

Safety Awareness in Mississippi 4-H Horse Programs

Injuries, even fatalities, can occur when working with horses, and children may be at an increased risk (Cripps, 2000). The incidence of children needing medical attention after falling from a horse while riding may be as high as 85 percent (Altgärde, Redéen, Hilding, & Drott, 2014).

States such as New York and Florida have laws mandating the use of helmets in specific settings. In New York, all riders under 14 years of age must wear a helmet when riding on roadways. Similarly, in Florida, children under 16 must wear a helmet when riding on roadways, public trails, and in parks. Washington and California have local city ordinances regarding the required use of a helmet when riding in public areas (Fershtman, 2011).

Mississippi 4-H'ers are required to wear helmets when participating in speed events and English classes. At all breed shows, helmets are mandatory for riders in hunter and over fences classes. Research regarding the public's knowledge of and intent to implement proper safety practices around horses is limited. Thus, the objectives of this study were to determine participants'

- ▶ existing horse safety practices,
- ▶ intent to practice horse safety in the future, and
- ▶ perceptions regarding potential regulations for mandatory safety education and helmet use in Mississippi.

In order to collect data concerning this topic, individuals at the 2018 Mississippi State 4-H Horse Show were asked to complete a survey concerning horse safety (IRB-18-239). Participants were asked to provide demographic information and indicate their perceived knowledge of horse safety. To determine subjective norms and intent, participants were asked to identify their existing horse safety practices in the past 6 months and their intent to practice certain safety activities when riding and working with horses in the next 6 months. Finally, participants reported their level of agreement to several statements regarding the necessity of safety equipment, mandatory safety education, and helmet use. These questions addressed participants' attitudes and perceived behavioral control.

Demographic Information of Participants

Of the 82 participants who completed surveys, 37 percent were male and 60 percent were female. Of the 65 respondents who identified as horse riders, 14 percent stated they were novice, whereas 52 percent were competent and 34 percent were expert. When working with horses as non-riders, 10 percent identified themselves as novice, 52 percent as competent, and 25 percent as expert.

Participants' Knowledge of Horse-Related Injuries and Safety

Risks to riders include falling, being thrown, and being dragged. Risks to handlers on the ground include being injured through biting, kicking, and crushing (Carmichael II, Davenport, Kearney, & Bernard, 2013). All participants were asked to indicate their likelihood of injury, on a scale of 1 being "always" to 5 being "never," when riding as well as working with horses for four categories (chest/abdomen, feet/legs, hands/arms, and head/neck). On average, participants responded that the likelihood of injury was most common in the chest/abdomen, followed by head/neck and hands/arms when riding horses (Table 1).

Table 1. Indication of likelihood of injury (1 = always and 5 = never) when riding and working with horses.

Area of Injury	Riding average	Working average
head/neck	3.2	3.45
chest/abdomen	3.5	3.46
hands/arms	3.2	3.07
feet/legs	3.0	3.1

These findings are in agreement with multiple studies that have shown head and extremity injury to be the most common among riders, along with thoracic and abdominal injuries (Lloyd, 1987; Bixby-Hammett & Brooks, 1990; Griffen et al., 2002). In more severely injured patients, the abdomen was the most common area of injury (for example, rib and clavicle fractures), as well as hemo/pneumothorax (air and/or blood in the chest cavity) (Carmichael II et al., 2013).

Similarly, respondents indicated that, when working with horses, the likelihood of injury was most common in the chest/abdomen, followed by the head/neck (Table 1). It is believed that one in five riders will receive a severe head or torso injury due to a fall at some point in their riding career (Chapman & Thompson, 2016). The most common cause of injury in unmounted handlers is kicking or crushing, which commonly causes injury to the chest and abdomen (Carmichael II et al., 2013). These findings indicate that the survey respondents are knowledgeable of their risk and likelihood of injury when riding and working with horses.

Participants' Existing Practices and Intent to Practice Horse Safety

Participants were instructed to indicate the frequency (always, very often, sometimes, rarely, or never) at which they performed a list of horse safety practices when riding horses in the past 6 months and their intent (very likely, likely, undecided, unlikely, or very unlikely) to perform those same practices in the next 6 months. Participants responded they rarely wore a helmet and were undecided as to whether they would wear one in the next 6 months. In addition, participants said in the past 6 months they very often rode in designated areas for riding but would be significantly more likely in the next 6 months to ride in designated areas such as a riding arena, horse trail, or grassy pasture (Table 2). This also indicates that respondents know about horse safety practices but at times may choose to not follow them.

Table 2. Participants' existing safety practices (1 = always and 5 = never) and intent to practice (1= very likely and 5= very unlikely) when riding horses.

Safety practice	Existing average	Planned average
Wear long pants	1.500	1.500
Wear heeled shoes or boots	1.518	1.407
Wear a helmet	3.922	3.532
Ride with a saddle (not bareback)	1.800	1.637
Ride with a bridle (not with a halter)	1.759	1.594
Ride in designated areas for riding (e.g., riding arena, horse trail, grassy pasture)	1.827	1.604

Similarly, participants were instructed to indicate the frequency with which they performed certain horse safety practices when working with horses in the past 6 months and their intent to practice those same tasks in the next 6 months. Participants' responses were that they were significantly more likely to wear long pants and hard-toed shoes or boots when working with horses in the future (Table 3). We can infer that participants have a positive attitude in regard to changing their behavior and

intend to follow safety practices. However, even though intention is a good predictor of behavior change, it does not guarantee it (Godin & Kok, 1996).

Table 3. Participants' existing safety practices (1 = always and 5 = never) and intent to practice (1= very likely and 5= very unlikely) when working with horses.

Safety practice	Existing average	Planned average
Wear long pants	1.597	1.436
Wear hard-toed shoes or boots	1.582	1.379
Use a lead rope attached to a halter	1.382	1.259
Approach horse at an angle between its head and shoulder	1.637	1.500
Feed treats from a flattened palm or a bucket	2.362	2.200

Level of Agreement with Proposed Rules and Regulations for Horse Safety

Participants were asked about their level of agreement (strongly agree = 1, agree = 2, undecided = 3, disagree = 4, strongly disagree = 5) to statements regarding horse safety. Ninety percent of participants agree or strongly agree that ongoing general horse safety education should be mandatory for 4-H'ers who ride or work with horses (Table 4). This indicates that people may have positive reactions and perceptions of a proposed rule to make horse safety education mandatory for young people riding or working with horses in Mississippi 4-H.

Participants were also asked to respond to the statement "minors (<18 years old) should be required by law to wear a riding helmet in Mississippi anytime they are mounted on a horse on public property." On average, participants responded that they agree but lean more toward undecided (Table 4). Participants varied greatly on their levels of agreement, creating a wide gap of answers from strongly agree (31.7 percent) to strongly disagree (17 percent). It should also be noted that 24 percent of participants said they were undecided on the

Table 4. Participants' level of agreement (1 = strongly agree and 5 = strongly disagree) with mandatory horse safety regulations.

Proposed statement	Average agreement
Ongoing general horse safety education should be mandatory for all 4-H youth who ride or work with horses.	1.536
Minors (younger than 18 years old) should be required by law to wear a riding helmet in Mississippi anytime they are mounted on a horse on public property.	2.670

statement. These findings indicate that many participants are unsure about a statewide law regulating helmet use. However, with the tendency to lean toward agreeing with the statement, a possible need for more informed horse safety awareness, especially in reference to helmet usage, may be warranted.

These findings offer an indispensable tool for Extension efforts across Mississippi for implementing horse safety education in 4-H horse programs. Campaigns attempting to reduce injury while riding and working with horses have been focused mostly on the use of helmets (Chapman & Thompson, 2016). However, the data illustrated here indicate a need for increased concern and use of other pieces of safety equipment such as long pants, hard-toed shoes or boots, and proper tack/equipment. Active Mississippi equine enthusiasts are aware of the risk involved when handling horses and have a positive attitude toward potentially changing their behaviors through educational outreach programs.

To improve horse safety awareness most effectively and potentially limit or reduce the likelihood of injury, 4-H'ers and their parents should be educated on horse safety practices and encouraged to follow them not only when at 4-H sanctioned events but also at home. In addition, participants in equine-related activities should be informed and knowledgeable about their risk of injury and how those injuries occur to help prevent them in the future.

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