

Crossing the Line: Adolescent Driving Safety Concerns for Dinwiddie County

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Introduction of Community Health Issue

In today's world, many people rely on automobiles for their primary source of transportation. With owning and driving a car comes great responsibility. Not all citizens who pursue this invaluable transportation method recognize the risk they carry every time they leave their house. Many do not realize how small, seemingly careless decisions can have a detrimental impact on them, those around them, and those in their community. Among these decisions is engaging in unsafe driving practices. Dinwiddie County, Virginia has recognized unsafe driving practices as a potential community health risk because of the increased incidence of accidents resulting in mortalities or morbidities. Nearly all of the injuries or deaths could have been prevented. Some of the known causes for this health concern include drivers who are speeding, distracted, or unrestrained. The particular cohort of concern is adolescent drivers. Risk factors specific to this age group of drivers include: education deficit, psychosocial development, and physical environment. According to the Center for Disease Control (CDC), the leading causes of teen crashes include: driver inexperience, drowsy driving, impaired driving, distracted driving, driving with teen passengers, nighttime driving, not using seat belts, and reckless driving (2016a; National Safety Council (NSC), 2016). Adolescents who participate in these unsafe driving practices, which can result in crashes, are a current health concern in Dinwiddie County.

Validation of Health Concern

Target Population and Community Factors

Adolescents ages fourteen to nineteen in Dinwiddie County are at risk for being injured or killed in automobile accidents. There are several environmental, geographic, and social issues that can contribute to the lessened safety of all inhabitants of the county, including adolescents.

Dinwiddie is a rural county and features many dirt roads or narrow paved road without lines defining one lane from the other. There is also a one-lane bridge and several other bridges that do not allow for the passage of two large vehicles at the same time. These mentioned road factors can all present as added challenges to driving in the county. There are no medical facilities in the county to treat injuries that could result from motor vehicle accidents (MVAs). Adolescents with minor injuries can be transported via EMS, but individuals with more serious injuries could face challenges in seeking care. Because of the heavily wooded areas in Dinwiddie, seriously injured people often have to be transported by ground to a place the Med-flight helicopter can land, further delaying hospital care. Some social concerns with adolescents and automobile safety are the number of adolescents driving older cars that have less safety factors. Older cars may or may not have airbags and do not have as high of a crash rating as newer model cars. However, these older-model cars may be the only automobiles adolescents can afford. Driving an older car with less safety features could lead to more severe or life-threatening injuries if in an accident.

Relevant Demographics and Trends in the Community

The rate of mortality and morbidity first seems low for adolescents involved in MVAs. As of 2013, there were 2,386 adolescents in Dinwiddie ages fourteen to nineteen (Virginia Atlas of Community Health (VACH), 2013). Of these 2,386, roughly 7%, or 175 adolescents, reported never or rarely wearing a seatbelt while driving or riding with others, which is a known contributor to mortality or morbidity (VACH, 2013). A Virginia Crash Report generated by Major Knott of the Dinwiddie Sheriff's Department reported that ninety-seven adolescents ages fifteen to nineteen were involved in reported car accidents during 2016 (Virginia State Police (VSP), 2016). Forty-six of these individuals sustained injuries in these accidents, and two of these individuals died as a result of their injuries (VSP, 2016). There was no police report data

generated for years prior to 2016. It is not reported if these individuals were restrained during the time of the accident or if speed was a factor, however, when looking at the crash statistics for the county at large, it is clear that both speed and safety restraint use play an important role in the outcome of the crash.

Comparison to State Data

The concern for adolescent safe driving practices is not only a countywide concern, but also is a statewide concern. The population of adolescents aged fourteen to nineteen for Virginia in 2013 was 656,868 (VACH, 2013). In 2015, forty-eight were killed in MVAs, and 6,316 were injured Virginia Highway Safety Office (VHSO), 2015). There has been a decrease in fatalities and an increase in injuries since 2012. In 2012, sixty-two adolescents fourteen to nineteen were killed in MVAs and 6,256 were injured (VHSO, 2012). One explanation for increased injuries from 2012 could be because there are fewer fatalities, yet more adolescents are surviving MVAs with only injuries. When comparing this state data to Dinwiddie County, 1.93% of the adolescent population in Dinwiddie was injured in MVAs and 0.96% was injured statewide in Virginia. Less than 1% of the Dinwiddie adolescent population in 2016 was killed in MVAs (VSP, 2016). Dinwiddie's mortality rate is nearly equivalent to the state statistic in 2015, which also is less than 1% (VHSO, 2015). While statistics indicate less than 1% of the adolescent population was killed, adolescent mortality as a result of MVAs is a concern for the county and state and serves as the driving force for more preventive measures.

Potential Consequences of Unsafe Driving Practices

Physical, Psychosocial, and Economic Consequences

Motor vehicle accidents resulting from unsafe driving practices can have many negative consequences. Physical consequences include life-threatening and non-life-threatening injuries

of the maxillofacial, abdominal, upper extremities, lower extremities, spinal cord, internal, and brain regions (Blincoe, Miller, Zaloshnja, & Lawrence, 2015). People can also suffer from whiplash injuries, especially those involved in rear-end collisions (Blincoe et al., 2015). Ejection and lateral impact collisions present an increased risk for thoracic injury in adolescents, specifically injury to the thoracic aorta; death can result if treatment is not received immediately (Mayo, Hackworth, & Billmire, 2014). According to the CDC, MVAs are also the leading cause of traumatic brain injuries (TBIs) in Americans aged five to twenty-four years (2016b).

Being involved in a car accident can have a significant impact on the mental health of the individual. With every experience being unique, it is important to recognize the possible psychosocial challenges that could arise. Post-traumatic stress disorder (PTSD) is a common occurrence after a serious MVA (Beck & Coffey, 2007). These individuals can have intrusive flashbacks of the accident, or they could aim to avoid thoughts or situations that could relate to the accident. The individual may show reluctance to drive and can have recurring dreams about the accident. They may also experience detachment from others and display absent emotions. While other psychosocial consequences, such as mood disorders, can occur, PTSD is the most reported (Beck & Coffey, 2007). The psychological impact of MVAs, if not combated with cognitive behavioral therapy or psychotherapy, can significantly impact a person's quality of life and can result in a need for lifestyle changes. Dinwiddie County does not currently have mental health services offered to the community. This could present a problem for someone experiencing PTSD attempting to seek clinical mental health counseling. Individuals in the county will have to seek services outside of the county, as there are mental health services available within the region and state to address mental health concerns, including PTSD.

MVAs have a substantial economic impact. Economical data specifically for MVAs

caused by adolescents was unavailable, but state and national data was available for MVAs involving all age groups. In 2010 alone, Virginia spent an estimated \$4,998,000 on all motor vehicle crashes. Contributors to these costs include medical expenses, property damage, and automobile repair. The nationwide economic cost in 2010 was \$784,000,000 for all motor vehicle crashes (Beck & Coffey, 2007). The state and national data included only accidents reported to police, as it is important to remember some choose not to report accidents. The economic cost for MVAs in Dinwiddie County was unavailable. Because of the incidence rate of MVAs with adolescent involvement, accidents could present a significant addition to Dinwiddie County's expenses. This further supports the need for preventive education for this age group.

Long-Term and Short-Term Consequences

MVAs have the ability to both end the life of or majorly impair an individual. There are some short-term, almost immediate consequences that can occur because of a MVA. Short-term consequences can include medical expenses, absence from school, loss of transportation vehicle, temporary discomfort, loss of consciousness, or minor injury (CDC, 2016b). Some of the short-term consequences of accidents can eventually turn into long-term consequences. An example of this would be medical expenses—if the extent of the injury is more severe than initially suspected or a sudden infection or unplanned healthcare event occurs, the patient's hospital stay can be extended, increasing the cost of the event. Other long-term consequences, aside from death, can include complicated medical stays, gross deformities, traumatic brain injuries, organ damage, spinal cord injury, and whiplash injuries. Traumatic brain injuries (TBIs) can have long-lasting effects on individuals. Effects include altered thinking or memory, movement, vision, or hearing. Individuals can also have permanent personality changes and may experience depression as a result of the brain changes that occur from a TBI. Short-term effects of TBIs can

include loss of consciousness, temporary amnesia, or altered mental status (CDC, 2016b). The community does not go unaffected. Aside from the financial costs, many community members rally together to mourn the loss of or support an injured teen. Some communities never completely heal from a traumatic accident involving the death of a teenager. Short-term and long-term consequences of motor vehicle accidents are concerning, especially in the high-risk driving adolescent population.

Evidenced-Based Literature Recommendations

Research Strategies and Recommended Services

Several states have employed programs to help provide education to adolescents. In Maryland, the Center for Injury Prevention and Policy (CIPP) created a Distracted Driving Prevention Program (Adeola, Omorogbe, & Johnson, 2016). Students in this program learned about the local trauma center and were able to interact with several medical professionals while completing this program. The idea of this program is to increase knowledge of distracted and unsafe driving practices and influence teen driving behaviors (Adeola et al., 2016). The results of this study showed the ability to influence behavior positivity and teen knowledge of safe driving.

A similar program, Be In the Zone, was created by the Children's Hospital at Vanderbilt (Unni, Morrow, Shultz, & Tian, 2013). This program involved small groups of adolescents from a school in Nashville, Tennessee. They participated in a half-day hospital-based experience. The objectives for this program were to increase overall awareness of teen risky driving behaviors and promote safe driving behaviors. "Preliminary results from this pilot program suggest that a strategy of combining hospital-school partnerships with a peer-driven educational approach can be effective in reducing texting while driving among teenagers in the short-term" (Unni et al., 2013). Both the Maryland and Tennessee studies included healthcare workers, including nurses,

to help teach the driver's educational programs in schools.

Prevention Strategies

One of the greatest primary preventive strategies to reduce the number of adolescent accidents is eliminating distracted driving through education. Some of the distractions worth noting include visual, manual and cognitive distractions (Adeola et al., 2016). Providing education to young drivers in a formal school setting can serve as a method to preventing MVAs. School nurses, coaches, resources officers, and teachers can provide factual information to adolescents through Driver's Educational Courses to aid in the prevention of risky, unsafe driving practices (McDonald & Sommers, 2016). Graduate Driver Licensing (GDL) Laws have shown a reduction in teen driver crashes through primary prevention. While each state's requirements are different, each state does employ some form of these laws. Virginia has a three-step program including: A learner stage, an intermediate stage, and a full privilege minimum age stage. These statewide preventive laws enforce nighttime driving restrictions, required hours of supervised driving, and passenger restrictions. The implementation of these laws has resulted in a reduction of the number of teen driver crashes. Secondary prevention strategies include police using radar to detect and monitor speed, having seat belt traffic stops, and enforcing the texting and driving law to help screen and identify unsafe driving practices before they cause harm (Governors Highway Safety Association (GHSA), 2016).

Evidence-Based Roles and Responsibilities of Nurses

Nurses play a pivotal role in helping adolescents establish safe driving practices by understanding the consequences of safety decisions. Research conducted by Koestner (2013), indicated that the most influential people on adolescents' driving practices were their parents. Students were then asked to respond to a survey identifying their parents' behaviors while

driving. The results of this study support the published literature on the parents' ability to influence their adolescents' driving practices (Koestner, 2013). Knowing this information is crucial for nursing education techniques. Based on this information, nurses should inquire about the parent's safety practices and educate them if they are not practicing in the safest manner. The nurse should focus on the adolescent, but should also include the parent in the teaching, because adolescents look to their parents as role models for behavior. School nurses could also aim to include parents in teaching for school-based programs. For effective teaching, strong partnerships are needed between the nurse and parents, teachers, coaches, and parent-teacher organizations (Koestner, 2013). For maximum effectiveness, this teaching should be presented with a family-centered care approach (Kyle & Carmen, 2017).

The nurse should also recognize the strong presence of social media and technology in today's society. The school nurse and public health department nurse alike can use this as a way to educate the adolescents within the community. Koestner (2013) believes that Facebook may have value when posting injury-prevention messages, based on previous studies that have shown where adolescents receive and share most of their information. Facebook may allow the adolescent to place meaning and value on the importance and seriousness of the issue, because of their reliance on the site for information. The nurse can intercede with this form of learning by making sure that factual, reputable articles are featured on the high school's Facebook page as well as the county's page.

Assessment of Community

Health Resources and Services in Community and Agencies Promoting Health Prevention

Despite being a rural community, Dinwiddie County has several resources that can serve as assets to healthcare and prevention. The best primary prevention resource in the county is

Dinwiddie High School's Driver's Education Class. The Dinwiddie County Sheriff's Department aims to provide secondary health prevention by screening drivers with use of radar, traffic stops, and zero tolerance for unrestrained vehicle passengers. The Dinwiddie Health Department does not focus on traffic safety. There are safe driving pamphlets available in the lobby; however, the Health Department's website re-routes the user to the Virginia Department of Health to seek out additional health promotional materials. Other health resources in the community include the Dinwiddie Medical Center, Fire Department, and Emergency Medical Services (EMS). Southside Regional Medical Center (SRMC) serves as the closest hospital located twenty minutes from the centrally located high school, while Virginia Commonwealth University's Medical Center (VCU), a level one trauma hospital, is forty-five minutes from the high school. Minor injuries could be treated at SRMC with transportation via EMS, while immediate life-threatening injuries are flown via Med-Flight to VCU.

Professional Services Offered in the Community

Dinwiddie County High School serves as the best primary prevention resource in the county, while the sheriff's office focuses more on secondary prevention. The curriculum taught at the high school has remained the same during Coach S. Wynn's sixteen years as a driver's education teacher, with the exception of this year (personal communication, March 8, 2017). The state of Virginia changed the curriculum guide this year and included an extra module. The curriculum also has a stronger focus on texting and driving. Currently, students have eighteen weeks of classroom instruction using this curriculum, along with seven hours on the driving range behind the wheel, and six hours on the road with a teacher. The students also have to get forty-five hours of parent-supervised driving experience that is documented in a signed driving log; fifteen of these hours must be completed at night (S. Wynn, personal communication, March

8, 2017). If the student meets these requirements and pays a one hundred dollar fee, they are eligible to receive their driver's license. Coach Wynn (personal communication, March 8, 2017) reports that they show commercials on texting and driving as well as other safety promotion videos during the course that present information from victims and the victim's families. The veteran teacher reports that the curriculum is set up to make the student successful, but that success is ultimately up to the student (S. Wynn, personal communication, March 8, 2017).

The Dinwiddie County Sheriff's Office has taken initiative in promoting safe driving practices for the county as a whole. Major W. Knott (personal communication, January 25, 2017) of the county's sheriff's office confirms that seat belt usage, speeding, and distracted driving are the top three concerns for traffic safety in the county. The county receives grant funding for seatbelt enforcement efforts and completes surveys in the county to determine current seat belt usage. They complete these surveys as part of the national "Click It or Ticket It" campaign that is a safety promotion effort from the National Highway Transportation Safety Commission and the Department of Motor Vehicles (W. Knott, personal communication, January 25, 2017). The county has also recently increased their presence on roadways that have heavy traffic before and after school hours to deter speeding (C. Dooley, personal communication, March 10, 2017). Major Knott (personal communication, January 25, 2017) shared that he is aware of the problem in the county with speeding and distracted driving among the younger drivers, and in his twenty-seven years of service, he has seen these unsafe driving practices injure or kill adolescents in the county. School resource officer, C. Dooley (personal communication, March 10, 2017), adds that he sees a direct correlation between accidents and distracted drivers. He also provides a presence in the driver's education classroom for several modules. The sheriff's department is currently promoting safe driving practices with traffic checks, radar usage, and public education.

Community Gaps in Nursing Care and Services

Health department nurses and school nurses are currently not involved in primary or secondary prevention methods for adolescent safe driving practices in the county. Nurses can promote primary prevention by educating parents and utilizing social media to share information, as both have been proven methods of increasing adolescent compliance and awareness of safe driving practices. Nurses could speak to students in greater detail about the health risks associated with the safety decisions made behind the wheel. Dinwiddie High School (DHS) could partner with the neighboring hospital, SRMC, to create a program for students to allow them to speak with more medical professionals. As Coach Wynn mentioned, DHS could also have the range location closer to the school to eliminate wasted time spent walking. DHS could also have more of a variety of driver's education vehicles, as many people in Dinwiddie County drive trucks or other larger vehicles. These gaps in both nursing care and community services could help lessen the occurrence of adolescents in MVAs.

Conclusion

Adolescents participating in unsafe driving practices are a current concern for Dinwiddie County. This concern is evidenced by the mortality and morbidity rates in the county. Several factors contribute to the rate of adolescents being involved in accidents in the county, but many can be combatted with increased preventive education and partnerships with neighboring resources. Based on previous evidenced-based research, the inclusion of nurses in the Driver's Education program could serve as an asset to the curriculum. The school nurse is an invaluable resource that the high school does not currently utilize. The nurse should be involved in planning and implementing healthcare promotion. The occurrence of MVAs involving adolescent drivers is a preventable concern that merits further investigation and continued health promotion.

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