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# Mobile Application for Survivors of Domestic Violence

Varsha Neelam  
*Georgia State University*

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## ABSTRACT

### MOBILE APPLICATION FOR SURVIVORS OF DOMESTIC VIOLENCE

BY

VARSHA NEELAM

APRIL 18<sup>TH</sup>, 2018

**INTRODUCTION:** Intimate Partner Violence (IPV) is any behavior within an intimate relationship, physical, sexual, psychological, emotional, or a combination of all the above, that causes harm. Domestic violence, also known as intimate partner violence, has been recognized as a preventable public health concern by health care professionals. Leaving their abusive situations is a harrowing process for survivors. While resources and support systems exist, accessing these resources is a difficult and trying process.

**AIM:** The purpose of this capstone is to consolidate evidence-informed and evidence-based resources into a single mobile application that can be utilized by survivors of violence and to serve as a tool to provide information to facilitate their recovery from abusive situations.

**METHODS:** Prior to starting the capstone, informal discussions with key stakeholders were held to validate the observation of lack of knowledge among survivors of intimate partner violence on accessing formal resources. Market research was performed, and no similar consolidated application of resources was found. Formal resources to be included in the application were identified by conducting a literature review and accessing government websites which serve the target population. By attending local panels and forums about domestic violence, the resources available in the Metro-Atlanta area were identified.

**RESULTS:** The target population for the feasibility study will be domestic violence survivors. The evidence-informed and evidence-based resources identified were information regarding formal resources. The proposed application will include a validated risk assessment, The Danger Assessment, an ecological momentary assessment (on subjective well-being), a journal, safety planning checklists, and short, informative videos. The Danger Assessment has been previously validated and found to have predictive validity for the target population. The assessment will provide survivors the ability to track the dangerousness and lethality of their abusive situations over time. It is a short assessment, which can be filled out by the survivor and takes around twenty minutes to fill out.

**DISCUSSION:** The application content will be hosted on an existing mobile platform, mWELL<sup>©</sup><sup>TM</sup>, which has already been developed by the Capstone Chair (Dr. Dube). A multi-phase feasibility study of the mobile app contents and functionality will be conducted, starting with the risk assessment. The feasibility will test for ease of use of assessment, comprehensibility, and acceptability of use within the mobile application. The second phase will test the videos and other content. All modifications will be made based on feasibility study findings, before it is finally launched.

MOBILE APPLICATION FOR SURVIVORS OF DOMESTIC VIOLENCE

BY

VARSHA NEELAM

M.B.B.S, SRI RAMACHANDRA UNIVERSITY

A Capstone Submitted to the Graduate Faculty  
of Georgia State University in Partial Fulfillment  
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30303

APPROVAL PAGE

MOBILE APPLICATION FOR SURVIVORS OF DOMESTIC VIOLENCE

BY

VARSHA NEELAM

Approved:

Dr. Shanta Dube  
Committee Chair

Mr. Mustafa Rahimi  
Committee Member

Defense Date: April 18<sup>th</sup>, 2018

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## Author's Statement Page

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Varsha Neelam

Signature of Author

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## **Introduction**

In the United States, the National Intimate Partner and Sexual Violence Survey report that one in three women and one in four men have been victims of some form of intimate partner violence (IPV) during their lifetime. According to the Georgia Coalition of Women, between 2003 and 2016, 1,671 citizens of Georgia lost their lives due to domestic violence. In 2016 alone, 121 domestic violence-related deaths occurred in Georgia (Domestic Violence Fact Sheet, 2017).

The World Health Organization defines intimate partner violence as “...any behavior within an intimate relationship that causes physical, psychological, or sexual harm to those in the relationship, including acts of sexual coercion, psychological abuse, and controlling behaviors.” (Garcia-Moreno, 2005, 3). Studies show that removal and escape of victims from their abusers can be a distressing experience. Most survivors report difficulty in finding and locating shelters, resources, and support services. Additionally, most survivors and victims are hesitant to leave their abusers due to lack of monetary support, fear of legal backlash, and lack of housing. (Jewkes, 2002, 1425). Among immigrant and minority populations due to high rates of poverty, poor education, limited job resources, language barriers, and fear of deportation, there is increased difficulty in finding help and support services (National Violence Against Women Survey, 2017).

Studies conducted among survivors and victims of IPV show that victims are dependent on their abusers, are unsure about the resources available to them, and have a difficult time identifying appropriate shelters or victims’ advocacy groups that can provide help. (Dichter, 2011, 483). Consolidating the resources available for survivors in the Metro-Atlanta area into a



single application that can be accessed by mobile phone users may help facilitate the safe removal of these individuals from their abusive situations.

### The Promise of Mobile Applications

Polling conducted by the PEW Research Center in 2017 shows that 95% of Americans own a cellphone and approximately 77% of cellphone owners use smartphones. With the introduction of data plans in the early 2000s, Americans have increasingly begun using mobile phones to access the internet. Over half of those polled in a 2011 PEW survey claimed to use mobile phones daily to go online. In 2017, PEW found that 1 in 10 Americans is “smartphone-only” internet users. Especially among younger adults, non-white, and lower-income Americans, there is an increasing reliance on smartphones for online access. The report also showed that minority cell phone owners are more likely than their white counterparts to use “non-voice data applications.”

In the poll conducted by the PEW Research Center in 2017, a reported 64% of Americans claimed to have used their phones to get the information they needed. In an era with increasing usage of smartphones for internet access, development of a mobile application that can be used to help survivors of IPV receive assistance to begin recovery may provide the information to help them exit abusive relationships.

This capstone is informed by the Host, Agent, Vector, Environment (HAVE) model. The HAVE model was developed to track and prevent infectious diseases. (Gordis, 2014). The model is typically used to describe the interactions between a host and an environment which contains the infectious agent and the vector. In recent years, the HAVE model has been adapted for chronic disease prevention, most notably, in tobacco control.

The HAVE model can be used to prevent and explain intimate partner violence. The host is the survivors of IPV. In the Metro-Atlanta area, this includes any person who is or has been abused by their partner. The agent and the vector are the abusers. The environment is the Metro-Atlanta area and the availability and access to resources for survivors.

The overall goal of this capstone is to consolidate evidence-informed resources and materials for survivors of intimate partner violence. A review of the of the materials and resources currently available is required to ensure they will be appropriate for the target population. Therefore, the research questions that inform this capstone are:

1. What are the evidence-informed resources available for survivors and victims of domestic violence in the Metro-Atlanta area?
2. What are the evidence-informed resources that can be appropriately utilized in a mobile phone application for survivors and victims of domestic violence in the Metro-Atlanta area?

The final product of this capstone will be an evidence-informed and evidence-based compilation of resources for a mobile application, which can be utilized by survivors of violence to help them plan an escape from abusive situations. The capstone will include a short proposal for testing the feasibility of the mobile application.

## **Review of the Literature**

### **Domestic Violence**

The Centers for Disease Control define intimate partner violence as "...physical violence, sexual violence, stalking, and psychological aggression (including coercive acts) by a current or former partner." In the United States, the National Intimate Partner and Sexual Violence survey found that 23% of women and 14% of men will at some point in their life be a victim of IPV (NISVS). Globally, that number is more than doubled, especially for women. The World Health Organization estimates that globally at least 37% of women have experienced some form of IPV in their lifetime. (Garcia-Moreno, 5). There is little data, in comparison, of the incidences of IPV in same-sex couples. However, it is estimated that at least 20% of individuals in same-sex pairing have or will experience some form of IPV (Stiles-Sheilds, 7).

Intimate partner violence is a serious, preventable health problem that affects millions of people every year. Economic consequences of IPV in the United States is estimated to be greater than \$5.8 billion per year. IPV is associated with poor health even after the abuse ends. It can lead to poor health status, affects the quality of life, and victims of IPV utilize health services more than the general population (Campbell, 1333). Health consequences of IPV can be divided into acute symptoms or conditions, chronic disorders, gynecologic and pregnancy-related problems, and mental or behavioral health issues (Karakurt et al., 85).

Acute symptoms of IPV are mostly a consequence of physical violence and can range from minor abrasions to multisystem trauma, which can even result in death. Most survivors of IPV report being struck by a hand or by heavy objects. The most common type of injury reported by victims of domestic violence is soft tissue injuries. (Campbell, 1334). In a study conducted by

Karakurt and his associates, they found that of 5,780 study participants 1,650 reported visiting an Emergency Department (ED) to seek treatment for “contusions to soft tissue.” (85).

The most commonly reported sites of injury were the head, face, and neck. Therefore, traumatic brain injuries (TBI), and consequent loss of consciousness, dizziness, disorientation, and neurological sequela are quite commonly seen in victims of IPV; prevalence rates of TBIs range anywhere from 30-74% among IPV victims. (Karakurt, Patel, Whiting, & Koyuturk, 85). Bone fractures and musculoskeletal problems also are frequent complaints or reasons for ED visits among IPV victims. (Karakurt et al., 85). 30 to 70% of femicide is caused by an intimate partner (Messing & Thaller, 1538). Physical abuse has been found to precede homicide in 65 to 80% of the cases. (Messing & Thaller, 1538).

A variety of chronic disorders and conditions may develop among survivors of IPV due to the repeated exposure to fear and stress. (Karakurt et al., 86). Studies have shown that chronic physiological responses conditioned within the victims can develop into post-traumatic stress disorder (PTSD). (Campbell, 1333). PTSD is associated with higher rates of cardiovascular, respiratory, musculoskeletal, and central nervous system symptoms. Chronic stress can also lead to alteration of the endocrine system leading to suppressed immunity, diabetes, and autoimmune conditions. Endocrine disorders may also lead to fatigue, infections, and malignant diseases. Studies have also shown that many victims of IPV suffer from chronic pain and gastrointestinal disorders, including the development of irritable bowel syndrome. (Karakurt et al., 86).

Gynecological problems are three times more likely than the average amongst women who suffer from spousal abuse. Rape, sexual assault, and victimization can lead to chronic and

acute gynecological concerns. Studies have shown that sexual abuse can lead to uterine ruptures, vaginal tears, and sexually transmitted diseases. (Karakurt et al., 88). There is a higher rate of HIV positive results among victims of abuse in comparison to the general population. Men who have sex with men (MSM) who are victims of IPV were found to be more likely engaged in substance abuse, suffer from depressive symptoms, be HIV positive, and be forced to participate in unprotected sex. (Buller, Devries, Howard, & Bacchus, 3).

Victims of IPV are commonly forced into unprotected sex and thus have a higher chance of unplanned pregnancy. (Campbell, 1332). While depression and anxiety are correlated with exposure to IPV, women who were victims of domestic violence during pregnancy are 2.5 times more likely to develop depression and anxiety. (Karakurt et al., 87). Also, there are higher rates of miscarriages, stillbirths, low birth weights, and maternal and fetal deaths among pregnant women who are exposed to IPV. (Karakurt et al., 87). Pregnant women who are exposed to domestic violence are more likely to have a late entry for prenatal care and frequently miss doctor's appointments, which further contributes to compromising their health. (Campbell, 1332).

Mental and behavioral health disorders include, but are not limited to, the development of depression, anxiety, and post-traumatic stress disorders. (Campbell, 1334). It has been found that around one-third of IPV survivors turn to drug abuse as coping mechanisms. Alcoholism and other types of substance abuse are quite frequently reported among survivors. (Karakurt et al., 87). Having proper access to care and access to social and mental health resources can help alleviate the need for these victims to turn to drugs and other unhealthy coping mechanisms.

## **Perpetrators**

With regards to perpetrators of violence, types of violence can be broadly divided into two classifications: 1) Intimate terrorism and 2) Situational couple violence. Intimate terrorism is when the perpetrators are both violent and controlling. Situational couple violence describes situations where occasional bouts of violence occur, but the violence is not part of a larger pattern of control. (Costia, Kaestle, Walter, Curtis, Ray, Toumbourou, & Miller, 262). Most of the research involved in elucidating characteristics of the abusers focus on the former category as they are a more readily available population. Typically, abusers who can be located via hospital EDs, law enforcement, and advocacy groups perpetrator both violence and control. (Costia et al., 262).

A systematic review of the literature regarding abusers conducted by Tolman & Bennet in 1990 showed that risk factors of perpetration could be considered as consistent risk markers, inconsistent risk markers, and consistent non-risk markers. (110). Consistent risk markers included sexually aggressive behavior, violence towards children, witnessing violence as a child or adolescent, occupational status, marital status, alcohol or substance use, income, assertiveness, and educational level. (Hoatling & Sugarman, 111). Inconsistent risk markers include experiencing violence as a child, unemployment, criminal arrest record, self-esteem, age, and need for power or dominance. Consistent non-risks are traditional sex-role expectations. (Hotaling & Sugarman, 112).

Research assessing the risk factors of domestic violence perpetration has been growing over the past two decades. In recent years, many retrospective studies have emerged that study the association between domestic violence perpetration and exposure to risk factors during childhood and adolescence. The most commonly pinpointed risk factors include risks associated

with the family of origin, behavioral risks, adolescent peer risks, and sociodemographic risks. (Ruddle, Pina, & Vasquez, 155).

Of the risk factors for perpetration of intimate partner violence, the most common and critical predictor is the family of origin risk. (Ruddle, Pina, & Vasquez, 155). The term “intergenerational transmission of violence and aggression” is a common theme in research related to perpetration. (Murrell, Christoff, & Henning, 525). Children and adolescents learn to model their behaviors based on their caretakers’ behavioral patterns. Family violence, e.g., witnessing interparental violence as a child or adolescent, teaches children not only how to commit violence but also confers positive attitudes to violence when it is seen to be a rewarding experience for the abuser. (Costia et al., 264).

Modeling of the abusive behavior can be generalized or specific. Generalized modeling is based on the internalization and acceptance of the aggressive and abusive behavior. Children and adolescents exposed to interparental abuse internalize the abuse, learn destructive conflict resolution, and ineffective communication patterns. (Ruddle, Pina, & Vasquez, 156). Specific modeling is when the child or adolescent that witnessed the abusive behavior perpetrates the type of aggression they were exposed to within the family of origin. (Ruddle, Pina, & Vasquez, 156). Evidence suggests that adults who witnessed violence but were not themselves abused, as adolescents are more likely to perpetrate than individuals who were abused but did not see abuse. (Ruddle, Pina, & Vasquez, 158). However, there is also evidence to suggest that individuals who were both abused and witnessed domestic violence are highly likely to perpetrate abuse later. (Costia et al. 265). Re-socializing individuals from violent homes have been found to lower perpetration rates by 26-48%. (Murrell, Christoff, & Henning, 527).

Behavioral risks associated with perpetration of IPV include a range of factors including substance abuse, aggressive behavior as a child or adolescent, conduct problems, and externalizing and internalizing behaviors. (Murrell, Christoff, Henning, 528). The most consistent behavioral risk factors of perpetration are alcohol or drug abuse and depression. Rarely have studies found or shown the association of severe mental disorders to the perpetration of violence. However, often batterers do show signs of personality disorders; the most common being antisocial, borderline, dependent, depressed, and narcissistic. (Costia et al., 266). A retrospective study on characteristics of abusers found that conduct problems assessed via school records and self-reporting at the ages of 7 to 13 years predicted perpetration at 24-25 years in both genders. (Costia et al., 266).

The same retrospective study also found that children or adolescents who “identify with a large network of violent peers have 3.76 greater odds of domestic violence perpetration.” (Costia et al., 266). Poor friendship qualities as adolescents lead to poor conflict resolution, lack of closeness to individuals, and distortion of empathy as adults. A retrospective study found that poor quality of adolescent peer networks can predict perpetration of domestic violence amongst adults. (Capaldi, Knoble, Shortt, & Kim, 3). A cross-sectional study found that controlling for other risk factors, financial stress (e.g., unemployment or loss of a job) was a strong predictor for perpetration among both men and women batterers. Many other studies have independently replicated this finding. (Capaldi, Knoble, Shortt, & Kim, 3).

Sociodemographic risk factors can be strong predictors of perpetration of domestic violence. The most common sociodemographic risk factor is low socioeconomic status (SES) in the family of origin. Low SES has been found to be associated mainly in the perpetration of physical and psychosocial abuse. A retrospective study found that low SES at birth significantly



correlated with male perpetration and victimization ( $r = 0.4$ ,  $p < 0.0001$ ) and low SES during adolescence strongly correlated with female perpetration and victimization ( $r = 0.35$ ,  $p < 0.001$ ). (Costia et al., 267). Age is found to be a protective factor against IPV; as age increases the likelihood of perpetration decreases.

A sizable portion of the research done regarding perpetrators of abuse focus on the heterosexual, male abuser. (Henning, Jones, & Holdford, 131). However, over the past five years, increasing awareness and acceptance of same-sex couples and the existence of female perpetrators has given rise to research on female abusers. Roberts conducted a study with 234 women batterers in the United States and assessed the association of family violence and perpetration of abuse. (81). He found that approximately 70% of the batterers were raised in abusive households; the national average ranges from 65 to 80%. (Roberts, 83). He also found that more than half of the participants reported the use of illegal substances or alcohol during the time of the abuse incident. (Roberts, 84). Most of the women also said a stressful life event (e.g., unemployment, financial difficulties) before the initiation of the abuse. (Roberts, 84). Another study examining the differences between female and male abusers found that female abusers were more likely to attribute blame of the abuse to characteristics of their partner or spouse. Also, women were more likely to claim the incident was defensive than men. (Henning, Jones, & Holdford, 134-135).

In recent years, studies have shown that female partners are just as likely or slightly more inclined to perpetrate intimate partner violence. A meta-analysis showed that women were more likely to resort to physical assaults and use this form of violence more frequently. (Henning, Jones, & Holdford, 132). In a study comparing the perpetration of clinical IPV (resulting in a severe injury that requires medical attention) versus nonclinical injury, it was found that women

were the most common perpetrators among the nonclinical injury group. (Ehrensaft, Moffitt, & Caspi, 4). Another study concluded that women were more likely to show physical aggression in late adolescence, but rates of physical violence evened out between female and male perpetrators later in life. (Capaldi, Kim, & Shortt, 4).

## **Survivors**

Prior to the past decade research on survivors of violence focused on the Traditional Feminist Perspective. The traditional feminist perspective argues that socially constructed and culturally approved gender inequality is the cause of domestic violence and abuse. (Yllo, 50). However, over the past decade, as awareness of male abuse victims and female perpetrators was on the rise, there has been a shift in the literature. Most of the research done with survivors now focus on the intersectionality of race, class, and gender. (Sokoloff & Dupont, 40).

The race and cultural beliefs of the victim plays a significant role in both disclosures and help-seeking behaviors. Different cultures define violence differently. A study that examined the perspectives of violence among immigrant and non-Caucasian women found that cultural and racial backgrounds alter the perception of violent acts. (Yoshima, 873). For example, Japanese women interviewed in the study stated that overturning of the dining table or throwing liquid on them, which signifies their inability to maintain a home and impurity respectively, were viewed as far worse than the typical domestic violence signs and symptoms. In the same study, South Asian women disclosed that they were taught to save face and maintain family unity; therefore, social standing and family outweigh individual safety. (Yoshima, 875).

African American mainstream stereotypes such as, “criminally inclined men” and “loud, independent women” have been found to be a hindrance to both disclosure and help-seeking.

(Sokoloff & Dupont, 42). Members of devalued racial identities, chiefly African American and African immigrants fear that disclosure will subject partner to racism within law enforcement groups and confirm racial stereotypes. (Sokoloff & Dupont, 43). A study assessing the effectiveness of protective orders found that African American men were more likely to be prosecuted in comparison to their white counterparts when controlling for severity of abuse and similarity of previous arrest records. (Lucea et al.).

Many studies have found that the most severe and lethal incidents of domestic violence occur disproportionately in low socioeconomic households, especially among women of color. (Anderson, Renner, & Danis, 1280). Studies show that many homeless women were once victims of intimate partner violence. (Anderson, Renner, & Danis, 1280). Studies assessing characteristics of domestic violence survivors have found that higher education and income brackets typically have lesser incidence and prevalence of domestic violence. Similarly, among older adults and married individuals, there is a consistently lower incidence and prevalence of intimate partner violence. (Sokoloff & Dupont, 45). Whether or not these factors are genuinely protective against IPV or whether it is due to lower disclosure rates is highly speculated.

Gender and sexuality also play a large part in the disclosure of domestic violence. (Sokoloff & Dupont, 55). Typically, men who are abused are more reluctant to come forward with claims of partner abuse. Reluctance is due to a combination of fear, shame, guilt, and perceived “threats to their masculinity.” (Stemple & Meyer, 22). Similarly, individuals in same-sex relationships are reluctant to disclose due to their belief of perceived bias in the community. (Stiles-Shields & Carroll, 637). Claiming abuse in a same-sex relationship further alienates and isolates both the abuser and the abused. Often these individuals are not “out” to their families and religious communities; in fact, the threat of outing is a frequently used form of abuse among

perpetrators. This reluctance to disclose is further complicated by the victim's beliefs about attitudes of law enforcement officials and advocates. Transsexual individuals face even more difficulties due to lack of judicial and medical support systems. (Stiles-Shields & Carroll, 637 – 642).

Overall, factors associated with victimization is a layered, multifaceted problem. However, some specific risk factors of victimization have been identified. They include pregnancy, witnessing interparental violence, previous history of abuse, unmarried or unemployed status, low socioeconomic standing, low educational attainment, younger age group, and history of substance or alcohol use. (Ambramsky et al., 15 – 17).

### **Help-Seeking Behavior**

The decision to seek help is often complicated, and the process of leaving an abuser is fraught with numerous stressors. Help-seeking behavior is defined as when a victim discloses the intimate partner violence abuse with the purpose of obtaining assistance. (Simmons, Farrar, Frazer, & Thompson, 1227). There are three stages of help-seeking: defining the problem (disclosure), deciding to seek help, and selecting a source of support. (Simmons, Farrar, Frazer, & Thompson, 1230). However, disclosure by a victim does not equate to the victim being ready to obtain services or leave. Instead, disclosure is often an indication of a way for the victim to cope with the abuse. Disclosure is usually the first step for help-seeking. Pressuring or forcing a victim to leave or seek help after disclosure is more harmful than helpful. (Simmons, Farrar, Frazer, & Thompson, 1226-132).

A study conducted by Krishnan, Hibert, and VanLeeuwen, focused on reasons for leaving a batterer among residents of a domestic violence shelter, found that the decision to seek help

often lead to isolation from family or friends, fear of retaliation or escalation of abuse, and worry over economic considerations. (30). Other factors that victims faced during the process of leaving an abuser were: firmly held religious or cultural beliefs, limited access or knowledge of available services, and limited availability or access to social and health services. (Krishnan, Hibert, & VanLeeuwen, 31). Among immigrants who are victims of IPV, there is an added layer of concern regarding lack of legal documentation and fear of deportation. Studies have shown that victims face increased chances of violence when they leave; in fact, most murders committed by abusive partners occur after an attempt to terminate the relationship. (Krishnan, Hibert, & VanLeeuwen, 30-33).

The National Intimate Partner and Sexual Violence Survey (NISVS) estimates that around half of the victims that leave return to the abuser, generally within one year of leaving. (NISVIS 2017 Fact Sheet). Researchers conducted a study among 90 female residents of an urban domestic violence shelter and gathered self-reported data on reasons for returning to abusers. (Griffing, Ragin, Sage, Madry, Bingham, Primm, 307). Approximately, 67% of the study participants indicated that they had left and returned at least once. (Griffing et al., 308). The study found that the most common reason battered women returned at least once was the abuser's expression of remorse, continued emotional attachment to abuser, and economic need. Study participants also indicated that the reason they might return to the abuser in the future were continued emotional attachment or the batterer's promise to seek counselling. Most of the study participants indicated that relocation, emotional instability, loss of social networks, legal action or retaliation, child custody issues, unemployment, lack of resources, and difficulty terminating the emotional connection to abuser were all factors in leading them to return to the abuser. Compared to women leaving for the first time, participants with a history of leaving in the past

were more likely to indicate they may return to the abuser in the future due to a continued emotional connection. The researchers observed that most of the participants were “emotionally and mentally underprepared for the difficulty of leaving their batterers.” (Griffing, Ragin, Sage, Madry, Bingham, & Primm, 308-312).

Social and familial isolation is one of the most commonly cited reasons for returning to an abuser. The lack of emotional support and the perception of judgment and shame drives the decision to return among victims of IPV. (Yamakami, Ochoa-Shipp, Pulsipher, Harlos, & Swindler, 3195-96). The term secondary victimization refers to a victim being revictimized by others’ negative attitudes about them and their victimization. Negative responses from social circles and family tend to increase chances of returning and reduce the chances of leaving once returned. (Yamakami et al., 3210).

A study conducted to assess the attitudes of people toward domestic violence, the victims, and perpetrators were conducted among 194 study participants. (Yamakami et al., 3196). The participants were assigned to one of four hypothetical scenarios to examine how observers perceive a victims’ decision to return to the abuser and how the relationship status of the victim influences perceptions of the observers. Participants blamed the victims more when it was reported they returned to the abuser in comparison to when information on returning was omitted. Likewise, married victims were blamed less for returning than victims who were only dating their abuser. It was reported that the participants felt that there were more venues for escape with victims who were merely dating their abuser than victims who were married. (Yamakami et al., 3196-3210).

The gender of the observer also played a part in victim blaming. Male participants were more likely to blame the victim, exonerate abuser, and minimize the incident than female

participants. The study also found that “non-traditional” victims, such as male victims or outspoken female victims, were more likely to be blamed by the participants than “traditional” victims. Victims were also blamed more if they were perceived to be verbally aggressive or provocative. Overall, 63% of the participants felt that the victim could leave if they wanted to. (Yamawaki, 3197-98).

All these factors contribute to making it difficult for victims to leave abusers, to not return, and to ask for help. However, the survivors of violence who do successfully leave all reported a “turning point” event caused them to leave for good. (Chang, Dado, Hawker, Cluss, Buranosky, Slagel, McNeil, & Schollee, 252). These turning points are defined events where there was an escalation of violence or an event where the violence was actively transferred to their children (i.e., the child became a victim of violence). When these turning points occur victims turn to formal and informal networks of resources for help leaving their abusers. (Chang et al., 250-255).

### **Accessing Resources**

There are two broad categories of resources that are available for victims of violence: formal and informal services. Formal services include domestic violence shelters, health care services, and law enforcement. Informal services are social networks, such as family, friends, and co-workers. (Lucea, Stockman, Mana-Ay, Bertrand, Callwood, Coverston, Campbell, & Campbell, 1618-19). The NISVS of 2017 reported that between 60-80% of survivors claimed to have utilized informal services, while 60% of survivors claim to have accessed formal services. (NISVS 2017 Fact Sheet). Especially among women of color, informal services are the first lines of resource access. Successful outreach is dependent on the ability and willingness of survivors to seek help. (Lucea et al., 1619).

Most survivors of violence seek assistance from informal networks. Informal networks provide emotional sustenance, material support, and contribute to psychological health and well-being. However, informal structures are often underprepared or unable to protect and help victims. Removing barriers to accessing formal services help survivors to be better prepared to successfully leave abusers and build better futures. (Lucea et al., 1618-19).

A study conducted among 545 African American survivors of violence found that only 57% of them accessed formal resources. (Lucea et al., 1617). Among the 57%, 13% utilized medical services, 18% used domestic violence shelters, and 41% sought criminal justice services. Increasing severity of violence increased the likelihood of accessing formal resources among the participants. Fear of one's own life or their children's lives was the most commonly reported reason for accessing formal services. Reliable predictors of resource utilization were education levels of the victims and severity of physical violence. (Lucea et al., 168-20).

Fanslow and Robinson assessed the barriers to accessing resources among victims of violence. External barriers to access of formal resources are lack of money, lack of insurance, and lack of knowledge about available resources. (Fanslow & Robinson, 931). Especially among immigrant women, who relied heavily on informal resources, there is a reluctant to disclose to formal services because they wish to secure family's image and stability. (Fanslow & Robinson, 932). Other individual-level barriers include failure to recognize IPV/IPV events as wrong, low self-esteem, fear of losses, fear of abuser, or a desire to protect the perpetrator. The researchers found that 64% of the study participants did not seek help from formal services because they believed the violence was "normal or not serious." (Fanslow & Robinson, 930-945).

The researchers also identified specific institutional level barriers to accessing formal services. They included lack of cultural competence, language barriers, and stereotyping and



labeling by providers of formal services. Women of color expressed doubts about the cultural sensitivity of service providers and claimed that experiencing stereotyping discourages them from receiving assistance to deal with intimate partner violence. On the structural level, racism, discrimination, and poverty contribute to diminishing the use of formal resources by survivors of violence. Of the women who reported being unaware of formal resources, 60% were not aware formal resources were available at the community level, and 65% said they did not believe domestic violence shelters or hotlines were available. (Fanslow & Robinson, 231-245).

Another study conducted by Simmons et al. found that the most commonly reported barriers to accessing formal services were shame (86%), lack of knowledge or information about formal services (80%), and personal or children's safety (70%). (1231). The barriers at the individual level were due to guilt, shame, language barrier, lack of transportation, experiences with forms of institutional oppression, and the person or organization the victim chooses to seek help from. The person or organization selected by the victim or survivor defines the experience of finding aid and determines whether the victim will seek help again. Simmons et al. also reported that the most preventable barrier to formal service access is to increase awareness and knowledge about the services available for survivors to utilize. (Simmons et al., 1230-39).

### **Mobile Phone Usage**

The 2017 PEW Research Center poll showed that 95% of American's use cell phones of some kind and 77% use smartphones. (<http://pewinternet.org/Reports/2017>). Smartphones are mobile phones with standard voice and text communication, and advanced computing and communications capabilities (Boulos, Wheeler, Tavares, & Jones, 1). The latest generations of smartphones are increasingly being used as handheld computers. Smartphone usage across the age demographic varies from 46 to 89%; as age increase use of smartphones decreases.

However, smartphone usage remains stable at around 77% across the races. Smartphone use does increase with educational attainment; 57% of smartphone users have less than a high school graduation, and 91% of users are college graduates. In rural areas, 65% of cellphone users have smartphones whereas in urban areas that number increases to 83%.

<http://pewinternet.org/Reports/2017>).

The poll also showed that 1:10 American adults are smartphone only internet users. Reliance on smartphones for internet access is more common among young adults and non-whites. 51% of cell phone users claimed to have used their cell phone at least once to get the information they needed right away, and 35% of smartphone users claimed to use their phone to access the required information. (<http://pewinternet.org/Reports/2017>).

In 2015, 64% of the U.S. population and 82% of adults (18-49 years) owned an app-enabled phone. (Kerbs & Duncan, 1). In 2009 there were 300 million mobile applications downloaded, and in 2010 that number jumped to 5 billion. (Boulos, Wheeler, Javeres, & Jones, 1-2). More than 100,000 health-related applications were available on the app stores of Apple and Android users in 2014 (Zhao, Freeman, & Li, 1). Examples of health-related applications include fitness and nutrition applications, on-board digital diaries, and sexual health education. (Boulos, Wheeler, Javeres, & Jones, 2).

Krebs and Duncan surveyed application usage among U.S. mobile phone owners. They conducted a cross-sectional survey of 1,604 mobile phone users with a 36-item questionnaire. Most of the respondents used Apple (35.2%) or Samsung (35.4%) products. AT&T (26.2%), Verizon (21.3%), and T-Mobile (19.4%) were the most widely utilized service providers. 58.23% of the survey respondents had downloaded a health-related mobile app; the most commonly downloaded applications were fitness and nutrition apps. Individuals who utilized

healthcare applications were more likely to be younger, have higher incomes, and be more educated. 45.7% of the health-related mobile application users reported they stopped using the app because of high data entry burdens, loss of interest, and hidden costs. Common reasons for never downloading a health-related application were lack of interest, cost, and concerns about the app collecting their data. (Kerbs & Duncan, 1-5).

Glass, Eden, Bloom, & Perrin developed an online safety aid to help victims create a safety plan to leave their abusive situations. The computerized aid was tested among 90 Spanish and English speaking abused women in shelters and domestic violence support groups. (Glass, Eden, Bloom, & Perrin, 1947). The aid provided feedback about the risk for lethal violence, using Campbell's Danger Assessment Tool. It also helped with setting priorities for safety, which was used to create a personalized safety plan for users. (Glass et al., 1948). The researchers found that after a single use of the safety aid the women felt supported and had less decisional conflict ( $p = 0.012$  and  $p=0.014$ , respectively). The research team also noted that since most victims return and leave the abuser multiple times, it would be more useful to provide victims with ongoing access to the aid. The researchers are currently developing a web portal that allows women to access the aid online when safe and convenient. Ongoing access allows the victims to update safety priorities, risk behaviors, and create an updated safety plan based on the relevant information. (Glass, Eden, Bloom, & Perrin, 1947-52).

A Canadian study was assessing the “use of information communication technologies (ICT) or computer-mediated technologies (CMC) among immigrant women who were IPV survivors” was done due to the non-existent evidence of research in the use of technology to escape among IPV victims. (Zaidi, Fernando, Ammar, 91). A non-random sample of 49 immigrant IPV survivors who were recruited from various community partner centers was

surveyed. The study found that ICTs and CMCs can be helpful in facilitating creating safety plans, finding resources, or using it as a support network. (Zaidi, Fernando, & Ammar, 92). Even email alone can expand the social support network of women. Only 22 of the participants indicated that cell phones helped them with their escape and only three of them responded that they accessed information about resources online using a phone. However, it was noted by the researchers that survivors with higher educations utilized ICT or CMC to seek help, make escape plans, or access services. They also found that survivors with firmly held religious and cultural beliefs were less likely to utilize ICT or CMCs for help. (Zaidi, Fernando, & Ammar, 91-94).

No known mechanisms and consolidated platforms of information on the internet or phones currently exist according to the researchers. The researchers of this exploratory study noted that disseminating more information through cell phones and computers may help victims plan and leave situations more efficiently. However, further development and research would be required to assess the usefulness of CMCs or ICTs for survivors of intimate partner violence. (Zaidi, Fernando, & Ammar, 94).

## **Methods**

### **Identifying a Need**

The idea for developing a mobile application was, in part, due to observations made at a non-profit in the Metro-Atlanta Area. It was observed that survivors of violence were unaware of formal services available to them. In fact, clients of the non-profit reported believed that no formal services existed to help them cope and deal with their situations. Those who were aware of formal services, generally, did not know the extent of the services available to them.

On the other hand, while attending numerous forum and panels on Domestic Violence conducted in the Metro-Atlanta area, a wide range and variety of formal resources and services

available to this population were identified. Another, frequently observed problem for this population was the barriers to access; that is, they were unable to locate the formal services due to fear of their captors tracing their efforts to leave and seek help. Thus, to bridge the gap, provide the target population with knowledge about formal services available to them, and to reduce barriers to accessing the formal services a platform to consolidate formal services in the Metro-Atlanta area was proposed.

Before proposing this capstone, many discussions among critical stakeholders took place. Key stakeholders include advocates, employees of advocacy groups, executives of shelter and group homes, and survivors of violence. They helped clarify which formal services are sought out by survivors in the Metro-Atlanta area. They also shed light on the experiences of their or their clients in seeking formal services. Importantly they validated observations that survivors have a general lack of knowledge of available services. The stakeholders were highly interested in the creation of a consolidated platform of information which could be utilized to ease the barriers to access.

### **Identifying Appropriate Medium for Resources**

Several types of information medium were considered for hosting the resources. For example, websites and blogs were considered, but their security and ability to be tracked by abusers made them the least appropriate method. Internet access through traditional computer-based platforms are not as frequently used as a decade ago and are less commonly utilized by minority populations (<http://pewinternet.org/Reports/2017>). Therefore, a computer-based medium was ruled out.

As stated in Chapter 2, the use of smartphones in the United States is prevalent and smartphones are commonly used as primary access to the internet. Therefore, to maintain anonymity and reduce the possibility of discovery by an abuser, a “decoy” mobile application idea was developed. Thus, Dr. Shanta Dube’s mWell©™ platform was identified to be used as the base platform for the content proposed by this capstone and act as the decoy app.

### **Market Research on Similar Mobile Apps**

Market research was conducted before the start of the capstone to determine whether there are any known mobile applications. To perform this market research, a search on google and google scholar was conducted. Key search terms included: a consolidated platform of resources for victims of violence or survivors of domestic violence, mobile phone applications for survivors of domestic violence, and online/mobile tools for survivors of IPV.

Market research showed that there is no similar mobile application that consolidates information regarding formal services for survivors of violence. An application that contains an S.O.S button to be utilized by victims of domestic violence does exist; however, it does not include any of the other proposed aspects of this capstone. Similarly, an online Danger Assessment platform, with tailored safety planning mechanisms based on the scores of the DA exists. However, it does not contain any other proposed aspects of this application.

### **Identifying the Mobile App Content**

The following methods were used to determine the mobile app content: 1) Literature review, 2) Review of U.S. governmental websites that serve the target population, and 3) Thorough review of the information to identify the formal services. The literature review was done using google scholar, PubMed, EBSCOhost, and the Violence and Abuse Abstracts search

tools. Key search terms included but were not limited to: formal services for survivors of IPV/DV, barriers to accessing resources for IPV/DV survivors, and help-seeking behaviors among survivors of DV/IPV.

Governmental websites accessed during the information gathering process included the Department of Justice, Health and Human Services, and the National Institute of Justice. The Department of Justice and the National Institute of Justice websites contain information regarding statistics of DV in the United States and definitions of different forms of DV. They also provide information on accessing National Hotlines. For victims of IPV, the hotline is 1-800-799-SAFE; when accessing the link for this number, a notification pops up on the screen explaining that web searches are impossible to hide, even if history is cleared, and to be careful of where this information is being accessed from. (<https://www.justice.gov/ovw/domestic-violence>).

The governmental websites also provide information regarding safety planning and the information a survivor should collect before leaving their abuser. This includes information on local shelters, advocacy groups, group homes, and counselors. They also provide information that can be utilized by immigrants or refugees who are survivors of violence and urge them to seek legal aid. Additionally, all the websites provided links to safety planning checklists and risk assessment tools.

After reviewing all the material accessed during the website searches and the literature review a list of formal services to be included in the mobile application was compiled. The formal services to be covered are information on shelters, group homes, transitional homes, advocacy groups, legal aid, immigration aid, and some background information on acts and laws that allow for non-US citizens to access governmentally funded services. Other information

incorporated in the app will include hotline numbers, a risk assessment, an ecological momentary assessment, a safety planning checklist, and videos summarizing the information provided in the formal services portion of the application.

The information provided in the application will be focused on the services available in the Metro-Atlanta area. For example, HOPE Atlanta is a non-profit that offers a variety of services to survivors of domestic violence. HOPE Atlanta provides both short-term shelters and long-term housing options for individuals who seek their services. They also help their clients lead stable lifestyles by providing them with structure and support to build their lives outside of their abusive situations.

One of the advocacy groups to be included in this application is Tapestri. They are a group of advocates that provide services for immigrants and refugees who are survivors of domestic abuse. Tapestri uses community organization and direct services to help their clients develop lives outside of their abusive situations. They focus on culturally appropriate services and provide language translation services to most of their clients. Tapestri also has a program to educate and reform abusers. (<https://tapestri.org/>).

A legal aid option included in the application will be Atlanta Volunteer Lawyers Foundation (AVLF) is a large, Atlanta based law firm that provides pro bono services to low-income families. They offer various services to individuals suffering from domestic violence, including helping with securing temporary protective orders (TPOs). (<https://avlf.org/>). Another law firm that provides services to victims of violence is the Georgia Asylum and Immigration Network (GAIN). They focus on immigration issues that may arise for victims of violence and can help survivors secure waivers and visas. (<http://georgiaasylum.org/>).



In addition to these components, a risk assessment, a journal, an Ecological Momentary Assessment (EMA), and a safety planning checklist will be included in the application. The components proposed are meant to provide a one-stop tool to assist survivors to reduce the number of searches they need to conduct to find information when preparing to leave. The risk assessment component will also, ideally, help victims track changes in behavior and escalation of violence in their abuser.

### **Assessments**

Risk assessments are “objective assessments of whether an adverse event will occur in the future.” (Canales, Macaulay, McDougall, Wei, & Campbell, 1). For this capstone, risk assessment tools would be used to determine the re-occurrence of an intimate partner violence-related event. Risk assessments require an assessor to examine factors influencing a person’s past behaviors, aspects of their current situations, and their life context. This judgment of risk is often based on the presence or absence of risk factors. (Canales et al., 1).

Research on risk assessments has shown that risk factors can be static or dynamic. Static risk factors are statistically linked to the offending behavior (IPV perpetration); in other words, they are fixed behaviors that, typically, cannot be changed over time. Examples include gender and past criminal history. (Canales et al., 2). Dynamic risk factors are characteristics that are changeable and can fluctuate over time. For example, with proper interventions anger and hostility can be curbed. (Canales et al., 2). Dynamic risk factors can be acute or stable. Acute dynamic risk factors are situational; they depend on the person’s current psychological and emotional state. Stable dynamic risk factors are changeable, but generally, the change occurs over an extended period. Most researchers concur that to accurately examine the presence and relevance of these risk factors, in IPV situations, requires the assessor to access both the

collateral information (e.g., criminal files or clinical files) and self-report of all parties involved. (Canales et al., 2-3).

In the field of violence prevention, risk assessment tools have significantly evolved over the past few decades. Initially, risk assessments were based on unstructured professional judgments. An evaluator would make subjective decisions about an offender's dangerousness based on their experience, intuition, and training. Studies have shown that these subjective measures had little correlation with predicting violent behaviors. These subjective assessments also lead to inconsistency in decision-making across similar cases. (Canales et al., 2).

Therefore, score-based risk assessments were developed. Score-based assessments could be purely actuarial or actuarial-theoretically driven risk-need tools. Purely actuarial tools are, usually, based on risk factors that are static but statistically pertinent to the outcome of interest (i.e., violent behavior). These tools are used to derive quantifiable risk scores and have a set rule of interpretation. Studies have proven that purely actuarial tools are significantly more accurate at predicting a risk of dangerousness than subjective tools. The main disadvantage with purely actuarial tools is the lack of emphasis on dynamic risk factors; therefore, these tools do not capture how risk changes over time. Actuarial-Theoretically driven risk-need tools capture how the risk changes over time because they incorporate both static and dynamic risk factors. They are significantly more useful in predicting the risk of violence in the community. (Canales et al., 2 - 4).

Structure professional judgment based (SPJ) assessments are theoretically driven tools that incorporate both static and dynamic risk factors. However, they are not score based. Instead, the assessors review the risk factors associated with violent behavior and weigh them as present, possibly present/uncertain, or not present. The result is converted and placed in one of three risk

levels for violence: low, moderate, or high. When utilized by a well-trained professional, the generated risk prediction is comparable, possibly slightly less accurate, to actuarially based instruments. However, many researchers have raised doubts about the subjectivism of SPJ assessment tools. (Canales et al., 2-4).

The most commonly used, reliable and validated, risk assessment instruments for IPV are the Spousal Assault Risk Assessment (SARA), the Ontario Domestic Assault Risk Assessment (ODARA), the Domestic Violence Risk Appraisal Guide (DVRAG), the Domestic Violence Screening Instrument (DVSI), and the Danger Assessment (DA). (Messing & Thaller, 1538). Each of these tools has its advantages and disadvantages. The choice of instrument should be based on more than just reliability, validity, and predictive validity; the reason and method of utilization should be considered before choosing one instrument over the other. (Canales et al., 7). This capstone will explore the strengths and limitations of the three most commonly utilized tools: B-SAFER, ODARA, and the DA.

The Brief Spousal Assault form for the Evaluation of Risk (B-SAFER), is an SPJ tool which is condensed version of SARA. It was designed to identify men who are at risk for IPV re-offense. It was explicitly intended to be utilized by police officers, due to their role as a front-line responder in domestic abuse situations; it is primarily a field risk assessment of spousal violence. B-SAFER eliminates the two-main limitation of SARA: 1) SARA required police officers to make judgments about the perpetrator's mental health and 2) SARA was lengthy and time-consuming for officers to complete. (Messing & Thaller, 6-7).

B-SAFER consists of 10-items divided into two sections; the first focuses on the offender's history of IPV and the second, is related to general risk factors of violence perpetration. Each item is scored twice, once based on the current incident and the other based on

past criminal history. There is no formal scoring; instead, the tool guides the assessor's decision making regarding the risk of re-offense. Advantages of B-SAFER is that it captures both static and dynamic risk factors, is short, requires limited mental health expertise, and was developed specifically for police officers. Disadvantages include the limited research on the utility of this tool and that the investigation conducted has mainly focused on male to female violence. (Canales, et al., 10-11).

The Ontario Domestic Assault Risk Assessment (ODARA), is a simple actuarial tool which is intended to be utilized by police officers. It was designed to be scored using information that would typically be readily available to the police (e.g., criminal records). It is a 13-item instrument, and each question has a dichotomous, yes, or no, response. The total score can be categorized into low, moderate, and high-risk categories. Generally, the higher the score, the higher the risk of future perpetration. It is a shorter, revised, version of the DVRAG. (Messing & Thaller, 7).

Strengths of the ODARA include that no formal training is required, minimal time is needed to complete the assessment, it can be finished based on information routinely available to police officers, and studies have shown that ODARA has a robust predictive validity of re-offense. Limitations of ODARA are that the research around ODARA utilization has focused on male to female perpetration, with no information on use with same-sex couples violence. Also, due to the dichotomous nature of the items, there is no reflection of the severity of the risk factors being addressed. Finally, due to the lack of dynamic risk factors assessed in the tool, ODARA has not been found to be sensitive to changes in risk over time. (Canales et al., 12-15).

The Danger Assessment is an actuarial-theoretically driven instrument, which was initially developed to assess a victim's risk of intimate partner homicide. It is one of the oldest

IPV risk assessments. However, the current version of the DA, revised in 2003, consists of 20 dichotomous items. When properly administered, the DA consists of two parts, each requiring approximately 20 minutes to be completed. The first part is calendar based; the victim is asked to mark approximate dates of violent incidents on a calendar. Each event is rated from 1 to 5 based on the severity of the assault. The second part is the 20-item instrument, which can be filled by a skilled interviewer or the victim. The instrument is scored using an algorithm which gives items with a higher predictive power of violence, more weight in the total score. The final score is used to place the victim in one of four danger categories; a score of 0-7 indicates variable danger, 9-13 is increased danger, 14-17 is severe danger, and any score greater than or equal to 18 means extreme danger. (Messing & Thaller, 6).

The DA is one of the most extensively researched IPV risk assessments. Research shows that the DA is mainly utilized to differentiate IPH victims from non-violent IPV victims. However, it is a significant predictor of IPV recidivism. Studies have shown that the internal consistency of the DA is acceptable, ranging from 0.74 to 0.80. Test-retest reliability has been found to range from 0.809 to 0.94. (Messing & Thaller, 1540-42).

Strengths of the DA are that it is user-friendly for survivors and can be completed on their own with the instructions. It emphasizes the dynamic nature of IPV risk and encourages victims to seek help. The weighting of the high-risk predictors ensures that even individuals with few risk items if they are highly weighted, can be identified by this instrument. The DA is ideally meant to be administered by a trained interviewer, which helps reduce memory bias and helps professionals identify and focus on high-risk individuals. A revised version of the DA, for immigrants and female perpetrators, exist and assists with identifying victims who are not solely subjected to male to female perpetration. Limitations of the DA are that since it was developed

for IPH, some of the items (e.g., access to firearms) are relevant purely to lethality risk and not general IPV risk. Proper administration of the DA requires at least 40 minutes and, therefore, can be time-consuming. (Canales et al., 16-19).

Table 1: Summary of commonly utilized risk assessments (adapted from Messing & Thaller (2014), 5).

<b>Original Instrument</b>	<b>Risk Assessed</b>	<b>Intended User</b>	<b>Components</b>	<b>Information Needed</b>	<b>Unique goal</b>	<b>AUC*</b>
DA	Lethality Re-assault	Health or social service professionals; Victims/Survivors	Two parts: Calendar & 20 items	Access to survivor	Safety planning	0.62 - 0.91
SARA	Re-offence	Professionals with training	20 items (Based on professional judgement)	Access to survivor, perpetrator, and criminal justice case files	Safety planning and court rulings	0.63 – 0.72
ODARA	Re-offence	Police officers	13 items	Offenders case files	Criminal justice decision making	0.64 – 0.71
DVSI	Re-offence	Criminal justice personnel	12 items	Offenders case files	Criminal justice decision making	0.68 – 0.71
DVRAG	Re-offence	Criminal justice personnel	14 items	Offender case files	Criminal justice decision making	0.62 – 0.70

\*AUC (Area under the curve) – Receiver operating characteristics (ROC) is the most common means of assessing predictive validity of risk assessment instruments. ROC is a curve shown on a graph, it plots the sensitivity as a function of the false-positive rate. AUC is the proportion of the graph that falls under the plotted ROC curve. AUC ranges from 0 – 1.0, 0.5 = prediction no better than chance and 1.0 = a perfect positive prediction.

## Results

### Environmental scan of governmental websites

As a part of the methodology to collect evidence-informed content for the application an environmental scan of governmental websites that provide services for survivors of domestic violence was conducted. In accessing these sights, commonly referred, and utilized formal

resources were identified. Also, the search helped highlight the use of risk assessment tools and safety planning checklists for this population.

The DOJ website provides information to access the National Domestic Violence Hotline and alternative hotline options for individuals who are deaf, blind, or both. The HHS website provided information regarding funding of governmentally sponsored DV programs. For example, it addresses the Welfare Reform Law (1996) and how the government funds many battered women's shelters. HHS financed programs serving DV victims include, but are not limited to, FVPSA-funded programs, community and migrant health centers, Community Service Block Grants (CSBG), and maternal and child health programs. (<https://healthfinder.gov/FindServices/SearchContext.aspx?topic=253>).

The Family Violence Prevention and Services Act (FVPSA) is a significant funding source for shelters, group homes, and transitional housing agencies. The FVPSA, due to the Welfare Reform Law, does not require verification of immigration status for most of its services. Similarly, the CSBG is also used by DV agencies to fund the services they provide their clients. However, certain programs that serve domestic violence survivors requires the client to provide their Social Security Numbers. Therefore, may not be accessible by unlawful immigrants. Examples include the Temporary Assistance for Needy Families (TANF) and Low-Income Home Energy Assistance Program (LIHEAP). (<https://www.hhs.gov/programs/public-health-safety/safety-from-violence-abuse/index.html>).

Another governmentally sponsored program for battered individuals is provided via the Violence Against Women Act. This act allows battered spouses to obtain green cards without the cooperation of the US citizen or permanent resident who is abusing them. Although this act was

created for female survivors, men who are being abused by their spouses are also eligible to self-petition. However, divorce proceedings must be underway, and proof of the abuse must be submitted for the case to be considered. (<https://www.hhs.gov/programs/public-health-safety/safety-from-violence-abuse/index.html>).

The HHS web site also warns the abused individual to protect their online activity as they collect information from various sources. The HHS suggests calling the National Hotline to speak with advocates and prepare a safety plan. They also provide links to risk assessments for individuals not ready to leave their abusers, the preferred one being the Danger Assessment Tool, and safety planning checklists, the preferred one being the National Center on Domestic and Sexual Violence. (<https://www.womenshealth.gov/relationships-and-safety/domestic-violence/leaving-abusive-relationship>).

The Centers for Disease Control has a violence prevention program within their National Center for Injury Prevention and Control Department (NCIPC). The CDC works to monitor and conduct research on the violent behaviors in the United States, including intimate partner abuse. They also do research on the effectiveness of implementation programs, governmentally funded programs, and other violence prevention efforts. They also conduct the National Intimate Partner and Sexual Violence Survey (NIPSV) which can be used to track trends in IPV and stalking in the United States. The CDC also provides links to risk assessments and safety planning tools. Their risk assessments are primarily for healthcare workers who identify domestic violence victims in a clinical setting. (<https://www.cdc.gov/violenceprevention/>).

### **Evidence-informed content**



The proposed mobile application will be built on an existing mobile platform created by Dr. Shanta Dube. The proposed application will be a “decoy app,” i.e., the application containing the pertinent information will be hidden within the previously existing application. The proposed application can only be viewed by an individual who knows how to access the relevant app.

The mobile application will include information that will be useful for survivors of domestic violence. The information provided in this mobile application can be utilized by survivors of violence to help with safety planning, access information on shelters or advocacy groups, and more. The original application has many platforms, including myWellness™, myProgress™, myCommunity™, and myLearning™. The proposed application will utilize these platforms and modify them by including the content relevant to the target population.

The myWellness™ platform will include the Danger Assessment which will be administered every six months. For this capstone, the original DA will be utilized. The purpose of this assessment is to assess dangerousness and lethality, to help the victim make decisions regarding disclosure or seeking help, and to suggest safety planning measures for the victim. Following the change in dangerousness and lethality over time allows for the tracking of escalation in violence and will, ideally, facilitate the decision of leaving the abuser.

The myProgress™ platform will include a journal and the EMA. Survivors can utilize the journal to give detailed accounts of an abusive event. The journal feature can also be a useful therapeutic and legal tool. One of the problems survivors face when pursuing legal action against their abusers is the lack of outcry or evidence of abuse. This tool may be used as an entry in legal cases to prove ongoing abuse.

The Ecological Momentary Assessment component will focus on mental and physical health-related quality of life questions. The EMA will be assessed using the health-related quality of life instrument, HRQoL-4. EMA will allow for the tracking of changes in stress and physical well-being amongst survivors of violence. It can aid in survivors making decisions regarding help-seeking.

The myCommunity™ platform of the original application is a discussion board. However, since the proposed mobile application is geared towards victims of violence, to minimize leaking of personal information and the chance of infiltration by abusers, it will be converted to provide information regarding formal services. Formal services can provide survivors with a variety of help, including transient housing and legal aid. Formal services provide the means for victims to re-establish their lives outside of their abusive situations. This component will be especially useful for survivors who lack informal support systems.

Information on shelters and group homes providing services to the population of interest in the Metro-Atlanta area, including contact information and availability-turnover rates, will be provided. Contact information and services provided by advocacy groups located in the Metro-Atlanta area will be available. Safety planning checklists and options for transportation to escape their abusive situations will also be included. Other information provided will be immigration or legal aid help, and housing or federal funding options offered for survivors of violence. This consolidated presentation of information about formal services is meant to reduce the barriers to help-seeking among survivors.

The myLearning™ platform will hold short video presentations of information that may be useful to survivors of abuse. They will be created and filmed with the help of Metro-Atlanta based organizations and will include information regarding a wide range of topics from legal aid

to safety planning. For example, organizations like the Atlanta Volunteer Lawyers Association will be invited to give a short 2 to a 3-minute presentation on the legal aid options (e.g., temporary protective orders) available to victims of violence. Visual displays are useful tools that can quickly and succinctly present information to the end users of this application.

Another proposed feature of this mobile application includes an S.O.S button which will be utilized by victims of violence to escape their abusers. When they are ready to leave, the individual can use the button to send a pre-written text message to a pre-determined point of contact. The text will be sent from within the app and cannot be traced by an abuser who accesses the victim's phone. Point of contact information to organizations that specialize in the retrieval of victims will be an option provided for individuals lacking in informal networks (e.g., Out of Darkness).

Ultimately, the goal of this application is to facilitate the decision-making process among survivors of violence. To help them realize the seriousness of their situation and to help them leave their abusers with a minimal escalation of violence. It is also meant to reduce barriers to access formal services, including providing knowledge of available services to the survivors of violence.

### **The Risk Assessment**

After reviewing all the possible risk assessments, the Danger Assessment (DA) tool was chosen to be included in this mobile application. Since 1980, over thirteen risk assessment tools have been developed. (Messing & Thaller, 1537). The ODARA, the SARA, and the DA are the most commonly used risk assessments of the assessments discussed earlier in this capstone. The DA is the oldest and most widely used tool in intimate partner violence situations. It was

designed to be rated based on information provided by victims and to help predict lethality and femicide. (Messing & Thaller, 1537-9).

The original version of the DA had two components: a calendar component and a 15-item questionnaire with dichotomous responses. A total score was added up at the end of the survey; however, there was no cutoff values or grouping based on the severity of the risk. The higher the score, the more likely a lethal incident could occur. (Messing & Thaller, 1537). Goodman, Dutton, and Bennet examined the predictive validity of the original DA among 92 female victims and found that the DA was significantly predictive of lethality (OR = 4.18, 95% CI = [1.65, 10.60]). (68). Heckert and Gondolf examined the predictive validity of the DA among 499 female victims of IPV and their partners who were facing criminal charges. They found that the DA was significantly predictive (AUC = 0.70) for recidivism and repeated assault. (Heckert & Gondolf, 779).

In 2003, Campbell and her colleagues undertook a study to identify risk factors of lethal domestic violence perpetration and updated the DA based on their findings. The updated DA consists of 20-items, with a total score ranging from 3 to 39, and no change to the calendar component. The results are based on a weighted scoring algorithm and are assigned to four levels of life-threatening danger (0 – 7 is variable danger, 8 – 13 is increased danger, 14 – 17 is severe danger, and 18+ corresponds to extreme danger). Each risk category is associated with suggested interventions and safety planning strategies. Two other revised version of the DA exist; one, is designed to be culturally appropriate and is meant to be utilized among immigrant women, and the other, is geared toward female perpetrators. (Storey & Hart, 56-62).

Research into the DA has found that the internal consistency of the tool is acceptable (0.70 – 0.80) and test-retest reliability ranges from 0.89 – 0.94. It also has strong construct

validity, correlating strongly with other measures of abusive behaviors. The predictive validity of the DA ranges from 0.67 to 0.90, and the DA has been found to be highly sensitive and specific to high degrees of lethal risk. The readability of the Danger Assessment tool is at a third-grade level, which makes it extremely user-friendly. (Storey & Hart, 56-62).

The DA was developed to be used by health care and social service providers. However, of all the risk assessment tools currently available for use in domestic violence situations, it is the only risk assessment that can be completed and scored solely by the victim. The Danger Assessment tool is intended to be utilized to help victims understand the dangerousness of their situations, by helping predict lethality and homicide. It is also useful in guiding safety planning protocols. The DA emphasizes the dynamic nature of IPV risk and encourages victims to seek help. It has been found to have acceptable internal consistency, strong reliability and validity, good predictive validity, and is readable at a third-grade level. Therefore, it is the most appropriate risk assessment tool to be utilized for the mobile application proposed in this capstone. (Storey & Hart, 56-62).

### **Ecological Momentary Assessments**

Ecological momentary assessments are “methods using repeated collection of real time data on a subjects’ behavior and experience in their natural environment.” (Shiffman, Stone, & Hufford, 1). Ecological Momentary Assessment (EMAs) encompasses a variety of research methods and methodological traditions. EMA studies can be based on information gathered from traditional diary entries to questionnaires delivered through technological mediums. (Shiffman et al., 1).

Ecological Momentary Assessments were developed, in part, as a response to the limitations of retrospective recall. Autobiographical memory is “a memory process involved in recalling one’s own experience.” (Shiffman, Stone, & Hufford, 2). Research has shown that retrospective recall, while not necessarily inaccurate, is associated with systematic bias (i.e., errors that systematically change the data). The EMA also accounts for the fact that context can affect many behaviors and experiences. Therefore, to accurately assess an experience or behavior it must be sampled in the natural context in which it occurs. (Shiffman et al., 1-2).

Many EMA studies primarily focus on characterizing a subject’s “typical” state by aggregated, repeated, assessments over time and across situations. Other EMA based studies focus on within-subject changes in behavior, over time and across situations, by assessing how the behavior changes over time or how conditions influence behavior. EMA studies aim to evaluate the change in experience or behavior over time, capturing the data in real-time, to characterize an individual’s behavior or experience. (Schiffman et al., 2-3).

Key features common to EMA approaches include the way the data is collected, avoidance of retrospective recall, and strategic selection of assessment. The data collected using EMAs are from real-world environments, where the subjects’ go about their lives. This is the “ecological” aspect of EMAs, it allows for generalization to the subjects’ life. The assessments also focus on the subjects’ present state of being. The self-reported questionnaire, typically, asks a subject about their current, or very recent, state of mind, instead of asking them to recall over an extended period. This addresses the “momentary” aspect of an EMA and allows for the reduction in errors and bias associated with retrospection. Finally, the assessment(s) used by the EMA method are strategically selected to either measure the feature of interest (e.g., stress or

behavior) or to ensure random sampling (i.e., representative sampling). (Shiffman, Stone, & Hufford, 2-4).

For this capstone, an EMA will be incorporated to assess the quality of life measures in victims of violence. Intimate partner violence survivors are subjected to stress and physical violence, more frequently than the general population, and this causes long-term health consequences. For example, pressure experienced in these violent situations has been linked to the development of chronic diseases (e.g., hormonal imbalances, diabetes, gastric ulcerations, etc.).

Assessing the stress and physical well-being of these individuals, especially over time, can help promote healthy behaviors (e.g., escaping their abusive situations). It may even be useful in helping these victims understand the seriousness of their situations and to seek help. Due to the risk of physical retaliation that many victims may face, if this mobile application is discovered by their perpetrators, monthly EMAs may be the safest and smartest choice; thus, notifications can be minimized, and additional stress is not placed on the victims. Therefore, the Health-related Quality of Life Core Module (HRQoL-4), developed by the Centers for Disease Control in 1988, was chosen to be incorporated into the mobile application.

The WHO defines health as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.” (Preamble to the Constitution of WHO). The CDC defines quality of life as a multidimensional concept, with subjective evaluations of both positive and negative aspects of life. The CDC defines the health-related quality of life as “concepts that encompass those aspects of overall quality of life that can be shown to affect either physical or mental health.” (CDC, HRQoL website).

In 1999, the aging studies unit within the CDC's Division of Adult and Community Health developed the HRQoL-14. The goal was to create a brief, but valid, measure which identified the essential underlying concepts of lengthier HRQoL tools (e.g., SF-36) and captured the fundamental concepts of health as defined by the WHO. The HRQoL-14 consists of 1) 4 questions in the Healthy Days Core Module (HRQoL-4), 2) 5 items in the Activity Limitation Module, 3) 5 Questions in the Health Days Symptoms Module, and 4) 10 questions in an Optional Module. The HRQoL-14 has been part of the Behavioral Risk Factor Surveillance System (BRFSS) since 1993. Since 2000, it has also been incorporated into the National Health and Nutrition Examination Survey, Medicare Health Outcome Survey, and other CDC funded programs. (Moriarty, Zack, & Kobau, 1-3).

The core questions, HRQoL-4, contains one self-rated general health question, three questions about the number of recent days when the individual was physically unhealthy, mentally unhealthy, and limited in usual activities. A summary measure combines the physically and mentally unhealthy days measures. The Healthy Days data is useful in identifying unmet health needs and tracking population patterns and trends. The HRQoL assessment is most commonly administered via a telephone survey, and the core questionnaire takes about 1.0 minutes to administer. (CDC, Measuring Healthy Days, 1-3).

Validation of the HRQoL measures in a statewide sample of 588 individuals conducted by St. Louis University was shown to have good construct validity and acceptable correlation with related SF-36 scales. The items on the core questionnaire were able to explain more than 59% of the variation in SF-36 summary scores. Another study performed by the St. Louis University Prevention Research Center and the Missouri Department of Health simultaneously compared the HRQoL questions with the SF-36 in a statewide population of non-institutionalized



adults. The HRQoL measure was found to have good construct validity, acceptable criterion validity, and known-groups validity. (CDC, Measuring Healthy Days, 15-17).

A longitudinal study being performed by the Pennsylvania State University's Department of Biobehavioral Health is tracking 82,853 low-income, elderly adults statewide. Early results have shown that the mailed version of the questions has good construct validity. It also shows that the core questionnaire is useful in predicting mortality and hospitalization in the short-term (predictive validity). Another study conducted by St. Louis University assessed the acceptability of the Health Days assessment among persons with known disability in the community and institutional settings (N = 513). Shown to have good construct validity and acceptable correlation with related SF-36 scales. The questionnaire had a 92% acceptability rating, in comparison to 90% of SF-36 and 87% for the Quality of Well-Being Scale. (CDC, Measuring Healthy Days, 15-17).

A study conducted at the University of Oslo tested the Healthy Days Measure for reliability and responsiveness in a nationwide study of Norwegian adults. The core questionnaire was found to have good internal consistency, reliability, and response changes on follow-up survey were observed to be indicative of actual changes in health. A telephone-based reliability study conducted by the St. Louis University (N = 52) showed substantial re-test reliability. A longitudinal study conducted by Columbia University among older, low-income African American males showed that there was a correlation between respondent's answers to the core healthy days questions and reported medical care utilization over several months. (CDC, Measuring Healthy Days, 15-19).

The HRQoL-4 has been shown to have good validity, reliability, re-test reliability, and strong predictive validity. It has also been found to have good acceptability. It is also short and

can be quickly completed in a few minutes. This brief survey instrument can be used a surveillance tool to provide insight into health trends and identify relationships between health and victimization. (Ounpuu, Krueger, Vermeulen, & Chambers, 67). A limitation of the instrument is that the readability is at a grade 13 level. This is because the tool was designed to be administered via a phone survey. (Ounpuu et al., 69). However, overall the Health-Related Quality of Life Core questionnaire (HRQoL-4) is a great tool to be incorporated into the proposed mobile application.

## **Discussion**

The mobile application proposed in this capstone will include evidence-informed content that intends to help survivors of violence decide to disclose, leave their abuser, and seek help. The proposed application will provide survivors with two assessments: 1) a risk assessment, which will be administered every six months, and 2) an ecological momentary assessment (EMA), which will be conducted every month.

## **Feasibility Testing**

It will be approximately a year before this proposed mobile application can be developed and modified using the mWell©™ platform. Feasibility testing will be conducted in partnership with a Metro-Atlanta based advocacy group that works with survivors of domestic violence. Feasibility studies “are designed to build the foundation for a planned intervention study.” (Tickle-Degnen, 171). In other words, they examine whether something can be done, if it should be proceeded with, and if so, how.

The proposed feasibility testing will be carried out in three phases. Each phase will be carried out using key stake holders and potential end-users of the proposed mobile application.

Key stakeholders of this application will be advocates, employees, volunteers, and members of advocacy groups or shelters and group homes in the Metro-Atlanta area. The proposed end-users are the survivors of domestic violence. The feasibility testing will be carried out in partnership with an advocacy group based in Metro-Atlanta that works with survivors of abuse. Institutional Review Board approval will be sought before starting the feasibility study.

In Phase I of the feasibility testing, screenshots of the different platforms of the proposed application, with the content, will be provided to the 5 to 8 key stakeholders and potential end-users. Phase I will be a one-time focus group, which will be conducted online through Qualtrics. The participants will be drawn from a local organization with which a working relationship can be established. The participants will be asked to comment on the appearance of the app, the usefulness of the application and its content. Based on the feedback changes will be made to the application.

Phase II of the feasibility testing will be conducted after the proposed application is entirely built out and during beta testing. This test pilot will assess both the functionality in the front end of the application through the end-users and the functionality at the back end of the application via the developer. Only a few, specific individuals with access to the application will beta test. The people chosen to beta test will provide the developer with their phone serial numbers and will be granted access to the test pilot version of the application.

Five to eight individuals will be asked to beta test this application including at least one advocate from the Metro-Atlanta area and four individuals from the R&D team. At least one person, most likely the developer, will test the Android version of this application. The beta testing will occur over a two-week time-period during which the individuals involved in the testing will access each component of the application and determine how efficient and usable this

application will be. For example, the end-user will utilize the SOS button and try to determine if the functionality of this component acts as proposed. Any bugs or glitches in the utility of the application will be documented and corrected.

Phase III will focus only on the target population. Working with local Metro-Atlanta organization 5 to 8 end-users will be approached to participate in testing the application. The end-users, survivors, will be asked to use the application and provide feedback on the ease of use and functionality of the application. Based on the input provided modification will be made to the application as required. If the application is found to be feasible and user-friendly, the application will be launched for use on both iOS and Android platforms.

### **End-Users**

The end-users for this application are adult survivors of both human trafficking and domestic violence. Domestic violence is defined by the World Health Organization as "...any behavior within an intimate relationship that causes physical, psychological, or sexual harm to those in the relationship, including acts of sexual coercion, psychological abuse, and controlling behaviors." Human trafficking is defined by the "forced labor, bonded labor, involuntary domestic servitude, forced child labor, or sex trafficking" of individuals (Joshi, 2).

The proposed mobile application will be useful for adult domestic violence victims, survivors, and the aged-out population of human trafficking victims and survivors. The aged-out population consists of victims and survivors of human trafficking who are  $\geq 18$  years of age and have either been abandoned by their traffickers or escaped their traffickers. The governmental support provided to human trafficking victims and survivors reduces dramatically after the age of

18. Lack of support causes many of them to turn to prostitution as a means of supporting themselves; primarily because they are unaware of the services available to them.

**Table 2: Characteristics of end-users**

<b>Characteristic</b>	<b>Domestic Violence</b>	<b>Aged-out Human Trafficking</b>
Age	≥ 18 years	≥ 18 years
Race	All races and ethnicities	All races and ethnicities
Gender†	Both male and female	Both male and female
Socioeconomic status*	Low SES	Low SES
Educational level*	Lower attainment of education	Lower attainment of education
Perpetrators	Intimate partner	Captors, human trafficking rings, pimps
Location	Metro-Atlanta Area	Metro-Atlanta Area

†Male survivors are underreported

\*It is unclear whether low SES and lower educational attainment contribute to victimization or that it is underreported in individuals belonging to higher SES and educational attainment groups.

**Table 3: Utilization of formal resources included in the mobile application**

<b>Resources</b>	<b>Serves both populations</b>	<b>Serves specific population</b>	
		<b>DV</b>	<b>Aged-Out</b>
Shelters & Group Homes	Tapestri	Georgia Coalition Against DV	Wellsprings
Housing	Continuum of Care rapid re-housing (CoC-RRH) HUD Funding	All funding options can be applied to both populations	All funding options can be used by both populations
Legal Aid	Atlanta Volunteer Lawyers Foundation	Temporary Protective (TPO)	TPO
Immigration	Georgia Asylum and Immigration Network (GAIN)	Battered Spouse Waiver	Continued Presence - Temporary Immigration Status
Visas	U-Visa	I-765V	T-Visa

Assessments	Danger Assessment Health-related Quality of Life		
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There is a lot of overlap in services available to both populations. Most of the resources provided in this application can be utilized by individuals in both populations. Resources only applicable to one population will be demarcated.

Though the definitions of these two forms of abuse vary, the population targeted for this mobile application, survivors of DV and the aged-out human trafficking, are similar. Also, the resources available to both these populations are similar. Therefore, a single mobile application can be created for utilization by both populations of survivors. Also, by creating a single “decoy” app for both groups, we are minimizing the number of apps designed.

**Strengths and Limitations**

The advantages of this proposed mobile application are that a single, consolidated, source of formal resources will exist for use by both target populations. The consolidated platform will serve to reduce the barriers to accessing resources amongst victims and survivors of violence. Due to the “decoy” nature of this app the services accessed and utilized by the survivors to escape their abusive situations will be untraceable by their abusers. Market research has shown that no known applications of this type exist currently; thus, with no competitors, there is a high chance of success for the proposed application.

Limitations of this app do exist. Due to the limited research on mobile application usage amongst these specific target populations, the actual reach of this app to its intended consumers is unknown. Similarly, this application cannot be publicly advertised, because public knowledge will defeat the purpose of the “decoy” nature of this application. Therefore, it can only be

promoted by agencies and individuals who work with survivors of IPV and human trafficking. For example, the information to access this application could be distributed among local Metro-Atlanta area advocacy groups. They could, in turn, provide this information to individuals considering leaving their abusers and to survivors who have left but returned to their abusers.

Other limitations include that the version of application proposed for this capstone will only be available in English. Also, the Danger Assessment utilized for this capstone focuses mainly on male to female intimate partner abuse in heterosexual relationships. However, when this application is built out modifications to the assessments and the language could easily be made in the future version of the application.

## **Conclusion**

In conclusion, while there are limitations to this application and unknown parameters to its reach and utilization, it is an essential need for these target populations. It will allow the user to track their abusers' dangerousness and their own mental and physical well-being over time. Therefore, the application will, hopefully, aid individuals in deciding to leave their abusive situations and seek help.

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