**Addressing Traffic Related Incidents in St. Johns County, FL using the Social Ecological Model**

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**The Health Issue and Target**

St. Johns County is known for being the healthiest county in Florida. However, many improvements can be made. In the St. Johns County 2017 Health Assessment and 2018–2020 Community Health Improvement Plan (CHIP) many issues were assessed and brought forth to plan for positive change. Unintentional injury was identified as the 3rd leading cause of death in St. Johns County (St. Johns County Leadership Council, 2018). The rates of unintentional injury in St. Johns County have been unfavorably increasing from 38.9% in 2011 to 43.7% in 2016. One of the leading causes of untintentional injury are motor vehicle crashes. According to Wilkes and Mee (2018), there were 3,595 crashes recorded in St. Johns county, including bicycles and pedestrians. Out of these crashes, there were 30 fatalities (Wilkes & Mee, 2018). Death rates from motor vehicle crashes have increased 50% in St. Johns County from 2009 – 2016, from 11.8% to 16.9%. Per the St. Johns County Leadership Council (2018), it was identified that across the nation motor vehicle crashes can cost up to $44 billion in a single year in medical expenses, work loss costs, and property damage. Male adults ages 18 – 44 are most likely to be affected by death by unintentional injury, stating that death rates among males in this age range are two times higher than the rates for women of the same age in St. Johns County (St. Johns County Leadership Council, 2018). Therefore, the audience will be both men and women 18-44, with a skew towards men.

The identified problem is the steady increase of deaths by unintentional injury in St. Johns County over the past few years, with a major cause being traffic-related incidents. The goal is to decrease deaths caused by unintentional injury by focusing on road safety in St. Johns County with the use of health education environmental change, and health communications strategies. Creating an environment that discourages poor driving behaviors can help decrease unintentional injury and death due to motor vehicle-related incidents. Therefore, the use of the Social Ecological Model will guide the creation of an intervention that addresses many levels of factors influencing behavior, leading to a change in the current environment towards a safer place to drive, walk, and bike.

**The Social Ecological Model**

The Social Ecological Model (SEM) views the environment as a critical component of behavior, categorized into different levels (Hayden, 2019). This approach states that human behavior is shaped by multiple levels of influence (McKenzie et al., 2017). These levels are intrapersonal, interpersonal, institutional, community and societal.

The intrapersonal level represents individual characteristics that influence behavior such as knowledge, attitudes, beliefs, perceptions, personality traits, self-efficacy, and others factors (McKenzie et al., 2017; Hayden, 2019). The interpersonal level includes the relationships individuals have with their families, friends, and peers, making up an individual’s support system, social identity, and roles within the social structure (McKenzie et al., 2017; Hayden, 2019). The institutional or organizational level represents rules and regulations associated with a workplace or any other organization that an individual is a part of (McKenzie et al., 2017; Hayden, 2019). The community level includes factors such as social networks and norms or standards of behavior that exist either formally or informally within a community (McKenzie et al., 2017; Hayden, 2019). The societal level represents broader factors that influence behavior such as social or cultural norms, economics, policy, and the physical environment (McKenzie et al., 2017; Hayden, 2019).

**Intrapersonal Level**

The main factors that the intervention will address are drinking and driving and texting and driving. Binge drinking was identified as a risk factor for unintentional injury, with 20.1% of adults participating in binge drinking in St. Johns County, which is higher than the Florida average (St. Johns County Health Leadership Council, 2018). Binge drinking is one of the top predictors of drinking and driving behavior (Nelson et al., 1998). Nelson et al. (1998), found that within their study that the most significant predictor of intention and attitude toward binge drinking and driving was participants agreeing with the statement “I can drive safely after drinking a lot as long as I drive more carefully than usual.” Drivers that have patterns of risky alcohol consumption do not typically perceive the seriousness of a crash risk when driving intoxicated (Stephens et al., 2017).

Texting and driving will also be addressed in the intervention. Favorable attitudes toward texting while driving predicted behavior intentions (Wang, 2016). Wang (2016) also found that efficacy towards being able to text and drive and efficacy towards being able to withhold from texting and driving were indicators whether an individual would engage in texting and driving behavior. Kim (2018) assesses that even though the risk of texting and driving has a high perceived risk, the habitual and automatic nature of texting tends to overpower any risk assessed.

**Interpersonal Level**

Binge drinking and driving can also be seen as a social norm among peer and friend relationships, as many tend to socialize with others that also are considered ‘binge drinking drivers’ (Nelson et al., 1998). Relationships will often predict drinking and driving. Binge drinking and driving is more likely to occur if friends do not disapprove and vice versa; the help of a supporting friend can deter binge drinking and driving (Nelson et al, 1998). Drivers who reported drinking and driving were likely to have friend and family who have engaged in the same behavior (Stephens et al., 2017). Understanding this, along with information that educates participants on personal risk, there needs to include a supportive environment as a way to combat this norm of drinking and driving. Texting and driving behavior tends to be influenced by peer relationships, as well. Per Wang (2016) norms did predict texting and driving behavior, both to send a text message and to read text messages. Especially among younger adults, peer culture plays a vital role in the adoption of risky behaviors (Kim, 2018).

**Institutional Level**

On an institutional level, there is a lack of research. Safe driving tends to be something that is incentivized by insurance companies, giving drivers rewards for safe driving. However, there is not much evidence gathered that shows that this helps motivate individuals to drive safer or that their safe driving is in any way linked to being rewarded. There was no research that found that safe driving media was put up in a workplace as part of promoting safe driving. This will be a consideration for the intervention.

**Community Level**

On the community level, it has been identified that public transportation is lacking and can help reduce traffic-related incidents and in return unintentional injuries. Developing a community with safe transportation can help those driving, biking, and on foot, thus improving health for everyone (St. Johns County Health Leadership Council, 2018). The state of Florida was ranked highest for Pedestrian Danger Index (PDI), with the highest traffic-related deaths in 2016 being pedestrian fatalities (St. Johns County Health Leadership Council, 2018). Therefore, there should be a focus towards increasing the availability of public transportation in St. Johns County and ensuring pedestrian safety in the form of better sidewalks and crosswalks.

On a community level efforts have been made through the implementation of campaigns such as 'Arrive Alive' addressing safe driving and 'U Text. U Drive. U Pay.' addressing texting and driving. The 'Arrive Alive' Campaign is a media campaign that is overseen by the Florida Department of Highway Safety and Motor Vehicles (FLHSMV), which is a division of the Florida Highway Patrol (FHP), charged with improving highway safety throughout the state of Florida (FLHSMV, 2019). Florida tends continuously rank as the highest traffic fatality state in the U.S. (FLHSMV, 2019). 'Arrive Alive' is a campaign that focuses on highway safety through education and media campaigns. One recent focus was on ‘buckling up.’ FHP will focus on hot spots for crashes for increased law enforcement patrolling and education in those areas (FLHSMV, 2019). Through this collaborative effort, the main goal is to decrease injury and fatalities due to crashes, helping residents and visitors arrive alive in St, Johns County, FL, especially the targeted I-95, known as a hot-spot for crashes (FLHSMV, 2019; Keever, 2018). Another useful campaign is the U Text. U Drive. U Pay campaign, which discourages texting and driving by educating the public about the high risk and consequences involved. It is a campaign “centered on helping law enforcement officers in their efforts to keep distracted drivers off the road.” (U.S. Department of Transportation). The materials are available to be implemented at a community level.

**Societal Level**

On a societal level, drinking and driving behavior is not accepted. However, it remains to be a public health issue and a cause for injury and fatalities. In a study conducted by Eby et al., (2017), nearly one-third of drivers of legal drinking age state that they supported lowering the legal blood alcohol concentration (BAC) (Eby et al., 2017). Efforts to decrease BAC levels partnered with increased law enforcement could combat the serious issue of drinking and driving.

There has been a nationwide effort to regulate texting and driving by using law enforcement. However, despite these efforts and the banning of texting and driving in many states it is still being done by nearly 71% of drivers are still doing it (Wang, 2016). One reason for the ineffectiveness of efforts to reduce texting and driving could be the low presence of law enforcement (Wang, 2016). Therefore, on a societal level, law enforcement must make increased efforts to address these dangerous behaviors.

**The Intervention**

Per Williams et al. (1995), “increased enforcement and awareness of negative outcomes may be effective in promoting safe driving practices.” Therefore, an intervention that addresses these elements while understanding the different levels and aspects that affect individual behavior should be created. First, it will be necessary to involve stakeholders. Per the University of Kansas (n.d.) involving those who are directly affected by the public health issue and those with a vested interest should be involved from the beginning, as it will lead to a better planning and implementation process, a greater community support and buy-in, a variety or ideas and perspectives, and a better understanding of the community context. Stakeholders also represent the main source of goal and objective creation for a program, as well as determining what needs to be evaluated and the goals of an evaluation plan.

The intervention will address the increase in deaths caused by unintentional injury due to traffic-related incidents. Strategies that will be used include environmental change through community mobilization and influencing policy/decision makers within the community, health education strategies to educate the public on dangers of dangerous driving behaviors, and partnering with ongoing media campaigns to increase the frequency of messages and public exposure. The goal of the intervention will be to educate the public on safe driving practices and the risk of poor driving practices, influence policy, towards improving roads, public transportation, and laws to regulate negative driving practices better and to partner with ongoing media campaigns that deter the public from using risky driving behaviors and promote safe driving practices.

The first part of the intervention will address both the intrapersonal and interpersonal levels. It will include a curriculum that addressing attitudes, beliefs, and social norms mainly regarding texting and driving, drinking and driving, but also address traffic laws, aggressive driving, bicycle safety, and pedestrian safety, as well. This portion will specifically target individual attitudes and knowledge regarding drinking and driving and texting and driving, with the intent of changing attitudes and killing peer and social norms that are accepting of this behavior. Drinking and driving attitudes and behaviors will be addressed as nearly 30% of serious crashes are caused by alcohol (Stephens et al., 2017). There has been an 8% increase of deaths relate to alcohol-related driving between 2015 and 2016 in St. Johns County (St. Johns County Health Leadership Council, 2018). The curriculum will need to address risks and consequences of drinking and driving specifically, as individuals that tend to drink and drive do not fully understand the risk or crashing, as they have the belief that if they drive carefully, they should be fine. Texting and driving attitudes and behaviors will also be addressed as an estimated 25% of all car crashes are the result of texting and driving (Snyder, 2019). The curriculum will need to specifically address an individual's self-efficacy towards being able to withhold from texting while driving, as even though individuals perceive a high risk, they will still send text messages. Providing information and education regarding road safety factors through a computer-based program will be the first portion of the intervention. A computer-based program will allow the health education to be catered to the individual, teaching new skills, and providing immediate feedback (Omaki et al., 2017). However, along with the computer-based curriculum, there should be a supportive environment using a discussion board as a place for collaboration and conversation, as these types of relationships can combat with dangerous social norms.

The second part of the intervention will be a focus on changing the environment to create a safer place to drive, bike, and walk. This will address the institutional, community, and societal levels of influence. A community involvement plan will need to be created to ensure members from the community are involved to the fullest extent and to guide the actions of those involved to get the desired results (University of Kansas, n.d.). Key influencers such as local government representatives will need to be involved, as well as those who have a trusted and active presence within the community. The strategies used will be to educate and influence policy and decision makers through community mobilization. Environmental change will be the goal. Creating awareness for the need for increased availability to public transportation, engaging policymakers about regulating negative driving behaviors, as well as partnering with ongoing media campaigns ‘Arrive Alive’ and ‘U Text. U Drive. U Pay.' will be included in this portion of the intervention. As a part of the media campaigns, media will be made available in the form of flyers and posters for within the community and workplaces to promote safe driving behaviors, thus addressing the lack of promotion of safe driving on an institutional level and increasing exposure on the community level. This portion intervention will also seek to influence on a higher level as it seeks out strategic partnerships with influencers and policymakers to change policies related to drinking and driving and texting and driving on a societal level.

**Evaluation**

Per McKenzie et al. (2017), evaluation is the process that determines the value of a health promotion program. The evaluation of the intervention will take place to determine if what works well and what needs to be improved. This can be done through both formative and summative evaluations. A process evaluation and an impact evaluation with plans for an outcome evaluation will be used.

Formative evaluations include evaluating components before and during the intervention. Therefore, all intervention components will be tested before the intervention begins, using a trial run for the health education portion and proofing all other intervention components including media used and community mobilization strategies. Process evaluation assesses the implementation process in general (McKenzie et al., 2017). This portion will pay close attention to measuring attendance of participation, the number of educational sessions implemented, and how well the curriculum is received and if the platform is easy to use. The process evaluation will also measure the frequency of media pieces used, where, and public exposure to the messages displayed and aired. It will also measure community participation by taking attendance at coalition and community meeting designed to gain the attention of policy and decision makers.

The summative evaluation determines if the intervention has met the goals determined by the stakeholders, making conclusions about the impact, outcomes, and benefits (McKenzie et al., 2017). As part of the summative evaluation, an impact evaluation will be performed, which observes the immediate effects of the program, such as knowledge gained and attitude changes (McKenzie et al., 2017). As part of the impact evaluation, data will be collected using a pre-test and post-test design. Using a computer-based curriculum will easily allow health educators to pretest participants knowledge base, and attitudes on the topics addressed in the curriculum and determine knowledge gained, attitude shifts, and intention to use safe driving behaviors. This will help determine if the curriculum is an effective learning tool.

**Conclusion**

To summarize, the Social Ecological Model assesses the many levels of factors that influence individual behavior, seeking to create an understanding of the inter-workings of the social context a person lives in and how each level affects their behavior. The intervention addresses the issue of the increase in deaths related to traffic-related incidents among men and women 18-44 years old in St. Johns County. On the intrapersonal and interpersonal levels, a computer-based educational curriculum will be created to address the factors of attitudes and norms related to drinking and driving and texting and driving, while also touching on traffic laws, safe driving behaviors, bicycle safety, and pedestrian safety. The goal will be to increase knowledge of the risks and consequences of using risky driving behaviors, thus changing their attitudes and norms towards using negative driving behaviors. On the community, institutional, and societal levels environment change strategies will be employed by creating a community involvement plan, involving all identified stakeholders and creating partnerships with key influencers, government officials, and ongoing media campaigns related to road and highway safety. This will be used to influence decision making at the local level, increasing the availability of public transportation, sidewalks, bike lanes, and safer roads in areas of congestion, as well as disperse messages that promote safe driving at a community, institutional, and societal level. On the societal level, there will also be a focus the influencing policy and decision makers towards the creation of laws that continue to discourage drinking and driving and texting and driving.

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