

The Knowledge of Mental Illness as A Risk Factor for Cardiovascular Disease Among Individuals with Mental Illness

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Compared to individuals without mental illness, individuals with mental illness (MI) are two times as likely to develop and three times as likely to die from cardiovascular disease (CVD). One reason for this is that they are screened significantly less for CVD risk factors. Encouraging individuals with MI to ask for proper CVD risk factors from providers directly has been suggested to improve the cardiovascular care they receive. Before this, it was important to determine whether this population knows about their increased risk. Thus, knowledge of MI was compared to five other risk factors (obesity/overweightness, smoking, hypertension, inactivity, hypercholesterolemia) among individuals with MI. A significant difference between knowledge of MI and the other five risk factors was found, indicating that individuals with MI are unaware of their increased CVD risk. The study thus highlights the need for interventions to increase knowledge of MI being a CVD risk factor among this population.

INTRODUCTION

Compared to individuals without mental illness, individuals with mental illness (MI) are two times as likely to develop cardiovascular disease (CVD) and three times as likely to die from CVD (Baker & Goldie, 2014). One of the reasons for this inequality is the poorer medical care that individuals with MI receive compared to individuals without MI (Leucht et al., 2007). There are essentially two sides to medical care (Lings et al., 2003). The first involves the duties and responsibilities of the physician or primary care provider in providing proper care to their patients (Piyaratn, 1982). Factors such as a lack of knowledge about individuals with MI and underlying stigmatizing attitudes impact the care that physicians provide (Burton et al., 2015; Wallace, 2010). Consequently, several interventions have aimed to increase knowledge and reduce stigma towards individuals with MI among physicians (Gronholm et al., 2017; Knaak et al., 2017; Mehta et al., 2015).

The other side of care involves what the patients can do within the medical care setting, which primarily revolves around their ability and willingness to take an active role in the healthcare they receive (James, 2013). As mentioned earlier, many physicians do not provide the appropriate cardiovascular healthcare that this population needs due to stigma and a lack of knowledge about the increased risk of CVD among this population (Baller et al., 2015). As such, there has been a call to help patients become more actively involved in the care they receive to discuss and request appropriate

tests and procedures with their providers as necessary (Gierisch et al., 2013). Before designing and implementing patient-focused interventions, it is important to determine whether, like the healthcare professionals discussed previously, individuals with MI are also unaware that they have a higher CVD risk.

The purpose of the present study is thus, to determine whether individuals with mental illness are aware of their increased risk for developing and dying from CVD as a consequence of their MI. Specifically, the aim of this study is to determine how knowledgeable individuals with MI are about MI being a risk factor for CVD. In order to further understand the extent of knowledge regarding MI as a risk factor, a comparison will be made between knowledge of MI being a CVD risk factor and knowledge of five other CVD risk factors, smoking at least one cigarette a day on average, having hypertension, being overweight/obese, having a family history of heart disease, and not obtaining adequate levels (engaging in at least 150 minutes of moderate intensity exercise a week) of physical activity. Because even trained healthcare professionals are unaware of the increased risk of CVD associated with MI, it is hypothesized that individuals with mental illness do not know that they are at higher risk for developing CVD than the general population due to their MI.

The results of this study can be utilized to determine how best to move forward to help individuals with MI.

If individuals with MI are currently unaware of their increased CVD risk, then programs to increase knowledge of MI being a risk factor for CVD can be initiated. Additionally, lifestyle interventions that aim to increase physical activity, improve the dietary habits, and increase engagement in other healthy behaviors among this population, may benefit from including an awareness component that aims to increase knowledge of MI doubling the risk of developing and tripling the risk of dying from CVD (Middleton et al., 2013).

If current findings reveal that individuals with MI are aware of their increased CVD risk, then public health professionals can directly intervene by improving the ability and willingness of individuals with MI to actively discuss their cardiovascular health with their providers and request necessary health services. Consequently, interventions to improve self-efficacy and communication skills of this population to discuss and request necessary tests and procedure imperative to improving cardiovascular health from health care providers can be implemented.

Increased CVD Risk

Mental illness (MI) affects millions of Americans each year. An estimated 26.2 percent of Americans ages eighteen and older, which translates to 57.7 million people, suffer from a diagnosable mental disorder in a given year (National Institute of Mental Health, 2008). Mental health care has improved substantially over the past several decades due to advancements in medicine, technology, and research. However, these improvements have not been reflected in the physical health of individuals with MI.

Individuals with MI on average die 15-20 years earlier than individuals without MI (Druss et al., 2011). The majority of excess deaths in this population are due to physical illnesses, particularly due to cardiovascular disease (Kisely et al., 2005; Lawrence et al., 2001; Leucht et al., 2007). Compared to individuals without mental illness, individuals with mental illness are twice as likely to develop and three times as likely to die from cardiovascular disease (Lawrence et al., 2001; Baker & Goldie, 2014). These inequalities in CVD risk among individuals with MI can be attributed to a combination of factors including consequences of MI itself, side effects of its treatment and medication, systemic issues, such as the separation of mental and primary care services from other medical services, and poor or

improper medical care (Leucht et al., 2007; Osborn et al., 2007).

These factors can then manifest into an increased susceptibility to CVD risk both directly and indirectly. In the direct sense, mental disorders and elevated psychiatric symptoms have been found to be independent risk factors of CVD (Khayyam-Nekouei et al., 2013). Consequences of MI include disruptions of the proper functioning of Hypothalamic–Pituitary–Adrenal Axis that lead to a stress-induced elevation of cortisol (Björntorp & Rosmond, 2000; Malik, 2004). This, in turn, increases the risk of a metabolic syndrome type state that includes glucose intolerance, hyperlipidemia, and increased visceral fat mass, all of which are CVD risk factors themselves (Björntorp, 1995; Björntorp & Rosmond, 2000; Malik, 2004). Additionally, mental stress experienced with MI also causes the improper activation of inflammatory reactions and autoimmune mechanisms that in turn leads to oxidative stress, one of the early signs of future CVD (Chauvet-Gélinier et al., 2013; Lerman, 2005).

In a more indirect sense, individuals with MI are also much more likely to have other CVD risk factors. Compared to individuals without MI, individuals with MI are more likely to smoke, have hypertension, be overweight/obese, have a family history of heart disease, and are less likely to obtain adequate levels of physical activity (Hert et al., 2009; Ross, 2014; Scott et al., 2012; Stapelberg et al., 2011). Taken together, individuals with MI are much more susceptible to both developing and dying from CVD.

Economic Impact

In addition to the disproportionately large morbidity and mortality rate associated with CVD that affects individuals with MI, the importance of this health problem can be further highlighted from an economic standpoint. In terms of direct costs, comorbidities between MI and physical health problems present major challenges to the healthcare system by worsening health outcomes and prolonging recovery, thereby exacerbating costs to the system. For instance, compared to the treatment of individuals who have CVD alone, treatment of individuals with mental illnesses and CVD costs the healthcare system 1.5 times as much (Mcdaid & Park, 2014). More specifically, the cost of treating comorbid MI and CVD vary from \$1457.93 to \$2566.95 per comorbid person per month

(American Psychiatric Association, 2014; Goetzel et al., 2004).

Comorbid mental illness and CVD is also associated with indirect costs related to the lost opportunity to contribute to economic productivity, in regards to both absenteeism and presenteeism. Absenteeism, taking off of work due to poor health or premature death associated with comorbid MI and CVD, costs the U.S. \$43.7 billion over 200 million days lost from work each year (Goetzel et al., 2004). While research on presenteeism, lost productivity while working, due to comorbid mental illness and CVD is substantially lacking, one study estimates that it may cost the U.S. between \$20.8 and \$48.3 billion annually (Mitchell & Bates, 2011).

Since economic costs refer to more than just monetary costs, it is also important to consider ‘intangible costs’ that are difficult to quantify. For instance, one in four families has at least one member currently suffering from a mental illness (WHO, 2013). Individuals with MI themselves have to deal with the symptoms of MI, side effects of medication, and stigma associated with MI coupled with rejection or discrimination leading to a sense of isolation (National Alliance on Mental Illness, n.d.). In addition to this, family members of these individuals are also often subject to the harsh consequences and realities associated with MI. Family members may have to miss other work and obligations to care for these individuals with MI in addition to experiencing the distress of seeing their loved one deal with mental illness (Leggatt, 2002).

It would not be surprising to note that adding CVD into this equation has a multiplicative effect on these intangible costs. For example, individuals with MI and CVD would require even more visits to physicians, medications, and treatments, in addition to the possibility of interactions between medications (World Health Organization, 2017). The financial burden of this comorbidity can place additional stress on both family members and individuals with MI, which may exacerbate their MI and in turn their CVD. Therefore, reducing the risk of CVD, preferably preventing CVD from occurring in the first place, along with improving treatment and care associated with CVD risk factors not only presents huge economic benefits, including both ‘intangible’ benefits for family members of individuals with MI and monetary benefits for the nation and larger

society as a whole, but it also provides an opportunity to provide some much-needed relief to a population of individuals with MI who have been unfairly suffering for several decades.

Addressing MI Health Disparities

Several steps have thus been taken to address this problem. The implementation of policies such as the Affordable Care Act (ACA) has served as a catalyst to addressing poor and improper care. First and foremost, the ACA has significantly increased access to mental health care by classifying mental health services as one of the ten essential health benefits that must be covered by insurance and extending insurance coverage to around 5.5 million individuals with MI (Mark et al., 2015). Such policies have also encouraged the integration of mental health care and primary care through provisions such as Accountable Care Organizations, which has been shown to significantly improve the physical and mental health outcomes of individuals with MI (Archer et al., 2012).

Additionally, offering integrated care provides a solution to the ongoing controversy over who is responsible for providing physical health care to individuals with MI (National Institute of Mental Health, 2017). Primary care physicians argue that they do not have specific training in dealing with MI and thus, psychiatrists should be responsible (Fleischhacker et al., 2008; Marder et al., 2004). Mental health care providers argue that they do not have the adequate training to provide physical health care to patients, that their role is in dealing with MI itself, and that primary care physicians should be responsible for the physical health of individuals with MI (Millar, 2008). It has also been estimated that, based on direct and indirect costs associated with comorbid mental illness and CVD in 2012, \$21.16 billion dollars could be saved annually through proper integration of primary care and mental health care (American Psychiatric Association, 2014). Nevertheless, until successful integrated care becomes a reality, any steps to improve the physical, particularly the cardiovascular health, of individuals with MI must be taken.

Provider-level Concerns

Out of the factors that are associated with the cardiovascular health disparities among individuals with MI mentioned above, one of the most modifiable factors to target in order to improve CVD outcomes

among this population is the poor quality of medical care they receive. While physicians today are more attuned to the risk of cardiovascular disease (CVD) among patients, many physicians are unaware that MI is associated with increased risk of CVD (Burton et al., 2015). Unfortunately, stigmatizing attitudes against individuals with MI are also prevalent among primary care physicians, which have prevailed as one of the major barriers to addressing the CVD health of the population (Wallace, 2010). Both of these factors often mean that physicians do not properly screen individuals with MI for CVD risk factors to the extent necessary to reduce preventable CVD and associated mortality (Lawrence & Kinsley, 2010). For instance, a review of ten studies summarizing screening rates for CVD risk factors found that not only were individuals with MI screened significantly less than individuals without MI, but as low as 6% of individuals with MI were adequately screened for CVD risk factors (Baller et al., 2015). This has profound implications; a large percentage of CVD and associated mortality among individuals with MI may have been prevented had they been appropriately screened for CVD risk factors.

Several interventions that aim to increase physician awareness of the increased risk of CVD among individuals with MI and interventions that aim to reduce stigma against individuals with MI among physicians and healthcare providers are underway (Gronholm et al., 2017; Knaak et al., 2017; Mehta et al., 2015). The evidence for the success of these interventions is mixed. Thus, the Agency for Healthcare Research and Quality (AHRQ) posits that trying to encourage individuals with MI to ask their providers for proper cardiovascular healthcare, such as CVD risk factor screenings, may yield more promising results (Gierisch et al., 2013). This may be because physicians are much less likely to deny appropriate screenings and other services when patients openly discuss why they are necessary and directly request these services (Chapman et al., 2013; Alcalá et al., 2015). If individuals with MI receive the appropriate cardiovascular care and are adequately screened for CVD risk factors, the prevalence of increased preventable CVD and associated mortality within this vulnerable population may be substantially reduced.

Theoretical Models and Steps toward Interventions

Interventions that aim to increase self-efficacy and communication skills of the MI patient population to

encourage them to discuss their CVD risk and request necessary screenings from physicians have been suggested (Gierisch et al., 2013). However, before designing these interventions, it is important to determine whether individuals with MI are aware of their increased CVD risk and are not discussing or pursuing CVD risk factor screenings from physicians or whether these individuals are unaware of their increased risk for CVD to start. While it makes sense to begin developing and implementing interventions to improve patient-provider communication in the former situation, these interventions may be less likely to be effective if individuals with MI do not know that have a higher CVD risk. Not only might this be less influential in improving the quality of cardiovascular health care that this population receives, but the time, effort, and resources used to develop and implement these interventions would have been misspent. In this case, interventions to improve knowledge among the MI patient population about their increased risk for CVD and associated mortality would be more appropriate and may improve the effectiveness of interventions that encourage patient-provider communication about cardiovascular health. Subsequent improvements in the cardiovascular health of this population would also be more likely since increasing patient education and understanding is associated with improvements in health outcomes (Adams, 2010). Therefore, determining whether individuals with MI know that they are at higher risk for developing and dying from CVD is important.

Another factor that leads to cardiovascular disparities among this population that could be modified revolves around the lifestyle patterns and behaviors of individuals with MI. For instance, compared to individuals without MI, individuals with MI are significantly less likely to be physically active and significantly more likely to have unhealthy dietary habits, (Zschucke et al., 2013; Scott & Happell, 2011). Therefore, interventions to improve the dietary habits and increase physical activity among individuals with MI are necessary. Several interventions aimed to do just that among individuals with MI (Alvarez-Jiménez

et al., 2008; Faulkner et al., 2007; Kalarchian et al., 2005; Lowe & Lubos, 2008; Markowitz et al., 2006; Verhaeghe et al., 2011). Unfortunately, most of these interventions have been unsuccessful. It is important to note that the few successful interventions have all

utilized a theoretical framework, specifically the Transtheoretical Model (TTM) and the Health Belief Model (HBM), to provide a conceptual foundation for designing the interventions (Farholm & Sørensen, 2016; Mo et al., 2016).

Knowledge is a crucial component that underlies both models. TTM views the process of behavior change that begins with changes in cognition that occur across the first three stages, such that new knowledge essentially leads individuals to a decisional balance, and helps move from one stage to the next (Prochaska & Velicer, 1997). Knowledge underlies most of the constructs of HBM, particularly the constructs of perceived severity and susceptibility (Glanz et al., 2002; Rosenstock, 1974). The interventions that included a knowledge component, explaining why exercise is necessary generally, were more effective (Farholm & Sørensen, 2016). If individuals with MI currently lack the knowledge of their increased risk for CVD, including a component that aims to increase this knowledge, may help motivate individuals to engage in healthy behaviors (Middleton et al., 2013). This, in turn, may improve the cardiovascular outcomes of individuals with MI and increase the effectiveness of lifestyle and behavior change interventions conducted among this population. Determining if individuals with MI do not know about their increased CVD risk is essential in understanding whether they stand to benefit from learning this information, is important.

Therefore, the purpose of the present study is to determine the level of knowledgeable individuals with MI have about their increased risk for CVD and associated mortality due to their MI. In order to understand the extent of knowledge regarding MI as a risk factor, a comparison will be made between knowledge of MI being a CVD risk factor and knowledge of five other CVD risk factors: smoking at least one cigarette a day on average, having hypertension, being overweight/obese, having a family history of CVD, and not obtaining adequate physical activity. These five risk factors were chosen for comparison because, as mentioned earlier, individuals with MI are more likely to suffer from these CVD risk factors than the general population (Ross, 2014; Scott et al., 2012; Stapelberg et al., 2011).

METHODS

Population of Study

The population base for the present study was individuals with MI. MI affects individuals of all racial and ethnic groups, across every level of socioeconomic status and nearly all age groups. According to the National Institute of Mental Health, results from the 2015 SAMHSA National Survey on Drug Use and Health revealed that 29.2% of biracial or multiracial Americans, 21.2% of Native Americans, 19.3% of Caucasians, 15.4% of African Americans, 14.3% of Native Hawaiian and other Pacific Islanders, 12% of Asian Americans, and 14.5% of Hispanics have a MI. However, it should be noted that due to cultural stigmas against mental illness, Hispanics, Asian Americans, African Americans, and Native Hawaiian and other Pacific Islanders are much more likely to underreport MI than other groups. In fact, one study estimates that when such cultural stigmas and views are accounted for, the percentage of these groups that have MI is likely to be close to that of Caucasians and Native Americans (Miller et al., 2016). Therefore, the priority population was not narrowed down to a particular racial or ethnic group, since the prevalence among each group is comparable.

The results of the 2015 SAMHSA National Survey on Drug Use and Health also revealed that while 21.2% of females have MI, only 14.3% of males have MI. However, as in the case of minority racial and ethnic groups, males are much more likely than females to underreport MI due to social norms and stigma associated with MI and treatment-seeking behavior in males. The study by Miller and colleagues (2016) also found that if these gender-related norms and stigmas are taken into consideration, then there would likely be no significant differences in the prevalence of MI between females and males. Thus, because the prevalence between the sexes is comparable, the priority population was also not limited to a particular sex and instead focused on both sexes.

Half of all individuals with MI who will ever be clinically diagnosed with an MI show signs of the disease by age 14 and 75% of all individuals with MI who will ever be diagnosed with a MI show signs by age 25 (Talbot, 2006). Although half of all individuals with MI show signs by the age of 14, most cases are not

diagnosed that early. In fact, 78% of cases of MI are diagnosed between the ages of 18 and 25 (Substance Abuse and Mental Health Services Administration, 2015).

Since the present study aims to examine the knowledge of CVD risk among individuals with MI, it was important that those who were enrolled as participants were aware that they have MI. In other words, participants will need to have been diagnosed with MI, which is why participants were recruited from mental health care settings. Additionally, according to the Board on Children, Youth, and Families, Institute of Medicine, and the National Research Council (2013), the earlier an intervention, such as an intervention to increase knowledge or improve healthy habits like increasing physical activity, is implemented, the more likely it is to be effective and have a greater impact on the lives of affected individuals. As stated earlier, because most cases of MI are diagnosed between the ages of 18 and 25, from a more practical perspective, the earliest ages during which such interventions could be implemented would thus be between 18 and 25. However, due to the limited time available for data collection, the age range for recruitment was extended from 18 to 25 to 18 to 30 to ensure that a sufficient number of participants could be recruited within the allotted timeframe. Furthermore, it has been shown that efforts to improve cardiovascular health are most effective at significantly reducing preventable CVD and associated mortality when initiated among young adults within this age group (Graham & Cooney, 2015). Before planning and implementing interventions among this age group, it is imperative to study the knowledge of CVD risk factors among young adults with MI. Therefore, taken together, the prioritized population for this study included individuals with MI between the ages of 18 and 30 of all racial and ethnic groups.

Design and Measurement

A comprehensive list of individuals with MI was not available at the time the study was initiated, so although obtaining a random sample of individuals with MI between the ages of 18 and 30 would yield more scientifically rigorous data, it was not feasible or practical. Therefore, a convenience sampling technique was utilized in the present study. Individuals with MI were recruited from mental healthcare settings in

Maryland, D.C., and Virginia. Healthcare facilities that serve diverse catchment populations were purposively selected to obtain more racially, ethnically, and socioeconomically diverse study samples that better represent the racial, ethnic, and socioeconomic diversity of the population base indicated above.

First, mental health care providers were contacted through email or over the phone to explain the details of the study and to determine if they would allow participants to be recruited from their mental health care facilities. If they agreed to allow participant recruitment from their facilities, they were asked to send an email (Appendix A) to their patient base explaining that a voluntary 5-minute survey will be administered to individuals between the ages of 18 and 30 during the wait times before their appointment with their mental health care provider. This technique of asking providers to email their participants was used because it may have made patients more willing and comfortable with taking the survey, increasing the likelihood of participation. The email was also used to let patients know that their decision to participate would not affect the care and services that they receive in any way. This, in turn, helped ensure that patients were not coerced to participate.

On the day of recruitment, an announcement (Appendix B) was made by the researcher at different times to provide patients with additional information about the survey. Individuals between the ages of 18 and 30 were approached and asked if they would be willing to take the survey. Interested individuals were then asked whether they would prefer to take the survey through Qualtrics on an iPad provided by the researcher at that time or on paper. Depending on their choice, the appropriate instrument was handed to them. Before beginning the survey, participants had to read the consent form on the iPad (Appendix C) or paper (Appendix D). Participants were given the opportunity to ask any questions they had before completing the consent form and beginning the survey. Only individuals who were able and willing to provide informed consent and were between the ages of 18 and 30 were allowed to take the survey. Eligible and interested participants then completed the survey (Appendix E) during wait times between appointments to meet with their mental health care providers. A more detailed description of the steps and procedures followed during the recruitment process, along with

important dates is provided in Appendix F. The corresponding study timeline is in Appendix G.

Survey Instrument

A CVD risk factor knowledge questionnaire was used as the survey instrument in this study. CVD risk factor knowledge questions were adapted from the questions found in three CVD risk factor knowledge instruments used in previous studies (Bergman et al., 2011; Awad & Al-Nafisi, 2014; McClendon, 2011). The psychometric properties of these three instruments have been well established previously and have been used in numerous other studies to assess CVD risk factor knowledge (Bergman et al., 2011; Awad & Al-Nafisi, 2014; McClendon, 2011).

The final Cardiovascular Disease Risk Factor Knowledge Questionnaire (Appendix E) used in the present study was pilot tested among 50 individuals with MI between the ages of 18 and 30 who rated the instrument as understandable, easy, quick, and unambiguous in interpretation, thereby validating its usefulness. Additionally, 25 primary care physicians and 25 mental health care providers who were asked to review the instrument rated the purpose and content of the instrument as appropriate. The psychometric properties of the questionnaire were also analyzed.

The validity and the reliability of the Cardiovascular Disease Risk Factor Knowledge Questionnaire have been appropriately established, confirming the utility of its application in the present study. The three most important types of validity in instrument assessment and educational literature, content, construct, and criterion validity, were all substantiated through appropriate tests. Content validity was established by 85% inter-content agreement among both primary care physicians and mental health care providers. Construct validity was evaluated and established through factor analysis. Hierarchical linear regression was used to establish criterion validity. Additionally, the instrument was found to significantly correlate with the other established CVD risk factor knowledge instruments that the present instrument was modeled after, thereby demonstrating the concurrent validity of the instrument. Internal consistency and instrument reliability were established by a Cronbach's Alpha of 0.853 and a Spearman-Brown split-half reliability of 0.827. Item analysis, using a point biserial correlation, found

statistically significant associations ($p < 0.01$) between performance on single items and the total score.

RESULTS

A total of 163 individuals with MI between the ages of 18 and 30 were approached to participate in the study, of which 152 agreed to participate, yielding a 93.3% response rate. Five of these were dropped due to missing data. Thus, the data for 147 participants were analyzed. Demographics and participant characteristics are shown in Table 1a and Table 1b, respectively. Fairly equal proportions of male ($n = 71$) and female ($n = 76$) subjects were recruited. Additionally, because mental health care facilities that serve racially and ethnically diverse catchment populations were purposively selected, the racial and ethnic diversity of the study sample, was high, where 59.9% of participants were non-white and 13.6% were of Hispanic origin.

There was significant variation in participant age, with the mean age being 22.76 ± 3.30 years. 78.2% ($n = 115$) of participants had at least a high school education. The majority of participants were either working part-time (42.2%) or looking for work (38.1%). Most participants are single (74.8%) and considered middle-class, with 46.9% ($n = 69$) in the lower middle class and 33.3% ($n = 49$) in the upper middle class.

Mental Illness

The prevalence of the type of MI among participants was similar to the national prevalence of each type (National Institute of Mental Health, 2008). The type of MI was reported as follows: 32.0% ($n = 47$) had depression, 31.9% ($n = 41$) had anxiety, 20.4% ($n = 30$) had bipolar disorder, 10.9% ($n = 16$) had a psychotic disorder or schizophrenia, and 8.84% ($n = 13$) had more than one type of MI. On average, participants had been living with mental illness for 4.37 ± 1.44 years. Because participants were recruited from mental health care facilities, all participants were currently under treatment for their MI. About equal numbers of participants were taking medication, under behavioral therapy/counseling, or both taking medication and seeking behavioral therapy/counseling. On average, participants had been under treatment for 3.96 ± 1.40 years.

Participant Behaviors and Lifestyle

Out of the 147 participants, 22.4% ($n = 33$) smoke at

least one cigarette a day on average. 73.5% (n = 108) are not engaging in the recommended amount of physical activity required for the maintenance of proper

cardiovascular health. Finally, their BMIs were calculated based on the heights and weights they reported on the survey. The results show that 54.4% (n = 80) of participants are above the normal weight classification. Specifically, 34.7% (n = 51) were overweight and 19.7% (n = 29) were obese.

Medical Diagnoses

Of the 147 participants in the study, 21.1% (n = 31) reported that they had been told by a medical professional that they were overweight or obese.

Similarly, 11.6% (n = 17) of participants reported that a medical professional had diagnosed them with high blood pressure previously. 15.6% (n = 23) of participants were diagnosed with high cholesterol.

Perceptions about Health and CVD

Over half of all participants (60.5%) perceived that their current health status was good or even better. 58.5% of participants reported that they felt well-informed about CVD, with 42.9% (n = 63) indicating that they were informed 'quite a lot' and 15.6% (n = 23) indicating they felt 'extremely' informed about CVD. 70.0% (n = 103) of participants also felt little to no concern about developing CVD.

Table 1a
Participant Demographics

Variable	Percent (n = 147)
Sex	
Male	48.3% (71)
Female	51.7% (76)
Age	
18-19	20.4% (30)
20-21	17.0% (25)
22-23	24.5% (36)
24-25	15.6% (23)
26-27	13.6% (20)
28-29	8.84% (13)
Mean age \pm S.D.	22.76 \pm 3.30
Ethnicity	
Hispanic/Latino	13.6% (20)
Not Hispanic/Latino	86.4% (127)
Race	
Black or African American	30.6% (45)
Asian American	22.4% (33)
Native Hawaiian or Pacific Islander	2.04% (3)
White or Caucasian	40.1% (59)
Biracial or Multiracial	4.76% (7)
Marital Status	
Single	74.8% (110)
Married or living with partner	25.2% (37)
Employment Status	
Full-time	18.4% (27)
Part-time	42.2% (62)
Looking for work	38.1% (56)
Disabled	1.40% (2)
Highest Level of Education	
Elementary	1.40% (2)
Some high school	20.4% (30)
High school graduate	15.0% (22)
GED	12.9% (19)
College/technical school	44.9% (66)
Graduate/professional school	5.40% (8)
Income Class ^a	
Working	15.6% (23)
Lower Middle	46.9% (69)
Upper Middle	33.3% (49)
Upper	4.10% (6)

a. Calculated and categorized based on the median income in Maryland

Table 1b

Participant Characteristics

Variable	Percent (n = 147)
Mental Illness	
Depression	32.0% (47)
Anxiety	31.9% (41)
Bipolar Disorder	20.4% (30)
Psychotic Disorder/Schizophrenia	10.9% (16)
Two or more types	8.84% (13)
Current Treatment	
Medication	40.1% (59)
Behavioral therapy/Counseling	29.3% (43)
Both	30.6% (45)
Smoke 1/+ cigarettes daily	
No	77.6% (114)
Yes	22.4% (33)
Weekly Exercise	
Less than recommended amount	73.5% (108)
Recommended amount or more	26.5% (39)
Weight Classification	
Normal weight	45.6% (67)
Overweight	34.7% (51)
Obese	19.7% (29)
Medical Diagnosis of Overweight/Obesity	
No	78.9% (116)
Yes	21.1% (31)
Medical Diagnosis of High Blood Pressure	
No	88.4% (130)
Yes	11.6% (17)
Medical Diagnosis of High Cholesterol	
No	84.4% (124)
Yes	15.6% (23)
General Health Status	
Very Poor	12.9% (19)
Poor	7.50% (11)
Fair	19.0% (28)
Good	28.6% (42)
Very Good	23.8% (35)
Excellent	8.20% (12)
Informed about CVD	
Not at all	5.40% (8)
Slightly	18.4% (27)
Moderately	17.7% (26)
Quite a lot	42.9% (63)
Extremely	15.6% (23)
Concern about developing CVD	
Not at all	39.5% (58)
Slightly	30.6% (45)
Moderately	21.1% (31)
Quite a lot	5.40% (8)
Extremely	3.40% (5)

Knowledge of CVD Risk Factors

For each of the six CVD risk factors tested, the scores on the three sub-component questions testing conditional, factual, and internalized knowledge were summed to determine the level of knowledge of that risk factor. The average summary scores for each risk factor is provided in Table 2. An analysis of variance test was used to compare the means of the sum of scores across the six risk factors. A statistically significant difference ($F(5, 730) = 54.602, p < 0.0005$) was found in the means of the summary scores of the three sub-component questions across the six CVD risk factors tested. In contrast, an analysis of variance showed no

significant difference ($F(4, 584) = 2.047, p = 0.086$) in the means of the summary scores of the three sub-component questions across the five general CVD risk factors: being overweight/obese, smoking at least one cigarette a day on average, high blood pressure, insufficient physical activity, and high cholesterol. Similarly, a Chi-squared test conducted to compare knowledge across the five general CVD risk factors, which again includes all the risk factors tested excluding MI, showed no significant difference ($\chi^2(4) = 1.97, p = 0.742$) in the percent of people with knowledge across the five CVD risk factors.

Table 2

<i>Average summary scores across conditional, factual, and internalized knowledge</i>	
Variable	Mean \pm SD
Overweightness/Obesity	11.02 \pm 1.73
Smoking at least one cigarette a day on average	11.69 \pm 1.53
Mental illness	7.24 \pm 1.42
Hypertension	11.02 \pm 1.63
Insufficient physical activity	11.46 \pm 1.66
Hypercholesterolemia	11.69 \pm 1.49

In contrast, a Chi-squared test revealed a significant difference ($\chi^2(5) = 13.52, p = 0.019$) in the percent of people who showed knowledge (i.e., had a summary score of 11 or higher) across the six CVD risk factors tested. While only 34% ($n = 50$) of participants knew MI was a risk factor for CVD, 82.3%, 75.5%, 70.1%, 72.8%, and 78.9% of participants knew that overweightness/obesity, smoking at least one cigarette a day, hypertension, insufficient exercise, and hypercholesterolemia were CVD risk factors, respectively (Figure 1).

The average summary score across from the three subcomponent questions for MI was 7.24 ± 1.42 . The summary scores for the remaining five general CVD risk factors were averaged for each participant. The average of the summary score of the five general CVD risk factors was then calculated and found to be 11.38

± 1.04 . A paired-samples t-test was then conducted to compare the level of knowledge of MI to the average level of knowledge of the five general CVD risk factors. Subsequently, a significant difference ($t(146) = -10.630, p < 0.0005$) in the means of the summary scores between MI ($M = 7.24, SD = 1.42$) and the average summary score across the five general CVD risk factors ($M = 11.38, SD = 1.04$) was found. The average summary scores across the five general CVD risk factors was then recoded into expressing knowledge (average score of 11 or higher) or not expressing knowledge (average score below 11). Then a Chi-squared test was conducted to compare knowledge of MI to the average knowledge of the five general CVD risk factors. A significant difference ($\chi^2(1) = 5.77, p = 0.016$) was found between knowledge of MI and the average knowledge of the general CVD risk factors. These findings are summarized in Table 3.

Table 3

Indication of the level of knowledge and knowledge of the CVD risk factors tested

Category	Sig.
Level of knowledge across all six CVD risk factors ^a	< 0.0005
Level of knowledge across the five general CVD risk factors ^b	0.086
Level of knowledge of mental illness compared to the average level of knowledge of the five general CVD risk factors	< 0.0005
Knowledge across all six CVD risk factors	0.019
Knowledge across the five general CVD risk factors	0.742
Knowledge of mental illness compared to the average level of knowledge of the five general CVD risk factors	0.016

Note. The sum of the scores across the three questions testing conditional, factual, and internalized knowledge represents level of knowledge of a risk factor. A summary score of 11/+ represents knowledge of that factor being a risk factor for CVD.

^a Overweightness/obesity, smoking 1/+ cigarettes, mental illness, hypertension, insufficient exercise, high cholesterol.

^b Five general CVD risk factors: the six CVD risk factors tested excluding mental illness

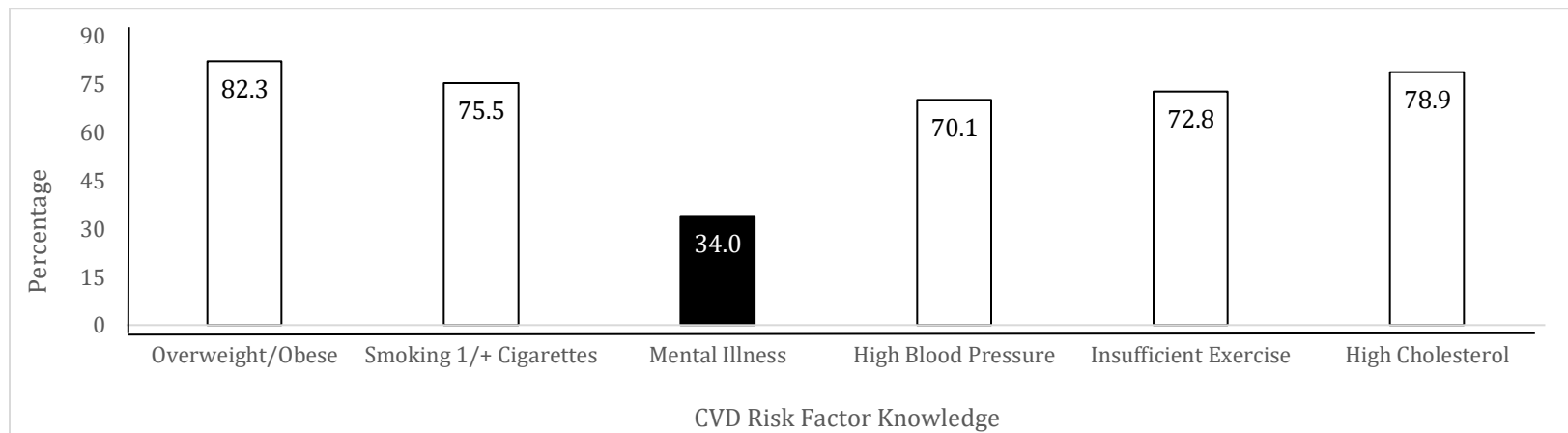


Figure 1. Percent of participants with knowledge of the CVD risk factors. This chart portrays the proportion of participants who scored a sum of 11 or higher across the three questions for each CVD risk factor, indicating knowledge of that CVD risk factor.

Variations in Scores and Knowledge

There were no significant differences in summary scores or knowledge of any of the six CVD risk factors based on differences in the demographic variables or participant characteristics listed in Table 1a and Table 1b, respectively. Of note, multinomial logistic regression analysis revealed no significant differences in knowledge of MI based on education level ($\chi^2(1) = 0.001, p = 0.977$) or how informed they perceived themselves to be about CVD ($\chi^2(1) = 0.108, p = 0.724$).

Data on smoking, exercise behavior, and obesity/overweightness were also collected. This data was used to determine if there were any significant differences in knowledge of respective CVD risk factors, namely, smoking, exercise, and overweightness/obesity and if there were any significant differences in how susceptible or concerned they reported feeling about developing CVD. An independent-samples t-test

showed no significant difference ($t(145) = 1.341, p = 0.182$) in the knowledge of smoking as a CVD risk factor based on whether participants smoked ($M = 1.67, SD = 0.48$) or did not smoke ($M = 1.78, SD = 0.42$). Similarly, there was no significant difference ($t(145) = 0.420, p = 0.680$) in the knowledge of lack of exercise as a CVD risk factor based on whether participants exercised sufficiently ($M = 1.67, SD = 0.49$) or not ($M = 1.73, SD = 0.45$). There was also no significant difference ($t(145) = 1.086, p = 0.279$) in the knowledge of overweightness/obesity as a CVD risk factor based on whether participants were overweight/obese ($M = 1.80, SD = 0.40$) or of normal weight ($M = 1.87, SD = 0.34$). Finally, as shown in Table 4, independent samples t-tests revealed no significant differences in perceived susceptibility or concern for developing CVD based on weight status ($p = 0.322$), smoking behavior ($p = 0.089$), or amount of exercise ($p = 0.315$).

Table 4

Independent samples t-test: differences in perceived susceptibility to CVD

CVD Risk factor	Mean \pm SD	df	t	Sig.
Weight status		145	0.993	0.322
Overweight/Obese	1.95 \pm 1.10			
Normal Weight	2.13 \pm 1.02			
Smoking behavior		145	1.713	0.089
Smoking 1/+ cigarettes a day on average	2.16 \pm 0.96			
Non-smoker	1.93 \pm 1.08			
Physical activity		145	1.009	0.315
Gets less than recommended amount	2.04 \pm 1.10			
Gets recommended amount	1.82 \pm 0.41			

DISCUSSION

Individuals with MI are two times as likely to develop and three times as likely to die from CVD (Baker & Goldie, 2014). The purpose of the present study was thus, to determine whether individuals with MI knew that MI is a risk factor for CVD to assess the awareness of their increased risk for CVD due their MI, compared to the general population. To compare knowledge of MI, knowledge of five other general CVD risk factors was assessed. It was hypothesized that individuals with MI currently do not know that they have a higher CVD risk. The results of the present study support this hypothesis. There was a significant difference in the sum of scores on the three sub-component questions testing conditional, factual, and internalized knowledge

across the six different CVD risk factors. There was also a significant difference in the percent of participants who scored a total of 11 or higher across the three sub-component questions for each variable/risk factor, indicating knowledge of that particular variable being a risk factor for CVD.

The sums of the scores for the five general CVD risk factors were also compared to determine if participants lacked knowledge on any of the other risk factors that commonly affect this population. No significant difference was found in the sums of scores across the five different CVD risk factors. There was also no significant difference in the percent of participants who

scored a sum total of 11 or higher across the three sub-component questions for each of the five variables/risk factors, indicating knowledge of that variable being a risk factor for CVD. Because there was no significant difference in scores and knowledge across the five general CVD risk factors, the average summary scores of the five general CVD risk factors were calculated and compared to the summary scores for MI. A significant difference in scores between MI and the average of the summary scores of the general risk factors was found, in terms of both level of knowledge and knowledge. In addition to this, while at least 70.0% of participants indicated knowledge (scored 11 or higher) for each of the five general CVD risk factors, only 34.0% of participants knew that MI was a CVD risk factor. Seventy percent of participants also felt little to no concern about developing CVD, despite the fact that MI doubles their CVD risk, further highlighting the lack of knowledge of MI being a risk factor for CVD among this population. The findings of this study were consistent with the results obtained from the pilot study conducted among fifty individuals with MI.

The results of the study also supported previous statistics of individuals with MI being more likely to have other CVD risk factors than the general population, increasing their CVD risk (Hert et al., 2009; Ross, 2014; Scott et al., 2012; Stapelberg et al., 2011). Compared to the 22.4% of participants that smoke, 20.7% of the general population smoke at least one cigarette a day (SAMHSA, 2017). Compared to the 73.5% of participants who are not engaging in the recommended amount of physical activity required for the maintenance of proper cardiovascular health, 48.3% of the general population did not get sufficient exercise (CDC, 2017). As such, participants in the study were more likely to smoke and less likely to get the required amount of physical activity than the general population. Therefore, it is important to increase the knowledge of this population about their higher risk for CVD, to increase their likelihood of engaging in healthy behaviors and reduce or stop unhealthy habits.

The present study was undertaken to determine whether individuals with MI need to be educated about their increased risk for CVD before trying to improve their self-efficacy and communication skills in preparation to encourage them to discuss their cardiovascular health with their providers and request necessary screenings and services. This reasoning was founded on reports of

individuals with MI not being screened appropriately for CVD risk factors. This was exemplified in the present study as well. Specifically, although 54.4% of participants were overweight or obese based on their heights and weights, only 21.1% of participants were told by a medical professional that they were, in fact, overweight or obese. It is also important to note that least 21.9% of individuals with MI between the ages of 18 and 35 are expected to be hypertensive and at least 24.1% are expected to have high cholesterol (SAMHSA, 2012). Therefore, although data on the blood pressure and cholesterol levels of participants were not collected in the present study, the percent of participants who reported being medically diagnosed with blood pressure (11.6%) or cholesterol (15.6%), was very low. These results provide further justification for why the present study was needed. Additionally, it highlights the urgency for improving CVD risk factor screening rates among individuals with MI, since this population is still receiving poorer quality cardiovascular health care.

Implications and Directions for Future Research and Intervention

The premise behind the development and completion of the present study was to determine the next steps to improve that cardiovascular health care that individuals with MI receive and lower their risk for poor cardiovascular health outcomes. As stated previously, the results of this study have revealed that individuals with MI do not know that they are at higher risk for developing CVD than the general population. Therefore, interventions to increase the awareness and knowledge of individuals with MI regarding their increased CVD risk associated with having a MI, is immediately warranted. Once these individuals with MI know that they are more likely to develop CVD and in turn perceive themselves to be more susceptible to developing and dying from CVD, interventions to improve their communication skills and confidence in discussing this information with their primary care providers can be implemented. This will likely increase the CVD risk factor screenings and other necessary services that this population receives, which in turn may improve their health outcomes (Adams, 2010).

While having these conversations with and asking for CVD risk factor screenings from primary care providers is likely to increase the both the quantity of appropriate services and quality of care this population receives,

targeting primary care providers and the care they provide directly remains a necessity to further increase the likelihood of this population receiving appropriate medical care. Thus, it is important to design and conduct interventions to increase the knowledge of the increased CVD risk that individuals with MI have, among primary care providers and other health professionals. In addition to this, it is important to continue researching the reasons behind the stigmatizing attitudes that many health care professionals hold against individuals with MI and how best to address these attitudes. These strategies should then be applied improve on current interventions as well as develop new interventions to reduce stigma around and discriminatory practices against individuals with MI within the medical field.

Informing and educating individuals with MI about their increased risk for CVD may also increase their initiation and maintenance of healthy behaviors in behavior and lifestyle interventions conducted among this population of individuals with MI (Middleton et al., 2013). Knowledge is a critical component in widely used behavior change models, such as the Transtheoretical Model and the Health Belief Model. As such, previously implemented lifestyle interventions that utilized these models and included knowledge components were typically more effective than interventions without a knowledge component. Therefore, there is reason to believe that including a knowledge component about the increased risk for CVD in interventions that target individuals with MI may improve the effectiveness of the intervention by increasing the practice of healthy behaviors among individuals with MI, which in turn would improve their cardiovascular health and reduce their risk for CVD. Additional research should be conducted to determine whether including the knowledge improves uptake of healthy behaviors among this population and how best to include such a component in future interventions. If interventions to improve knowledge about the increased risk for CVD among both individuals with MI and healthcare providers, encourage communication between patients and providers regarding the provision of necessary cardiovascular care, reduce stigma against MI among providers are implemented in concert with lifestyle interventions that include a knowledge component, the cardiovascular health of individuals with MI may be improved substantially.

Additionally, as explained in the limitations section below, this study could be repeated with a random sample of individuals with MI to obtain more scientifically rigorous results. In the present study, participants were asked whether they had three CVD risk factors (being overweight/obese, smoking at least one cigarette a day, and not getting the recommended amount of exercise weekly). No significant differences in CVD risk perception based on whether or not the participants had these risk factors were found in this study. However, future studies could test additional CVD risk factors, and collect this data directly instead of using a self-report system, to determine whether having those risk factors influences the perceived risk or concern about developing CVD among this population.

Limitations

Limitations of this study warrant caution when interpreting the results. The study sample was not obtained randomly and was instead obtained as a convenience sample, which may not be representative of the overall population of young adults with MI. However, mental health care facilities that serve racially and ethnically diverse catchment populations in both lower and higher-income areas were selected purposively to obtain as diverse and representative of a sample as possible. Nevertheless, repeating the study with a random sample of young adults with MI may yield more scientifically rigorous results.

Another limitation is that because data were self-reported by participants, it is possible that participants may have provided socially desirable answers. However, because the survey was anonymous and no identifying information was collected from participants, participants in this study may have been more willing and comfortable with answering truthfully. Still, participant response bias cannot be ruled out in the study, especially for the lifestyle and behavior-related questions about smoking, physical activity, and weight, which was used to determine what additional CVD risk factors this population had. Therefore, collecting data directly, through biological tests, for instance, may produce more accurate results. Finally, while a pilot study was conducted among 50 individuals with MI between the ages of 18 and 30 previously, there are currently no known studies that have aimed to determine knowledge of MI being a risk factor for CVD among the population of individuals

with MI. However, this study thus, adds to the literature and current understanding about the associations between MI and CVD. Additionally, the present study can be used to design similar studies in the future that can then be used to corroborate the results obtained in this study.

Conclusion

As stated previously, individuals with MI are not screened for CVD risk factors to the extent necessary to reduce the risk of developing and dying from CVD due to a combination of lack of knowledge of MI increasing the risk of CVD, stigmatizing attitudes against individuals with MI, and the subsequent poorer quality of health care provided to this population, by healthcare providers. Interventions that involve encouraging and enabling individuals with MI to directly ask their physicians to provide the necessary services and screenings has been suggested as a way to improve both the quality of cardiovascular healthcare and quantity of related services provided.

However, due to time and resource limitations, it is important to determine whether individuals with MI are

aware of their increased risk for CVD before developing and implementing interventions that aim to improve the communications skills and self-efficacy of these individuals to initiate these conversations with their providers. This study highlighted the limited awareness that individuals with MI have about MI being a CVD risk factor, indicating the need to educate this population about their increased risk for CVD. This, in turn, may increase their likelihood of initiating and maintaining healthy behaviors and better prepare them to have open discussions with their providers to request necessary medical procedures pertinent to cardiovascular health. Subsequently, their risk of developing and dying from CVD may be lowered, thereby reducing the incidence of comorbid CVD and MI among this population. Not only would this result in substantial financial savings for the nation as a whole, but it would also reduce the stress, financial strain, and hardship that individuals with MI and their family members face, offering some much-needed relief to a population whose physical has been unfairly neglected for several decades.

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Appendix E

Cardiovascular Disease Risk Factor Knowledge Questionnaire

Individuals between the ages of 18 and 30 are eligible to take this survey. The following survey is completely voluntary. You are under no circumstances required to complete the survey. Your decision to complete this survey will in no way affect any care or services that you receive within this or any other health care facility, now or in the future. If at any point during the survey, you wish to quit, you are free to do so. This is an anonymous survey, meaning no identifying information will be collected. Please do not hesitate to ask if you have any questions or concerns. Simply raise your hand at any time and I will come over to you to answer any questions that you may have.

I understand that the survey I am about to take is voluntary and anonymous. By clicking “next,” I provide my consent to take the survey.

Please select the answer that best represents your agreement to each statement.

Statement	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
If I am or become overweight/obese, then my possibility of getting heart disease will increase	1	2	3	4	5
If I smoke one or more cigarettes a day, then my possibility of getting heart disease will increase	1	2	3	4	5
If I have a mental illness, then my possibility of getting heart disease will increase	1	2	3	4	5
If I have high blood pressure, then my possibility of getting heart disease will increase	1	2	3	4	5
If I do not exercise regularly, then my possibility of getting heart disease will increase	1	2	3	4	5
If I have high blood cholesterol, then my possibility of getting heart disease will increase	1	2	3	4	5

Please select one answer for each question.

Being overweight/obese increases a person's risk for developing heart disease.	True	False	I don't know
Smoking one or more cigarettes a day increases a person's risk for developing heart disease.	True	False	I don't know
Having a mental illness increases a person's risk for developing heart disease.	True	False	I don't know
Having a high blood pressure increases the person's risk for developing heart disease.	True	False	I don't know
Not exercising regularly increases a person's risk for developing heart disease.	True	False	I don't know
Having high cholesterol increases a person's risk for developing heart disease.	True	False	I don't know

Please select one answer for each statement.

Statement	Very Low	Low	Medium	High	Very High
My likelihood of getting heart disease if I am or become overweight/obese is	1	2	3	4	5
My likelihood of getting heart disease if I smoke one or more cigarettes a day is	1	2	3	4	5
My likelihood of getting heart disease if I have a mental illness is	1	2	3	4	5
My likelihood of getting heart disease if I have high blood pressure is	1	2	3	4	5
My likelihood of getting heart disease if I don't exercise regularly is	1	2	3	4	5
My likelihood of getting heart disease if I have high cholesterol is	1	2	3	4	5

Demographics

Sex: Male
 Female

Age: _____ years old

Which race do you most closely identify with?

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or Pacific Islander
- White or Caucasian
- Other (please specify: _____)

Are you of Hispanic or Latino descent? Yes No

What is your marital status?

- Married/living with partner
- Divorced
- Widowed
- Single

Are you currently employed for pay?

- Yes, full-time
- Yes, part-time
- No, looking for work
- No, disabled
- Other _____

What is your highest grade you completed in school:

Elementary:	0	1	2	3	4	5	6	7	8
High school:	9	10	11	12					
GED:	12								
College/technical school:	13	14	15	16					
Graduate:	17 or more								

Please estimate your total yearly household income:

- Less than \$10,000
- \$10,000 to \$19,999
- \$20,000 to \$29,999
- \$30,000 to \$39,999
- \$40,000 to \$49,999
- \$50,000 to \$59,999
- \$60,000 to \$69,999
- \$70,000 to \$79,999
- \$80,000 or more

Including yourself, how many people are supported on this income? _____ people

Personal Characteristics

Please select one answer to each question unless indicated otherwise.

Indicate your mental illness (check all that apply):

- Depression
- Anxiety
- Bipolar Disorder
- Psychotic Disorder/Schizophrenia
- Other (please specify: _____)

How long have you been living with a mental illness?

- Less than one year
- Two years
- Three years
- Four years
- Five years
- Six or more years

Indicate whether you are currently under any of the following treatments for your mental illness (check all that apply):

- Medication
- Behavioral Therapy/Counseling
- Other (please specify: _____)

How long have you been under treatment for your mental illness?

- Less than one year
- Two years
- Three years
- Four years
- Five years
- Six or more years

Indicate your height: _____ feet _____ inches

Indicate your weight: _____ pounds

Has a medical professional ever diagnosed you with high blood pressure?

- No
- Yes

Has a medical professional ever diagnosed you with high cholesterol?

- No
- Yes

Has a medical professional ever told you that you are overweight or obese?

- No
- Yes

On average, do you smoke one or more cigarettes per day?

- No
- Yes

On average, how much do you exercise per week?

- Less than 1 hour/week
- 1 - 1.5 hours/week
- 1.5 - 2 hours/week
- 2 - 2.5 hours/week
- 2.5 - 3 hours/week
- More than 3 hours/week

Would you say that in general your health is:

- Very Poor
- Poor
- Fair
- Good
- Very Good
- Excellent

At this point in time, how informed about heart disease do you think you are?

- Not at all
- Slightly
- Moderately
- Quite a lot
- Extremely

At this point in time, how concerned are you about having heart disease?

- Not at all
- Slightly
- Moderately
- Quite a lot
- Extremely

Your responses have been recorded. Thank you for your participation!