in and collect data solely from Turkey. Measuring and achieving best practices in transporting horses sometimes requires considering conflicting endorsements. Data can be collected from other countries in order to make comparisons. During research period, we provided limited data from associations and federations. Lack of data recording was a big challenge for the study. Studies focusing on regulations and standards may contribute to developing better regulations to fill the existing gaps.

Further study is needed in order to identify educational needs and develop standards for animal-related accident emergencies (Cregier, 2015). Although our intention was to incorporate all the stakeholders related with horses, we were unable to find enough number of participants in horse veterinary and owner areas. So, further research is recommended on the horse transportation risks and their solutions from the viewpoint of veterinaries and owners. My data is only based on horses. However, other economic animals are also transported, so this study should be repeated for other animals as well. Other animals can also be investigated in further studies.

APPENDIX

#	Themes	Questions check list				
		Processes	Difficulty /problems	Risk	Solution	Alternative Solutions
1	Loading -----					
2	Unloading -----					
3	Poor Welfare Problems					
	Disease Problems					
	Injuries Problems					
4	Vehicle Related Problems					

5	Veterinary Control -----					
6	Pre-Loading					
	Thorough Loading					
	Unloading					
7	Transport					
	----- The Horse Stressors					

8	Feeding Issues (during transport and breaks)	Food							
		Water (Dehydration)							
		Loading Density Problems in Horse Transportation							
		Diseases Problem from Other Horses							
9	Vehicle Qualification	Disinfection of Vehicle from Other Horses							
		AC, Ventilation, Climate Control							
		Transport Duration							
10	Time Management (esp. for horse's welfare)	Journey Breaks							
		Waiting Times							
11	Insurance	-----							
12	Implementation of regulations	-----							
13	Do You Have Anything to Add? Any Questions or Concerns Will Be Helpful.	-----							

REFERENCES

- Adi, B. (2019). <https://www.questionpro.com/blog/qualitative-research-methods/>.
- Adolfo Paz Silva, Maria Sol Arias Vazques. (2014). *Horse breeding, health disorders and effects on performance and behavior*. New York: Animal science, issue and professions.
- Alberghina D, Medica P, Cusumano F, Fazio E and Ferlazzo A. (2000). Effects of transportation stress and influence of different distance and age on beta-endorphin, ACTH and cortisol levels of horses. . *Proceedings of the 34th International Congress*, (p. 108). Florianopolis, Brazil: International Society for Applied Ethology.
- Aradom, S. (2013). *Animal Transport and Welfare with special emphasis on Transport time and Vibration*. Swedish University of Agricultural Sciences.
- Atock, M.A, Williams, R.B. (1994). Welfare of competition horses. *Revue scientifique et technique (International Office of Epizootics)*, 217-232.
- Aykinon, H. (2018, June 04). <https://vergidosyasi.com/2018/06/04/at-yarisinda-kazanilan-ikramiyeden-ne-kadar-vergi-kesilir/>. Retrieved from At yarisinda kazanilan ikramiyeden ne kadar vergi kesilir: <https://vergidosyasi.com/>
- Barbara, L. Smith, J. H. Jones, G. P. Carlson, J. R. Pascoe. (1994). Body position and direction preferences in horses during road transport. *Equinw Veterinary Journal*, 374-377.
- Baron, A. (1991). Avoidance and punishment. In: Iversen, I.H., Lattal, K.A. (Ed), *Experimental analysis 767 of behavior*, Elsevier, New York, USA, pp. 173-217. *Elsevier*, 173-217.
- Bashir, M. (2008). Reliability and Validity of Qualitative and Operational Research Paradigm. *Pakistan Journal of Statistics and Operation Research*.
- Bernard, H. (1988). *Research Methodin Cultural Anthropology*. Beverly Hills: Sage.
- Boehm, , R. (1998). Disinfection and hygiene in the veterinary field and disinfection of animal houses and transport vehicles. *Int. Biodeter. Biodegr.*, 41, 217-224.

- Clarkson, N. (2017, 7 10). <https://www.horsetalk.co.nz/>. Retrieved from <https://www.horsetalk.co.nz/2017/07/10/world-horse-population-60-million/>.
- Cockram , M. (2007). Criteria and potential reasons for maximum journey times for farm animals destined for slaughter. . *Applied Animal Behaviour Science*, 234-243.
- Cockram MS, Kent JE, Jackson RE, Goddard PJ, Doherty OM, McGilp IM, Fox A, Studdert-Kennedy TC, McConnell TI and O’Riordan T. (1977). Effect of lairage during 24h of transport on the behavioural and physiological responses of sheep. . *Animal Science* 65, , 391–40.
- Cockram MS, Ranson M, Imlah P, Goddard PJ, Burrells C and Harkiss GD. (1994). The behavioural, endocrine and immune responses of sheep to isolation. *Animal Production* 58, 389–399.
- Cregier, S. (1982). Reducing equine hauling stress: a review. *J. Equine Vet. Sci.*, 2(6), 187-198.
- Cregier, S. (2009). *Best Practices: Surface Transport of the Horse*. Animal Transportation Association, AATA Education Committee.
- Cregier, S. (2015). *Non-Commercial Horse Transport: New Standards for Trailers in Canada*. Charlottetown, Canada: University of Prince Edward Island Charlottetown, Canada Join institution .
- Creswell, J. W. (2014). *Reserch Design, Qualitative, quantitative, and mixed methods approaches*.
- Darth, A. (2014). *Identifying causes and preventing injuries to horses*. . Swedish University of Agricultural Sciences.
- EuropeanCommission. (2002). *The welfare of animals during transport (details for horses, pigs, sheep and cattle)*. European Commission Health & Consumer Protection Directorate-General.
- Fazio, E., Medica, P., Cravana, C., Ferlazzo, A. (2013). Cortisol response to road transport stress in calm and nervous stallions. *J. Vet. Behav.: Clin. Appl. Res.* 8,, 231-237.

- Flick U, Von Kardorff E, Steinke I. (2004). *A Companion to Qualitative Research*. Thousand Oaks: Sage Publications Ltd;.
- Foreman, J.H. and Ferlazzo, A. (1996). Physiological responses to stress in the horse. *Pferdeheilkunde* 12, 401-404.
- Foss, M. and A. Lindner. (1996). Effects of trailer transportation duration on body weight and biochemical variables of horses. 435-437.
- Fowler, M. (1995). *Restraint and Handling of Wild and Domestic Animals*.
- Friend, T. (2001). 2001. A review of recent research on the transportation of horses. *Journal of Animal Science*, 79, 32- 830 40.
- Gade PB and Christensen L. (1998). Effect of different stocking densities during transport on welfare and meat quality in Danish slaughter pigs. *Meat Science*, 48, 237–247.
- Gade, Christensen . (1998). Effect of different stocking densities during transport on welfare and meat quality in Danish slaughter pigs. *Meat Science*, 48, 237–247.
- Gallicano, T. (2013, July 22). *An example of how to perform open coding, axial coding and selective coding*. Retrieved from <https://prpost.wordpress.com/2013/07/22/an-example-of-how-to-perform-open-coding-axial-coding-and-selective-coding/>: <https://prpost.wordpress.com/>
- Giovagnoli, G. (2008). *Manuale teorico-pratico sul trasporto del cavallo*. Milano, Italy.
- Guide to good practices for the transport of horses destined for slaughter* (Vol. 12). (2018). Animal Transport Guide.
- Hall, S.J.G. and Bradshaw, R.H. (1998). Welfare aspects of transport by road of sheep and pigs. *Journal Applied Animal Welfare Science.*, 1, 235-254.
- Hotchkiss, J.W., Reid, S.W., Christley, R.M., (2007). A survey of horse owners in Great Britain regarding horses in their care. Part 2: risk factor for recurrent airway obstruction. *Equine Vet. J.*, 39, 301-308.

- Houpt, K.A., Leib, S. (1993). Horse handling and transport. *Livestock handling 860 and transport, CAB international*,, 233-252.
- JC Petherick, CJCPhillips . (2009). Space allowance for confined livestock and their determination from allometric principles. . *Applied Animal Behaviour Science* 117, 1-12.
- Jessica Renshaw, J. Richard Nottingham. (2012). *Safe Trailering and Transportation of Horses*. Maryland: University of Maryland Extension.
- Jones J.H., J. (1999). Effects of Transport on Stress and Disease in Horses. . *Conf. Proc 18th Annual Meeting AESM*. Reno, Nevada.
- Jones, W. (2003). Transporting horses: minimizing the stress. . *Journal of Equine Vet. Sci.* , 543-545.
- Judge, N. (1969). *Transport of horses*. Aus.
- Kaneene, J.B., Whitney, A.R., Miller, R.A. (1997). The Michigan equine monitoring system. II. Frequencies and impact of selected health problems. *Preventive Veterinary Medicine* , 277-292.
- Kay, R., Hall, C. (2009). The use of a mirror reduces isolation stress in horses being transported by trailer. *App. Anim. Behav. Sci.* 116, 237-243. *App. Anim. Behav. Sci.*, 116, 237-243.
- Kvale, S. (1983). The Qualitative Research Interview: Aphenomenological and a Hermeneutical mode of understanding. *Journalof Phenomenological Psychology*, 171-196.
- Leadon, D. (1994). *Transport stress*. In" *The Athletic Horse*" . Philadelphia.
- Leadon, D., Daykin, J., Blackhouse, W., Frank, C., Attock, M.A. (1990). Environmental, haematological and blood biochemistry changes in equine transit stress. *American Association of Equine Practioners*, (pp. 485-490).
- Lindner, A. (2000). *Transport von Pferden*.
- Live transport: welfare regulations*. (2019, 8 29). Retrieved from <https://www.gov.uk/guidance/farm-animal-welfare-during-transportation>
- Longrigg, R. (1972). *The history of horse racing*. New York: Stain & Day.

- Mansmann, R.A., Woodie, B. (1995). Equine transportation problems and some preventives: a review. . *International Conference on equine rescue.*, (pp. February 11-12, 141-144.). Southern Pines, North Carolina.
- Mars, M.E., Keisling, H.E., Ross, T.T., Armstrong, J.B., Murray, L. (1992). Water acceptance and 898 intake in horses under shipping stress. *Journal of Equine Vet.*(12), 17-21.
- Maudsley , G. (2011). Mixing it but not mixed up: mixed methods research in medical education (a critical narrative review). *Med Teach*, 92-104.
- McCammon, B. (2019). *www.designresearchtechniques.com*. Retrieved from Semi-Structured Interviews: <http://designresearchtechniques.com/casestudies/semi-structured-interviews/>
- Miles B, Huberman AM. (2009). *Qualitative data analysis*. Thousand Oaks: Sage Publications Ltd;.
- Munsters, C. (2013). How Challenging is A Riding Horse's Life. *Dissertation Utrecht University, Faculty of Veterinary Medicine*,. Utrecht.
- Natalie K. Waranav, Derek Cuddefordb. (1995). Effects of loading and transport on the heart rate and behaviour of horses. *Applied Animal Behaviour Science* 43 , 71-81.
- Nielsen B.L, Dybjaer L, Herskin M.S. (2011). Road transport of farm animals: effects of journey duration on animal welfare. *Animal*, 5(3).
- Norman K. Denzin, Yvonna S. Lincoln. (2008). *The Landscape of Qualitative Research*.
- Oikawa M and Kusunose R. (1995). Some epidemiological aspects of equine respiratory disease associated with transport. *Journal of Equine Science* , 25–29.
- Padalino, B. (2015). Effects of the different transport phases on equine health status, behavior, and welfare: A review. *Journal of Veterinary Behavior*, 10, 272-282.
- Padalino, B. Raidal, SL. Hall, E. Knight, P. Celi, P. Jeffcotta, L. and Muscatelloa, G. (2016, October). Survey of horse transportation in Australia: issues and

practices. *Australian Veterinary Journal*, 94(10), Australian Veterinary Journal Volume 94, No 10, October 2016.

Pritchard, J.C., Lindberg, A.C., Main, D.C.J., Whay, H.R. (2005). Assessment of the welfare of working horses, mules and donkeys, using health and behaviour parameters. . *Preventive Veterinary Medicine* , 265-28.

Pryor, J. (1982). *Transportation of the horses by sea during the era of the crusade: eight century to 935 1285 A.D.* .

Raidal, S., Love, D.N., Bailey, G.B. (1996). Effects of posture and accumulated airway secretions on tracheal mucociliary transport in the horse. *Aust. Vet. J.*, 73, 45-49.

Roberts, T. (1990). Staying upright in a moving trailer. *The Equine Athlete*, 2-8.

Smith, B.L., Jones, J.H., Hornof, W.J., Miles, J.A., Longworth, K.E., Willits, N.H., . (1996). Effects of road transport on indices of stress in horses. . *Equine Vet. J.* , 28, 446-454.

Stark, F. (1945). *The Southern Gates Of Arabia*. London: Penguin Books.

Stull, C. (1999). Responses of horses to trailer design, duration, and floor area during commercial transportation to slaughter. *77 (11)*, 2925-2933.

Stull, C. (Stull, C. 1997.). Physiology, balance, and management of horses during transportation. *The Horse Breeders and Owners Conference* (pp. 10-12). Alberta: Red, Deer.

T. Knowles, S. Brown, S. Pope. (2009). Response of untamed (unbroken) ponies to conditions of road transport. *Animal Welfare* .

Türkiye Jokey Kulübü. (2011, 10 28). <https://www.posta.com.tr/at-kosar-tjk-kazanir-94137>. Retrieved from At koşar TJK kazanır: <https://www.posta.com.tr/>

Tarrant, P. (1990). Transportation of cattle by road. *Appl. Anim. Behav. Sci.*, 28, 153-170.

Tinker, M.K., White, N.A., Lessard, P., Thatcher, C.D., Pelzer, K.D., Davis, B., Carmel, D.K.,. (1997). Prospective study of equine colic risk factors. *Equine Vet. J.*, 29, 454–458.

- Tips for long distance hauling. (n.d.). Retrieved from [https://thehorse.com:
https://thehorse.com/119247/tips-for-long-distance-hauling/](https://thehorse.com:https://thehorse.com/119247/tips-for-long-distance-hauling/)
- Transporting horses by road. (2018, 10 23). Retrieved from
[https://www.businesscompanion.info/
https://www.businesscompanion.info/en/quick-guides/animals-and-
agriculture/](https://www.businesscompanion.info:https://www.businesscompanion.info/en/quick-guides/animals-and-agriculture/)
- Transporting Horses by Road and Air Recommendations for Reducing the Stress.
(2018, 11 03). Horse Report.
- Turkey – Beautiful Horses Country. (2019, 03 12). Retrieved from
[http://www.equist.org: http://www.equist.org/english/turkey-beautiful-horses-
country.htm#atsahibi](http://www.equist.org:http://www.equist.org/english/turkey-beautiful-horses-country.htm#atsahibi)
- Victoria", ". (2018, 10 26). *Agriculture Victoria*. Retrieved from
<http://agriculture.vic.gov.au/home>.
- Waran, N. (1993). The behaviour of horses during and after transport by road. *Equine Vet Educ*, 129-132.
- West, R., French, D., Kemp, R., Elander, J., (1993). Direct observation of driving, self-reports of driver behavior, and accident involvement. *Ergonomics* 36, 557-567.
- White, A., Reyes, A., Godoy, A., Martinez, R. (1991). Effects of transport and racing on ionic changes in thoroughbred race horses. *Comp. Biochem. Physiol.* , 99A(3), 343-346.
- Whiting, T. (1999). Maximum loading density of loose horses. *Can. J. Anim. Sci.* 79, 115-118.
- Wood, O. (2017, June 13). *Transporting Horses by Air for Dummies*. Retrieved from
[https://www.ridewiththequo.com:
https://www.ridewiththequo.com/blog/transporting-horses-by-air](https://www.ridewiththequo.com:https://www.ridewiththequo.com/blog/transporting-horses-by-air)
- Zubin , Austin, Sutton, Jane . (2014). Qualitative Research: Getting Started. *Can J Hosp Pharm*.

Qualitative Data Analysis, (21 April 2019), Retrieved from:

<https://www.achievability.co.uk/evasys/how-to-effectively-carry-out-a-qualitative-data-analysis>

Live transport: welfare regulations, (25 Feb 2019), Retrieved from

<https://www.gov.uk/guidance/farm-animal-welfare-during-transportation#history>

Tips for distance hauling, (29 May 2019), retrieved from

<https://thehorse.com/119247/tips-for-long-distance-hauling/>

Transporting Horses by Road and Air Recommendations for Reducing the Stress, (13 April 2018), Retrieved from: <https://www.vetmed.ucdavis.edu/>

Safe Trailing and Transportation of Horses (20 May 2019), Retrieved from:

<https://extension.umd.edu/sites/extension.umd.edu/files/docs/programs/horses/FS-932%20Safe%20Trailing%20and%20Transportation%20of%20Horses.pdf>