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A Concurrent Mixed Method Study Exploring Iraqi Immigrants' Views of Michigan

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Walden University

College of Health Sciences

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Kerry Chamberlain

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Walden University
2016

Abstract

A Concurrent Mixed Method Study Exploring Iraqi Immigrants' Views of Michigan

Hazards

by

Kerry Chamberlain

MPH, Walden University, 2010

BS, Michigan State University, 1998

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

March 2016

Abstract

Failure of emergency response personnel to communicate effectively with different cultures can have dire consequences during an emergency, including loss of lives and litigation costs. For emergency response personnel to communicate the risk of an emergency, it is important to understand how different groups, especially newly arrived foreign immigrants, perceive warnings and related messages. This study addressed how one of the largest category of immigrants in Michigan perceived severe tornados, influenza pandemics, power outages, severe floods, and snowstorms. The research question examined the degree to which the equation, $Risk = Hazard + Outrage$, explained perceptions of these hazards in Michigan among newly arrived Iraqi immigrants. A concurrent mixed-method design was used. In-person interviews were conducted using quantitative and qualitative questions based on the equation and the PEN 3 model with 84 immigrants from Iraq who lived in the United States 4 years or less. Respondents' levels of outrage and hazard were compared using ANOVA. The calculated levels were compared with the qualitative comments made during the interviews. Snowstorms measured the highest outrage, and power outages measured the least. The reported awareness level was lowest for snowstorms with the highest being power outages. More information needs to reach Iraqi immigrants regarding unfamiliar hazards. Communicators should use Iraqi immigrants' experience with familiar hazards to identify effective ways of responding to this population. The results of this study may promote social change of more effective communication and saving lives in the future should an emergency occur in Michigan that affects Iraqi immigrants.

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Dedication

I dedicate my dissertation to my husband, family, friends, and coworkers who provided support throughout this process. Without my husband, I would not have had the guts to start the graduate school process. He forced me to stop doubting myself and do it. My friends, family, and coworkers were great at listening to me throughout the process and were patient even if I repeated myself for the hundredth time.

A special dedication goes to those who supported me in this process, but were not able to be here. My father Ken Navarre and my father-in-law Richard Chamberlain were some of my biggest supporters. They supported me in spirit as they supported me in life. I will miss them both.

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Chapter 1: Introduction to the Study

Introduction

The United States has many diverse populations; each population has particular ways of communication both between groups and within them. (Centers for Disease Control and Prevention [CDC], 2014a). Although it is impossible for those in emergency management and preparedness to understand every community's communication method, they should understand the diverse populations and their communication methods in local areas (CDC, 2013). Unfortunately, this is not always the case for every emergency management and preparedness program. Emergencies, such as Hurricane Katrina, that occur can showcase these communication gaps, leaving groups without the knowledge to protect themselves, and emergency response authorities not able to reach them (Andrulis, Siddiqui, & Ganter, 2007). This communication gap leads to lost lives and potential costs to localities that are the target of lawsuits by groups (Andrulis, Siddiqui, & Ganter, 2007; Sherry & Harkins, 2011). The communication gap is why it is important for emergency management and preparedness professionals to learn about communication within the diverse populations that they serve before an emergency strikes.

The Midwestern state of Michigan has one of the largest populations of immigrants from the Middle East in the United States, with the bulk emigrating from Iraq (Arab American Institute Foundation, 2011). Gaps exist in communicating with immigrants from the Middle East on the topic of emergency preparedness (Arab American Institute Foundation, 2011). The Arab Community Center for Economic & Social Services (ACCESS) provides outreach to Middle East immigrants in Michigan on

various health topics. However, communication on emergency preparedness is limited to translated fact sheets posted online (Arab Community Center for Economic & Social Services [ACCESS], n.d.; CDC, 2014b). A translated fact sheet may not be enough to communicate emergency preparedness and response information to this audience (Andrulis, Siddiqui, & Ganter, 2007). The difficulty with only providing a translated fact sheet is it may not be properly translated and culturally appropriate (Andrulis, Siddiqui, & Ganter, 2007). Providing fact sheets also assumes the person reading them has the appropriate level of literacy (Andrulis, Siddiqui, & Ganter, 2007).

A deeper understanding on how different Middle Eastern immigrant groups in Michigan view emergencies will help provide better emergency preparedness and response information to this population and may save lives (Andrulis, Siddiqui, & Ganter, 2007). According to Abraham (2009), a message conveyed to a non-North American group should be adapted to fit the perceptions of the emergency to the specific culture. Other researchers have extensively studied many diverse populations in the literature with a heavy focus on Hispanic populations (Carter-Pokras, Zambrana, Mora, & Aaby, 2007; Eisenman, Glik, Gonzalez, Maranon, Zhou, Tseng, & Asch, 2009; Eisenman, Glik, Maranon, Gonzales, & Asch, 2009; Glik, Eisenman, Zhou, Tseng, & Asch, 2014; Johnson, 2011; Taylor-Clark, Koh, & Viswanath, 2007; Vaughn, 1993a; Vaughn, 1993b; Vaughn & Dutton, 2007; Yip et al., 2011). To fill a gap in the literature, I performed a concurrent mixed method study to learn more about how Iraqi immigrants in Sterling Heights and Dearborn, Michigan, perceive hazards common to Michigan. In this chapter, I provide an overview of the literature on risk communication and

communicating with diverse populations and the problem underpinning my research. Then, I discuss the study's purpose, research questions and hypothesis, theoretical frameworks, and key assumptions and limitations. Finally, I consider the study's significance and potential contribution to positive social change.

Background

There have been instances where a group or groups has not been accounted for before, during, and after an emergency (Andrulis, Siddiqui, & Ganter, 2007; Sellnow & Seeger, 2001; Sherry & Harkins, 2011). The most recent were two hurricane events that affected two different localities. The first was Hurricane Katrina, which left many poor and African-American communities without assistance for days (Andrulis, Siddiqui, & Ganter, 2007). One issue was this group did not have access to the transportation necessary to evacuate (Andrulis, Siddiqui, & Ganter, 2007). Messages promoting evacuation from the government did not properly communicate the need to do so taking into account how a large section of their population assimilated information (Andrulis, Siddiqui, & Ganter, 2007). The second involved Hurricane Irene where the evacuation plans for the City of New York did not include disabled people (Sherry & Harkins, 2011). Some people were not able to evacuate because their buildings did not have working elevators due to power outages (Sherry & Harkins, 2011). Others that were able to evacuate their buildings could not be transported to safer areas because public transportation could not accommodate those who needed assistance due to limited space (Sherry & Harkins, 2011). The Brooklyn Center for Independence of the Disabled then sued the city successfully because its plans were not compliant with the American

Disabilities Act (Sherry & Harkins, 2011). These examples show there is more work to be done in understanding diverse communities and including them in emergency preparedness planning.

The U.S. public health preparedness funding program began in 1999. It increased in importance after the September 11, 2001, World Trade Center attack and subsequent anthrax incidents (CDC, n.d.). This program provides funding for each state and territory and several large cities to build their public health preparedness programs (CDC, n.d.). These cooperative agreements started out with focus areas, which split funding among functions such as training and risk communication, and then moved to the current model of the fifteen public health preparedness capabilities (CDC, 2004, 2013). One focus has remained throughout the entire program, which is communicating with the public about public health preparedness (CDC, 2004, 2013). Communicating with the public encompasses communicating with everyone in the community including diverse populations (CDC, 2014a). A diverse population includes but is not limited to those with physical or cognitive disabilities, those who live in isolation, and those who have limited English proficiency (Federal Emergency Management Agency [FEMA], 2011). When an emergency strikes, it is the job of the governmental agencies to ensure that everyone is included in communications strategies (FEMA, 2011).

Immigrants from the Middle East have been living in the Detroit, Michigan area since the 1880's due to the booming auto industry (Suleiman, 1999). The population has immigrated to this area for a variety of reasons (Schoeb, Weinstein, & Halpern, 2007; Sirkeci, 2005). One reason in particular that pertains specifically to Iraqi population is

immigration due to conflict in their home country (Jamil, Nasser-McMillan, & Lambert, 2007). For Iraqis war can affect how they view life in the United States (Jamil, Nasser-McMillan, & Lambert, 2007). With a large group of different Middle-Eastern immigrants, an emergency management or preparedness professional might assume there would be a plethora of information on their views and how it affects the newer topic of public health preparedness (Naber, 2000). However, it is hard to ignore for such a large concentration of immigrants from the Middle East in one area there is little known about their views on emergency preparedness and response (Naber, 2000).

Problem Statement

Communicating risk to different groups is a complex task. One group may perceive its risk of experiencing a hazard one way while another may view it in a different light (Abraham, 2009). The key to communicating risks to different groups is determining how each group views its risk of experiencing a hazard (Taylor-Clark, Koh, & Viswanath, 2007). There could be any number of reasons for their perception of risk stemming from past experiences to cultural customs and traditions. Determining a group's risk perception can lead to culturally sensitive education on specific hazards and emergency preparedness (Eisenman, Glik; Maranon, Gonzales, & Asch, 2009). Understanding differences in perceptions of hazards may help public health and emergency management professionals to better communicate preparedness and emergency information effectively, which may help in saving lives in an emergency. Reaching all individuals in a community, especially those with limited English proficiency, exacerbates communications challenges that public health and emergency

management professionals face. Populations who are isolated because of language barriers may have little understanding of how to handle emergencies (Andrulis, Siddiqui, & Ganter, 2007). In Houston, Texas, after Hurricane Ike, individuals who only spoke Mandarin, Cantonese, Somali, May May, Spanish, or Vietnamese did not understand emergency orders (e.g., on when to evacuate) that were communicated in English (Nepal, Banerjee, Perry, & Scott, 2011).

The meaning of emergency preparedness and response information may be different depending on the culture, even if the message in English is understood. In terms of warnings for flooding events, police and fire departments gave the same message to both Euro-Americans and Mexican-Americans in a small western U.S. town (Perry, Lindell, & Greene, 1982). The Mexican-Americans did not heed the flood warnings as seriously as their Euro-American counterparts leaving them at higher risk for flood damage (Perry, Lindell, & Greene, 1982). Another example of pre-event messaging showed how someone who is poor and Latino affects the way they prepared for emergencies after receiving emergency preparedness messaging (Glik, Eisenman, Zhou, Tseng, & Asch, 2014). Again, this group understood English, but did not find the emergency preparedness messages from authorities easily understood (Glik, Eisenman, Zhou, Tseng, & Asch, 2014). One of the main factors is the inconsistency of the messages themselves (Glik, Eisenman, Zhou, Tseng, & Asch, 2014). An example is the creation of a family emergency plan was explained differently by different agencies (Glik, Eisenman, Zhou, Tseng, & Asch, 2014). Another factor was the distrust of the government (Glik, Eisenman, Zhou, Tseng, & Asch, 2014). Finding an organization

whom this population trusts will allow for better assimilation of the message (Glik, Eisenman, Zhou, Tseng, & Asch, 2014). Emergency preparedness and response messages are more easily understood if the language and culture are accounted for.

Depending on the state and locality, the makeup of the groups can be vastly different. In Michigan, for example, one of the major ethnic groups is Arab-Americans. Michigan possesses the second highest population of Arab-Americans, second only to California (Arab American Institute Foundation, 2011). Michigan's largest Arab-American subgroup is Iraqi immigrants (Arab American Institute Foundation, 2011). Addressing the unique needs of Iraqi immigrants by emergency management and preparedness agencies to improve communication with this group concerning emergencies. In other states, the group makeup could be different. However, it is the task of the emergency management and preparedness professionals to ensure they understand the population makeup of their area and communicate appropriately (FEMA, 2011)

Anyone seeking an understanding of Iraqi immigrants must first understand their beliefs (Schoeb, Weinstein, & Halpern, 2007). Importantly, this understanding must occur by thinking beyond the Euro-American perspective, and including the Iraqi immigrant's unique perspective (Schoeb, Weinstein, & Halpern, 2007). Some of the things that may affect how an Iraqi immigrant may view what constitutes a hazard include religion, stress of war, and adapting to a new way of life in the United States (Schoeb, Weinstein, & Halpern, 2007). Chesser et al. (2006) conducted focus groups in U.S. rural and urban settings, which included Arab Americans. Their research showed a

lack of understanding from Arab-Americans of common emergency preparedness terminology. Participants also expressed a desire to learn more about emergency preparedness. Emergency management and preparedness professionals should place more importance on learning more about how Iraqi immigrants view hazards can help foster an understanding by this population of the emergencies they may face.

A way to help promote a better understanding of emergency preparedness and response information is for Iraqi immigrants is to first ask the question of how a group feels about things that are more likely to cause harm to them living in a certain area. Sandman (1988) created a risk equation in order to explain how to improve communication of risk to the public; his model encompasses hazards such as tornadoes and individuals' outrage about such hazards. Sandman (1988) found by only communicating the hazard without measuring the outrage made for a message that did not promote the appropriate action. For example, if the possibility of a major flood event is high in a certain area, but the public is not sufficiently worried about it, the communication method is to increase the worry of the public (Sandman, 1988).

Part of understanding the risk equation is to measure the hazard to which the total risk will be based on. The State of Michigan emergency management created a "hazard vulnerability assessment" identifying common hazards in the state (Michigan State Police Emergency Management and Homeland Security Division, 2012). This assessment ranks each hazard based on several factors. These factors include average annual events, deaths, injuries, and property damage; development trend effects, risk rating property, economic costs, infrastructure, and environment; and frequency as a top local hazard.

Totaling all of these figures will give a hazard risk (Michigan State Police Emergency Management and Homeland Security Division, 2012). The level of worry or concern of Iraqi immigrants in the area towards each of these hazards is unknown, however.

Emergency preparedness planning focused on the ethnic majority with few instances where ethnic minorities been included in the process (Andrulis, Siddiqui, & Ganter, 2007). Having ethnic minorities participate more actively in emergency management planning and development of risk communication strategies may promote a better understanding of the cultures and better ways of communicating emergency information. Without this understanding, ethnic minorities will not receive the information they need to be prepared for, and to respond to, emergencies (Carter-Pokras, Zambrana, Mora, & Aaby, 2007). With this research study, I hope to increase knowledge of Iraqi immigrants' perspectives on common hazards in Michigan and promote more culturally sensitive emergency risk communications.

Purpose of the Study

The purpose of this concurrent mixed methods study is to explore the perceptions by Iraqi immigrants as well as the cultural factors that influence them of the top five hazards (tornado, influenza pandemic, power outage, severe winter weather, and floods) that occur in Michigan. In this study, I used a Likert scale questionnaire that contains nine outrage factors and measures the relationship between hazard and outrage. At the same time, cultural factors that influence the outrage were explored using qualitative interviews with Iraqi immigrants in Sterling Heights and Dearborn, Michigan. The reason for combining both quantitative and qualitative methods was to improve

understanding of how Iraqi immigrants view common hazards in Michigan to advocate for more culturally specific methods of emergency communication.

Research Questions and Hypothesis

RQ1: To what degree does the equation $\text{Risk} = \text{Hazard} + \text{Outrage}$ explain the relationship between the top five hazards in Michigan and the outrage of Iraqi immigrants living in Sterling Heights and Dearborn, Michigan?

H₀: There is no statistically difference in the outrage ratings of Iraqi immigrants living in Sterling Heights and Dearborn, Michigan for each of the top five hazards.

H₁: There is a statistically difference in the outrage ratings of Iraqi immigrants living in Sterling Heights and Dearborn, Michigan for each of the top five hazards.

RQ2: What cultural factors influence the views of Iraqi immigrants living in Sterling Heights and Dearborn, Michigan, with regard to the top five hazards in Michigan?

Theoretical Framework

The framework for this study is twofold-- the risk equation from Dr. Peter Sandman and the PEN-3 model. This risk equation is simply $\text{Risk} = \text{Hazard} + \text{Outrage}$ (Sandman, 1988). Risk is a function of the level of hazard and the level of outrage associated with the hazard (Sandman, 1988). The hazard is defined, as whether or not there will be any harm done to the population affected. An example of a hazard is a tornado or a power outage. The hazard is measured quantitatively by factors such as death toll and monetary damages. A high hazard means that there is great potential for harm to life and/or property while low is something that can cause minimal harm. The

outrage is how upset the population is about the hazard. Outrage is measured by up to 20 different factors, nine of which will be used in this study (Covello & Sandman, 2001).

One end the scale makes the person perceive the hazard as being less dangerous than the other end of the scale. For example, if the hazard is familiar there is less outrage than if the hazard is unfamiliar (Covello & Sandman, 2001). The key to communication is to understand how a population feels about a hazard and then apply one of three communication strategies in order to increase, decrease, or whether the hazard together in the form of outrage. The three communication strategies are

- Crisis communication (high hazard, high outrage): This is where an event is taking place where the outrage matches the hazard. The public is open to receiving information.
- Precaution advocacy (high hazard, low outrage): This is where the public is not sufficiently upset about something that may harm them and outrage needs to be raised.
- Outrage management (low hazard, high outrage): This is where the public is overly outraged about a hazard that will cause little to no harm (Sandman, 2003).

If the outrage and hazard are both low, there is no set communication strategy. The reason for this is if the hazard is low and the public is not particularly worried about it, there is no need to communicate in a way that either raises or lowers outrage. An example of a low hazard, low outrage event is a smallpox outbreak. The hazard is low because the disease is one of the few completely eradicated from the human population and because of this; the outrage is low in the public.

According to Sandman (2011), the equation has not been tested extensively and the idea needs to be applied as a hypothesis. However, this equation has informed communication guidance at the federal, state, and local levels of public health governmental agencies as well as cooperative agreement funding (CDC, 2002, 2013, 2014a). In terms of the PEN-3 model, it takes into account three main factors and their interrelationship in terms of communication strategy: cultural identity, relationships & expectations, and cultural empowerment (Airhihenbuwa, 1990). The reason for utilizing this model is because many cultures outside the United States do not base their beliefs on what only a person alone thinks, but what their families and other outside cultural influences feel (Airhihenbuwa, 1990).

Nature of the Study

The nature of the study was a mixed method inquiry of the Iraqi immigrant community in Sterling Heights and Dearborn, Michigan within the PEN-3 model and risk equation to determine perceived risks and hazards (Airhihenbuwa, 1990; Sandman, 1988). The risk equation from Sandman (1988) pinpoints what a person or group is worried about and then finding out why they are worried about a hazard. The results from the risk equation will be compared to the results of the PEN-3 model assessment to form a more informed communication strategy. This research was qualitative because the goal is to further the understanding of how Iraqi immigrants view hazards in Michigan. This fits with the risk equation from Sandman (1988) because the assessment was of the outrage factors that each hazard evokes. I collected outside experiences from not having lived in the United States for a long period along with their feelings about

hazards in Michigan. Themes emerged from these outside experiences, which may drive future communication strategies.

I measured each part of the theoretical framework was measured differently. I measured the risk equation using Likert scale questions, which gauged the level of their outrage towards each hazard. I assessed the PEN-3 model using open-ended questions. These open-ended questions determined what cultural factors influence how they think about hazards and their outrage towards them. This was done as an in person interview to accommodate a possible language barrier and account for those who may not be literate.

Definitions

Iraqi immigrant: For the purpose of this study, an Iraqi immigrant is a person who has immigrated to the United States from Iraq. The target is to study Iraqi immigrants who have only lived in the United States for four years or less. This is before United States citizenship is granted. The reason for using this definition was to attempt to factor out acculturation. Those that have lived in the United States for longer may have adopted more of the ways of their surroundings. This also ensured the cultural identity with Iraq was mostly intact.

Hazard: Hazards can be defined in two ways. A simpler definition of hazards is defined as “threats to humans and what they value” (Kates, Hohenemser, & Kasperson, 1985 p. 22). The definition from FEMA (1997) details a hazard as “events or physical condition that has the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural loss, damage to the environment, interruption of

business, or other types of harm or loss.” (p. xxv). The hazard was quantitatively measured using hazard event frequency. This is the dependent variable in the quantitative portion of this study.

Acculturation: Acculturation means how well someone who has previously lived in another culture in a host country adopts the culture of the receiving country (Schwartz, Unger, Zamboanga, & Szapocznik, 2010). There are levels of acculturation that can affect the outlook of the host country by immigrants. There are four levels of acculturation as described by Barry (1980): assimilation, separation, integration, and marginalization. This study is not addressing assimilation (accepting the American culture and rejecting Iraqi culture), marginalization (rejecting both cultures) or integration (accepting both cultures). Separation (rejects American culture and retains Iraqi culture) was the focus. The goal was to reach those who have not had the chance to accept.

Diverse Community: “A common definition of community emerged as a group of people with diverse characteristics who are linked by social ties, share common perspectives, and engage in joint action in geographical locations or settings.” (MacQueen et al., 2001, para 3). “Community was defined similarly but experienced differently by people with diverse backgrounds.” (MacQueen et al., 2001, para 3). In the case of this study, the diverse community is defined as Iraqi immigrants. One of the goals of this study was to define their cultural lens in which they see hazards.

Outrage: Nine of 20 outrage factors defined by Covello & Sandman (2001) measured Outrage. These nine factors include controllability, familiarity, catastrophic

potential, understanding, uncertainty, delayed effects, dread, human and natural origin, and personal stake. The other 11 factors: voluntariness, fairness, benefits, effects on children, effects on future generations, victim identity, trust, media attention, accident history, and reversibility were not measured. The reason they were not measured was that they were based on whether or not they had experienced the hazard. Hazard experience was not a variable being measured by this study. This was the dependent variable in the quantitative portion of this study.

Assumptions

There were several assumptions in regards to this study, the first was recent Iraqi immigrants to the United States had limited English proficiency. This assumption was based on 61% of Iraqis surveyed in Iraq are not able to speak, read, or write English as a second language (World Bank, 2007). The second assumption was recent Iraqi immigrants had limited reading proficiency. This assumption drove the research to be conducted by in person interview rather than by a printed evaluation. This assumption was based from as of 2012 approximately 21% of Iraqis were illiterate within their own native language and moving to the United States provides a new set of issues with learning a new language (World DataBank, 2014).

Scope and Delimitations

The scope of this study focused on recent immigrants to the United States from Iraq. A recent immigrant as defined for this study will be living in the United States for four years or less. The reason for using this period was to prevent acculturation as being a factor in the immigrant's understanding of living in Michigan. The focus was on adults

18 and older. I did not focus on children due to the time involved with recruitment. While there are several different Middle Eastern immigrant communities in Sterling Heights, Michigan, I focused solely on Iraqi immigrants because they were the largest group, thus more likely to recruit study participants (Arab American Institute Foundation, 2011).

Limitations of the Study

There were limitations to performing this research. In terms of the limitations of mixed methods research, one issue on the qualitative side is how complete the understanding of the researcher is of the group that is under study (Creswell, 2013, p. 96). While I have some understanding of Middle-Eastern culture in Michigan, I did not have an intrinsic knowledge. I am neither Middle-Eastern, nor Iraqi and do not speak Arabic. My understanding of immigrants from a stigmatized group living in the United States is limited to a case of a single German immigrant's experience following World War II. Another limitation in performing this research was the possibility of an implied power differential between the participant and myself. I work with the State of Michigan in my profession, but did not perform this study under this entity. In order to mitigate this possibility I was open about where I work. Being open about my profession seemed counterintuitive, however, being open rather than secretive mitigated the participant finding out later and feeling like their trust had been broken.

Another qualitative limitation was generalizability of the data collected from this segment of Iraqi immigrants in Sterling Heights and Dearborn, Michigan to the greater population of Iraqi immigrants in Michigan and other states (Goodson & Vasser, 2011).

One goal of this study was to inform other states that have similar pockets of Middle-Eastern immigrants. However, it may not apply to their particular mix of Middle-Eastern immigrants. This study applied to Iraqi immigrants in Sterling Heights and Dearborn, Michigan, which may not be the same experiences of Iraqi immigrants in all of the state of Michigan or another state. Iraqi immigrants are also more likely to have experiences war whereas other immigrant groups from the Middle East may not (Sirkeci, 2005). As with other forms of qualitative enquiry, the subjectivity of the researcher is a limitation (Goodson & Vasser, 2011). The data collected will require interpretation by me.

Another researcher may have a different view of the same data. Because this is doctoral research and not grant funded research where a larger team may be able to triangulate interpretation of the data we were limited to one view.

Finally, there may be issues with gaining participants for the study (Creswell, 2013, p. 96). Even though I had contacts with ACCESS, it did not guarantee a large study population. Recruitment took place through ACCESS classes, Women, Infant and Children (WIC) clinics, and through caseworkers. In those that were willing to be part of the study there was trust in the key informants that the study participants are indeed Iraqi immigrants who have lived in the United States for four years or less. In addition, with translation of the questions into Arabic there could be misinterpretations even with a second translation back to English. I regardless of the language of the participant, I asked the question in English and the interpreter asked the question in Arabic if one was necessary. I was present for all interviews to ensure they were conducted ethically and to ensure accurate data collection. I used both translation and an interpreter to perform the

interviews. The quantitative questions were translated into Arabic and then back into English to ensure accuracy. There may be unintentional interpretation of the questions by the person who is asking them.

In terms of mixed method limitations, one of which is the difficulty in performing the research. Because mixed methods research contains both quantitative and qualitative assessments, it may take longer to perform (Johnson & Onwuegbuzie, 2004). To combat this issue, the quantitative and qualitative questions were performed in the same interview. Data analysis is more time consuming as there was twice the amount of data collected (Johnson & Onwuegbuzie, 2004). This is one of the reasons it is not conducive for dissertation research, however, within the context of this study can provide more information than either a quantitative or qualitative assessment by itself.

Significance of the Study

This research is significant because as the United States becomes a more diverse nation, public health risk communicators must work towards being able to convey information to all groups (Allen & Katz, 2009; Andrulis, Siddiqui, & Ganter, 2007; Vaughn, 1995). Several ethnic groups have been extensively studied in regards to risk communication strategies with a particular focus on Hispanic groups (Carter-Pokras, Zambrana, Mora, & Aaby, 2007; Eisenman, Glik, Gonzalez, Maranon, Zhou, Tseng, & Asch, 2009; Eisenman, Glik, Maranon, Gonzales, & Asch, 2009; Glik, Eisenman, Zhou, Tseng, & Asch, 2014; Johnson, 2011; Taylor-Clark, Koh, & Viswanath, 2007; Vaughn, 1993a; Vaughn, 1993b; Vaughn & Dutton, 2007; Yip et al., 2011).

However, Arab Americans are a group who are not well studied in regards to risk communication. This study aimed to inform communicators not only in Michigan, but also in other states with large Arab American populations. This was also an attempt at looking beyond what is typically regarded as communicating with a diverse population (i.e. translation). Being in Michigan provided a unique opportunity to study this group because of the high concentration of Arab Americans as well as immigrants from the Middle East. In terms of positive social change not only will understanding this issue help Iraqi immigrants be prepared for emergencies, but will be important for the community as a whole (Andrulis, Siddiqui, & Ganter, 2007). Emergency preparedness is not just about preparing one specific group. Emergency preparedness is about preparing the whole community. In terms of risk communication, a communicator cannot pick and choose who to communicate with before, during, or after an emergency (Carter-Pokras, Zambrana, Mora, & Aaby, 2007). Hurricane Katrina was a lesson learned on the importance of everyone has the same right to emergency communication messages (Andrulis, Siddiqui, & Ganter, 2007). At risk groups are not remaining silent on being ignored during emergencies as shown in the case of New York City, which was successfully sued by the city's disabled population for the emergency plans not adequately protecting them (Sherry & Harkins, 2011). In order to prevent communication issues during future emergencies understanding the risk perception of Iraqi immigrants brings communicators closer to being able to communicate with all groups.

Implications for Social Change

When emergencies occur, whether public health or otherwise, the most important aspect is to save lives (Sherry & Harkins, 2011). During emergency response, the governmental and non-governmental agencies do not knowingly pick and choose who to help (Carter-Pokras, Zambrana, Mora, & Aaby, 2007). However, when groups are accidentally excluded because of lack of knowledge of how best to communicate, there are lives that can be unnecessarily lost (Andrulis, Siddiqui, & Ganter, 2007; Sherry & Harkins, 2011). Hurricane Katrina was an example of how the African- American community lost lives because their communication needs were not met (Andrulis, Siddiqui, & Ganter, 2007).

While the cooperative agreement language in the CDC Public Health Emergency Preparedness Emergency Public Information and Warning section has stated explicitly to enhance emergency communication with diverse populations for the past 10 years, there is more that still needs to be done (CDC, 2004). This study will contribute to the body of knowledge by defining how Iraqi immigrants view different hazards. The hazards for this study pertain to Michigan, and this knowledge could be applied to other types of events in other states. The key is understanding that different groups perceive the world differently and not understanding this puts lives at risk. A saying that was first coined for the disabled population “nothing about us without us” applies here as well (Charlton, 1998). As public health communicators, there cannot be successful communication with a group without including them in the process. This study goes straight to the source to

explore how Iraqi immigrants view hazards instead of asking the questions to an indirect source and extrapolating the answers.

Summary

Being able to communicate with diverse populations before, during, and after an emergency saves lives. The purpose of this study was to learn about the perception of hazards through the eyes of the Iraqi immigrant. I performed a concurrent mixed method study to gain an understanding of their culture and how they view hazards in Michigan. I interviewed several members of this group with both quantitative and qualitative questions to understand how their perceptions influence their view of hazards in Michigan. The following chapters provide a review of the literature, which includes both the PEN-3 and risk equation, details on the methods that were used for this study, the results and interpretation of the data.

Chapter 2: Literature Review

Introduction

Communicating with diverse populations requires an understanding on how they perceive the hazards they face (Sandman, 1988). However, emergency management and preparedness professionals may not measure this perception to enhance their communication plans possibly due its difficulty (Sherry & Harkins, 2011). Understanding how Iraqi immigrants view hazards in Michigan is challenging. Even though Arab-Americans have been in the United States for some time, there are issues with prejudice against this group from other Americans that prevent further learning about this population (Naber, 2000). To explore this complex issue, I used two models: one to help understand how Iraqi immigrants in Michigan view hazards and the other to help recommend strategies to more effectively communicate about hazards with this population. PEN-3 (Airhihenbuwa, 1990) and Sandman's risk equation model (1988) provide a theoretical framework for explaining how hazard information can be effectively communicated to Iraqi immigrants in the state.

PEN-3 focuses on culturally sensitive program creation starting with the topic one wishes to educate others on and adding in unique cultural factors to ensure relevance (Airhihenbuwa, 1990). The risk equation measures how much a person or community is worried about a particular hazard (Sandman, 1988). I use the risk equation to ask questions regarding worry about specific hazards, and the PEN-3 model to assess why they may or may not be worried about the hazard. In the literature review that follows, I address PEN-3, the risk equation model, crisis communication, precaution advocacy,

outrage management, risk communication and perception of different diverse communities, and what makes Iraqi immigrants unique.

Literature Search Strategy

I conducted a literature review using the following online search sites and databases: Google Scholar, Walden Library Thoreau database search, and PubMed from the National Library of Medicine, which includes peer-reviewed journals on health topics. I used the following search terms *immigrant, Iraqi, Iraq, risk communication, emergency preparedness, risk equation, Sandman, "Risk = Hazard + Outrage," crisis communication, precaution advocacy, outrage management, and PEN-3 model*. I chose articles based on relevancy to the topic. I found most of the articles were qualitative in nature; however, other articles analyzed quantitative aspects as well. I included 123 articles for my review.

Theoretical Framework

PEN-3 Model

Identifying the needs of how different non-Western cultures communicate requires a model that does not have a basis in Western communication strategies. The differences between health promotion in Western countries versus non-Western countries are great (Airhihenbuwa, 1990). Non-Western countries do not have the same environment in which health promotion exists (Airhihenbuwa, 1990). Opposite of Western countries, many people in non-Western countries live outside urban centers and are facing environmental challenges and overcrowding in urban centers (Airhihenbuwa, 1990). The communication gap may be due to any number of issues including a harsh

political environment and limited funding to implement programs (Airhihenbuwa, 1990). The differences in life and communication style in non-Western countries require a different model to base communication of emergency information (Airhihenbuwa, 1990).

When moving from a developing country to the United States, the immigrant's worldview may not quickly adapt to Western culture (Airhihenbuwa, 1990). Even with U.S. cultures (e.g., Native Americans), norms and cultural differences require more sensitive communication strategies by emergency management and preparedness professionals (Michielutte, Sharp, Dignan, & Blinson, 1994). It cannot be assumed that living in the U.S. will allow someone from a different culture to assimilate fully into Western culture (Airhihenbuwa, 1990).

Airhihenbuwa (1990) developed the PEN-3 model to bridge the gap between culture and health education. The goal for the model is to ensure health education programs are culturally appropriate (Airhihenbuwa, 1990). The PEN-3 model has three intersecting domains that include health education, cultural appropriateness for health behavior, and educational diagnosis for health behavior. The three domains are covered by including positive and negative views of the behavior, what does the family and neighborhood think of the issue, what the person already thinks of the issue, how society views the issue, and what ideas are considered exotic (Airhihenbuwa, 1990). The acronym "PEN" encompasses the three elements (see Figure 1).

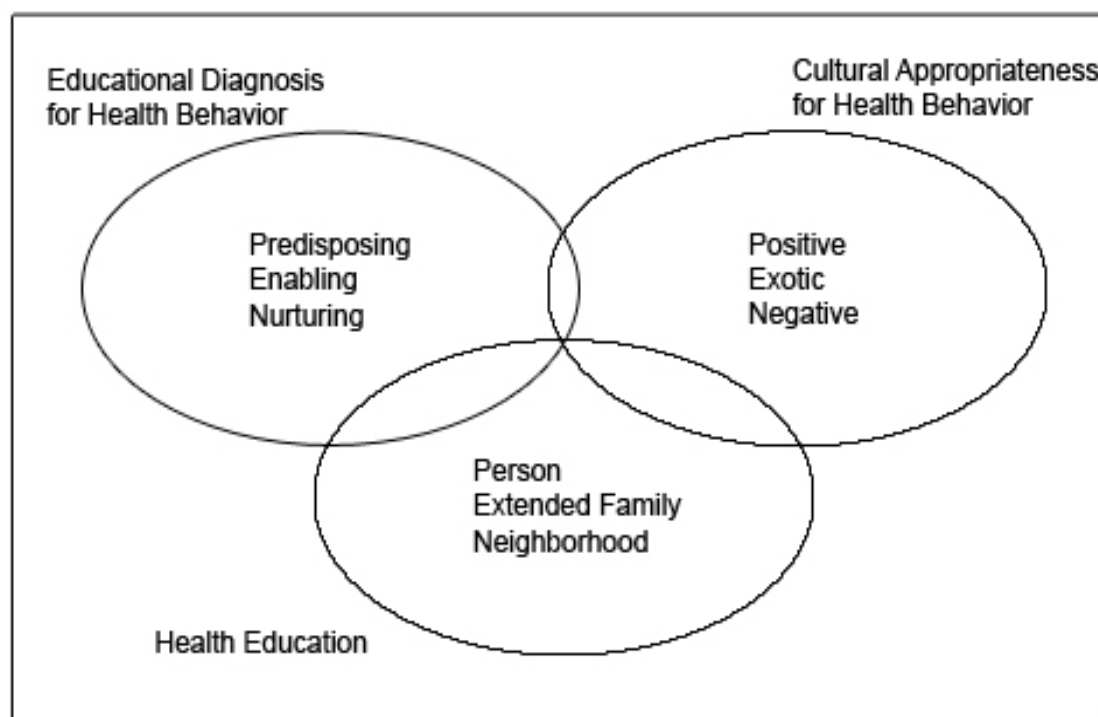


Figure 1. PEN-3 model. From “A Conceptual Model for Culturally Appropriate Health Education Programs in Developing Countries,” by C. O. Airhihenbuwa, 1990, *International Quarterly of Community Health Education*, 34, p. 55. Reprinted with permission.

Using the PEN-3 model defines who is affected by health education, what cultural lens the health behaviors to be promoted are viewed and the cultural values that may help or hinder a person or community in implementing a health behavior.

The PEN-3 model has influenced more culturally sensitive health education programs through its application. Several studies applied the model as it was originally developed to help promote AIDS/HIV prevention and treatment in Africa (see

Airhihenbuwa et al., 2009; Brown, BeLue & Airhihenbuwa, 2010; Okoror, Airhihenbuwa, Zungu, Makofani, Brown, & Iwelunmor, 2007; Okoror, BeLue, Zungu, Adam, & Airhihenbuwa, 2014). The focus of these studies is understanding the reasons behind social stigma in African countries of those with HIV/AIDS (see Airhihenbuwa et al., 2009; Brown, BeLue & Airhihenbuwa, 2010; Okoror, Airhihenbuwa, Zungu, Makofani, Brown, & Iwelunmor, 2007; Okoror, BeLue, Zungu, Adam, & Airhihenbuwa, 2014). Other researchers have focused on cultures within the United States. Many studies focus on lifestyle changes in the African-American community (Cowdry, Parker, & Thompson, 2010; James, 2004; Purcell & Cutchen, 2013). In working to prevent diabetes among African-Americans in the United States, health advocates have focused on confronting social stigma and the idea that healthy eating is akin to losing part of one's culture (Cowdry, Parker, & Thompson, 2010; Purcell & Cutchen, 2013). The remainder of the literature that has used the PEN-3 model focuses on Latinos and other Hispanic groups (Erwin, Johnson, Trevino, Duke, Feliciano, & Jandorf, 2007; Erwin, Trevino, Saas-Harfouche, Rodriguez, Gage, & Jandorf, 2010; Fitzgibbon & Beech, 2009; Melancon, Oomen-Early, & del Rincon, 2009; Saulsberry et al., 2013; Scarinci, Bandura, Hidalgo, & Cherrington, 2012; White, Garces, Bandura, McGuire, & Scarinci, 2012). While researchers used the PEN-3 model to address several different issues concerning health education and Hispanics in the United States, a common barrier to health education includes distrust of the medical profession (Erwin, Johnson, Trevino, Duke, Feliciano, & Jandorf, 2007; Erwin, Trevino, Saas-Harfouche, Rodriguez, Gage, & Jandorf, 2010; Fitzgibbon & Beech, 2009; Melancon, Oomen-Early, & del Rincon, 2009;

Saulsberry et al., 2013; Scarinci, Bandura, Hidalgo, & Cherrington, 2012; White, Garces, Bandura, McGuire, & Scarinci, 2012). Many Hispanics felt the medical profession was intimidating and were not allowed to ask questions seeking clarity (Erwin, Johnson, Trevino, Duke, Feliciano, & Jandorf, 2007; Erwin, Trevino, Saas-Harfouche, Rodriguez, Gage, & Jandorf, 2010; Fitzgibbon & Beech, 2009; Melancon, Oomen-Early, & del Rincon, 2009; Saulsberry et al., 2013; Scarinci, Bandura, Hidalgo, & Cherrington, 2012; White, Garces, Bandura, McGuire, & Scarinci, 2012). Researchers and advocacy groups have found that using community advocates is a helpful way to promote programs. Using the PEN-3 model was instrumental in assessing the cultural factors in diverse populations that affected learning about health interventions.

I found many examples of the PEN-3 model used to understand culture in terms of more common health issues, a lack of research using the model for consideration of public health preparedness related issues is present. If the PEN-3 model is useful for health promotion programs to prevent type-2 diabetes, it may also be useful for subjects such as pandemic influenza prevention. The key theme that runs with the use of the PEN-3 model is finding out ways to educate in a culturally competent way to prepare for and respond to health hazards. Type-2 diabetes is as much of a hazard to one's health as an influenza pandemic. In each instance, there is a chance for prevention and a chance for mitigation if they were to become ill.

Risk Equation: Risk = Hazard + Outrage

Determining risk is not as simple as finding out the statistics about a particular hazard and reporting them to the public (Sandman, 1988). The public may respond to

those statistics in ways that may not be expected. However, how the public reacts is an important part of how one communicates with them (Sandman, 1988). Risk = Hazard + Outrage was developed with this in mind. The input into this equation is not only a hazard and how outraged the public are about it, there are factors about the hazard that determine the level of outrage. There are 20 different factors that determine the outrage level of the public (Covello & Sandman, 2001). One factor is how voluntary a risk is (Covello & Sandman, 2001). A risk that the person has control over is a lesser risk than one he or she cannot control. In general, the perception of risk of driving a car is lesser than flying in an airplane because of the level of control. Another factor is familiarity (Covello & Sandman, 2001). If the risk is seen as unfamiliar, it is seen as a higher risk than a risk that is familiar. Familiarity of a risk depends on location and cultural influences. A hurricane is familiar risk to a person living in Florida where a snowstorm is not. Each of the 20 outrage factors work in the same way. One end of the spectrum represents a high risk; the other end of the spectrum represents a low risk. Choosing one of the three methods of communication: crisis communication, precaution advocacy, and crisis communication rests on where the outrage of the public falls on the spectrum concerning a hazard (Sandman, 2003).

Crisis communication. Crisis communication occurs when there is a high level of hazard and the outrage from the public towards this hazard is high (Sandman, 2003). For the purposes of this research, I define a crisis as a hazard that could cause widespread harm to the public. An example of this type of crisis would be an emergency event such as 9/11 (Reynolds & Seeger, 2005). The other type of crisis is concerning business and

reputational damage. For a business, their reputation can make or break it (Coombs, 2007). Having a negative public reaction to a business and its practices and products could sink the business without crisis communication (Ulmer & Sellnow, 2000). The link between both of these types of crises is the public's reaction to it (Marra, 1998). For each type of crisis, the outrage of the public is high. The difference is during an emergency the public and the government is outraged at the same level over the same hazard while during business reputational damage, they are practicing self-protection (Marra, 1998).

Business reputation management. The reputation of a business consists of several items: the actions of the business, the reliability of the product, and how they handle negative reactions from the public. The reaction of the public to a business and its reputation has to do with some of the same items which were listed by Covello and Sandman (2001). Three of the items listed in terms of the action of the business on the public: external control, internal control, and stability (Coombs & Holliday, 1996). Crisis communication in terms of preserving the reputation of a business uses messaging to manipulate the view of the public to ensure they have their trust and they feel in control (Coombs & Holliday, 1996). Similarly, to Sandman's risk equation, how to communicate relies on two factors: the intention of the act and whether it was an internal and external locus of control (Coombs & Holliday, 1996).

To expand on the two factors, other items have been identified that may also influence how a business communicates to protect its reputation. Situation Crisis Communication Theory (SCCT) suggests there are seven factors used by business crisis

managers to determine the best crisis communication strategy (Coombs, 2007). The crisis starts the relationship between crisis responsibility, crisis history, crisis response strategies, organizational reputation, prior relationship reputation, emotions, and behavioral intentions (Coombs, 2007). After the assessment of the crisis, the business can use strategies that range from denying involvement to taking full responsibility (Coombs, 2007). Part of accepting full responsibility for the crisis is the apology (Coombs & Holladay, 2008). A business can use the apology as a communication strategy when it is at fault for the crisis and the anger felt by the public is high (Coombs & Holladay, 2008).

Chaos theory is also used to help explain what happens in an organization when the reputational damage occurred and how best to communicate. Chaos theory is used, primarily applied to physics to explain complex systems, to explain this issue (Seeger, 2002). A single unexpected event that causes reputational damage can cascade into chaos quickly. The more complex the organization, the more likely the situation can turn into chaos (Seeger, 2002). The communication strategy hinges on how far reaching the communication is. Chaos theory also describes when rifts are already in place, the event can amplify them and if communication strategy involves pointing the blame elsewhere, chaos only increases (Seeger, 2002). On the other hand, one can mitigate the chaos if the communication strategy is a more long-term approach, which involves bringing people together (Seeger, 2002).

Businesses cannot dismiss cultural differences as a factor in their crisis communication strategy. Different cultures view how a business handles an event

differently. Lee (2004) explains how Asian culture reacts differently to an event. Some of the results found what works to decrease outrage in the public and increase trust in the business in Western culture, did not have the same effect in the sample from Hong Kong (Lee, 2004). It was most acceptable to say nothing, followed by accepting responsibility and apologizing (Lee, 2004). With many cultures living in the United States, a crisis communicator benefits from understanding the community's cultural makeup.

Disaster communication. Crisis communication when applied to disasters is similar business reputation management. The reputation of the government agencies responding to the disaster hinges on not only how it responds, but also how it communicates the message to the public affected (Reynolds & Seeger, 2005). Crisis communication in this sense is about being open and honest with the public to help reduce harm. This differs with business reputation management in that the government agencies are not generally responsible for the disaster and the strategies for communicating with the affected public is not about accepting blame but acknowledging their vulnerabilities (Sandman, 2003). In a disaster, the media can serve as an ally because it can convey information widely (Argenti, 2002). However, a badly implemented communication strategy can also bring a governmental organization down.

An example of crisis communication gone wrong is Hurricane Katrina. The communication failures occurred on many levels, the first being lack of a communication strategy (Garnett & Kouzmin, 2007). When primary modes of communication are not available, there needs to be a backup method to communicate. Because there were so many failures in the primary modes of communication during Hurricane Katrina, many

people who needed information were not able to get it (Garnett & Kouzmin, 2007). Conflicting messages were an issue because so many organizations were working together. Organizations who have not worked together prior to the disaster did not convey a unified message (Garnett & Kouzmin, 2007). Finally, transparency was an issue from many organizations responding to the disaster. Organizations were viewed as inept players and deceitful when they were not transparent with conveying what they were doing and how they were doing it (Garnett & Kouzmin, 2007).

A similarity with Hurricane Katrina and other disasters before it is the notion of planning for the possibility of an occurrence that is unlikely, but plausible. The Red River flood of 1997 was this type of anomaly disaster (Sellnow & Seeger, 2001). The Red River divides Minnesota and North Dakota. The river flooded in 1997 beyond what the plans at the time had predicted. Many lives were in danger by hindering evacuation efforts because of compromised primary communication methods during this event (Sellnow & Seeger, 2001). Both the Red River flooding and Hurricane Katrina were unlikely events because they were outside the scope of what normally occurs (Sellnow & Seeger, 2001; Waymer & Heath, 2007).

How other cultures and populations view the messages in crisis is also important when providing the communication. During the response, the Hurricane Katrina lacked communication with the African American community (Waymer & Heath, 2007). Many African Americans who lived in New Orleans, Louisiana were also in a low socioeconomic status and adversely affected (Waymer & Heath, 2007). This incident pointed to emergency planning strategies, which included communication strategies that

avored those that spoke English and were of a higher socioeconomic status (Waymer & Heath, 2007). The Hurricane Katrina event taught crisis communicators that their communication strategy should be all-inclusive.

Precaution advocacy. Precaution advocacy is where there is a hazard that the public may face that they are not concerned with and public health is charged with making them more worried about the risk (Sandman, 2003). Many public health education programs fall under this type of communication. Public health preparedness programs are frequently educating the public on hazards they may face and if they do not happen often, they have a very hard time convincing the public to prepare (Katz, Staiti, & McKenzie, 2006). Precaution advocacy listed as risk communication in some of the literature. However, many do not define it with a cohesive definition until 2002 when Dr. Barbara Reynolds and the Centers for Disease Control released their first edition of the Crisis and Emergency Risk Communication Guidance (Reynolds, 2002). The definition of risk communication included other parts such as timeframe and recommended actions. The timeframe is defined as anticipated while the communication style is to educate and persuade (Reynolds, 2002, p. 6). This definition of risk communication mirrors precaution advocacy.

Several different issues have required precaution advocacy to deliver their message. Nuclear war is a high hazard event that many in the public are not particularly concerned about since the cold war ended. Before the end of the cold war, nuclear war was still a threat to the United States (Sandman & Valenti, 1986). The reason for the use of precaution advocacy in this case was to reduce the high level of fear that lead to the

public not wanting to face the risk. Increasing outrage is an important part of applying precaution advocacy (Sandman, 2003). In the case of a nuclear war, reducing the overwhelming fear then increasing the outrage was the formula to make the public turn their attention to preparing for this risk (Sandman and Valenti, 1986).

A hazard does not need to be as extreme as a nuclear war to be considered a high hazard. Food safety is another high hazard that requires precaution advocacy to communicate the risk to the public (McCarthy & Brennan, 2009). An element of precaution advocacy is understanding the disconnect between expert's data and the public perception (Sandman, 2003). In the case of food safety while the experts had the data published in the academic literature, the public was not receiving the message because it required interpretation (McCarthy & Brennan, 2009). Beyond interpreting scientific information for the public, there was also need to make the information relevant to different audiences. Some audiences required education to increase their knowledge of food safety issues, while others knew of the issues but needed relevant ways to make it easier for them to perform (McCarthy & Brennan, 2009).

Sometimes explaining hazards is more than just providing tools to explain them to audiences who accept the basic premise. Disease outbreaks can be difficult to explain to some audiences who do not believe in the way science defines disease (Abraham, 2009). Cultures outside the Western world do not interpret disease outbreaks the way science defines them. A disease outbreak may be interpreted as not caused by a bacteria or virus but of how the person feels (Abraham, 2009). For precaution advocacy to work within cultures that may have come to live in the United States, the way they view health and

disease is very important. The communicator must put aside their assumptions and efforts to convince the audience to see the issue their way and work towards defining it by their point of view (Abraham, 2009).

Precaution advocacy is not only for communicating with the public, but also internally within a business. While safety procedures are in place at many businesses to prevent risks in their employees because of their work environment, persuading them to take the precautions is a more complex problem (Uchida, 2012). As with the public, there are many stages of understanding within the employee group from not understanding the risk at all to those who adopt the information and the safety measures (Uchida, 2012). The goal of precaution advocacy in this case is to ensure all employees adopt the safety measures to protect themselves.

Outrage management. There are instances where the public is outraged over a low hazard. Outrage management is the communication method, which attempts to lower public outrage over a hazard that does not put them in danger (Sandman, 2003). There may be data that show that the risk to the public is minimal; however, if the public perceives the risk to be large it does not matter. The goal of outrage management is to get the public to calm down (Sandman, 2003). Working with the public's perception can make this more difficult, especially when they truly believe they are at risk and it is the fault of the company or government agency.

While outrage management can be used to persuade the public to calm down about a minimal risk, there is another form of outrage that can be internal to a company. Employee morale is an indicator of company health (Sandman, 1995). If the morale of

the employee is low, which is an indicator of increased outrage, more reports of health issues arise (Sandman, 1995). Low morale can also lead to corporate sabotage where staff takes aggressive actions to bring the company down (Sandman, 1995). A company can manage outrage by ensuring employee happiness by having procedures in place to work with those that become distressed.

Outrage management techniques can also be used to make something normally seen by the public as detestable as more acceptable. An extreme example of the genocide in Rwanda in the 1990's used outrage management techniques to make the idea of the extermination of an entire ethnic group acceptable to the public (Martin, 2009). The Backfire Outrage Model has five different tactics used together in this instance: covering up facts, devaluing the target, minimalizing the threat, using official channels to distribute information, and using intimidation and reward (Martin, 2012, p.8). In the case of the Rwandan genocide, the group in power covered up their actions away from public view. The target (the Tutsi people) was devalued in the eyes of the public, official channels were used to distribute the hate message and the group in power intimidated sympathizers and rewarded those who carried out their actions (Martin, 2009). Perpetrators of sexual harassment (McDonald, Graham, & Martin, 2010) can use these same tactics. Because sexual harassment takes place between two people without an outside witness, the cover up is simple as it is the harasser's word against the one reporting it. The harasser then devalues the target by name calling and painting an inaccurate picture of who he or she is. The harasser also uses statements to reinterpret the harassment to minimize the impact. Official channels available to report sexual

harassment may work against the victim when they try to report the incident. Finally, the harasser threatens the victim to keep them from causing a stir over the incident.

The bulk of outrage management is to reduce public outrage over a small hazard. There are several ways in which to reduce outrage for these types of hazards. In the case of the Marcellus shale development in Pennsylvania, the public was outraged over the possibility of the development affecting their way of life (Weigle, 2010). The strategy for communication is first to understand why the public is upset and what they want to achieve. Understanding this helped the company to adapt their message and work with the community to ensure they could endure the change and that the change would be beneficial to them (Weigle, 2010). This can also be applied to exotic diseases that are discovered that may only pose a small threat to the public. In the case of bovine spongiform encephalopathy (BSE) and Creutzfeld-Jakob Disease (vCJD) in the United Kingdom, while the health community was gathering new scientific information on the threat, the public's outrage over their safety grew (Hueston, 2013). Noting when one contracted the disease, he or she knowing there is not a cure only fueled further outrage. In the end, utilizing empathy and transparent communication strategies ultimately reduced public outrage (Hueston, 2013).

Diverse Communities and Perception of Risk

Perception of risk is an important part of the Risk = Hazard + Outrage equation (Sandman, Miller, Johnson, & Weinstein, 1993). How a community perceives a risk shows what they will do to mitigate that risk. However, each community has its own experiences and differing viewpoints on their risk of different hazards. The perception of

risk and their outrage towards that risk and the agencies charged with mitigating that risk had the most influence their overall risk (Sandman, Miller, Johnson, & Weinstein, 1993). This is why it is important for emergency preparedness professionals to understand what this is and how it influences their protection strategy.

There is a differing view of the risk of a hazard by experts and the public. The public may not understand the expert's data that support a scientific viewpoint (Plattner, Plapp, & Hebel, 2006). In terms of emergency preparedness, when analyzing what risks affect a particular area, the emergency management or preparedness professional should take perception of risk into account (Plattner, Plapp, & Hebel, 2006). This includes where someone lives as well as what information he or she has on the risk. A person who lives in an area that is prone to flooding has a differing risk perception to a person who only experiences it occasionally (Elliot, Kole, Kreuger, Voorberg, Wakefield, 1999).

Risk perception relies on not only the experience of the community, but also how to communicate the risk to them. If the media makes the risk out to be hazardous, more outrage from the community may occur (Chapman & Wutze, 1997). This is positive when the agency wants the public to take more interest as is in the case of emergency preparedness. When this becomes a problem is when the hazard is low and the outrage towards becomes higher than it needs to be (Chapman & Wutze, 1997).

The Latino and Hispanic Population

This population represents a large swath of different cultures. They range from immigrants from Mexico and other countries and Latin America, to those that are born in the United States with parents or other family members that may have immigrated here.

The main differences here are the perception of risk is defined by three variables: acculturation, English-speaking proficiency, and socioeconomic status (Johnson, 2011; Taylor-Clark, Koh, & Viswanath, 2007). The longer an immigrant spends in the United States meant the more the person understands the risks he or she faces here (Johnson, 2011). In addition, the more proficient the person is at speaking English, the more they understand the risks they face in the United States (Johnson, 2011). What types of media this group uses is different from others in the United States. There are many ways to disseminate information and Latinos or Hispanics prefers the television and radio to other forms of media (Taylor-Clark, Koh, & Viswanath, 2007). In order to influence risk perception, providing information through the preferred methods of information absorption may help influence this group to prepare for emergencies.

Migrant Farm Workers

Migrant farm workers are people who work in large agricultural operation that are not US citizens (Vaughn, 1993a). Migrant farm workers mainly come from Mexico (Vaughn, 1993a). Hazards to migrant farm workers involve their exposure to different chemicals used in the growing process as well as injury risk. In this group, the perception of risk had more to do with the control of their work environment than their culture (Vaughn, 1993a). Factors that influenced their perception included whether or not they exposure occurred to a risk in prior work experience and optimistic bias. If a migrant worker experienced effects from exposure to chemicals used in the farming process, he or she felt their risk was greater than those that have not (Vaughn, 1993a). Optimistic bias has to do with believing that their risk will be lower than others will. This belief is when

the person believes the risk will happen to someone else, but never to himself or herself (Vaughn, 1993a). Finally, if the migrant worker believes he or she has no other options but the work he or she is doing now, they will take on more risk than if they believe they have other options for employment (Vaughn, 1993a). This again points back to control of their environment.

African Americans

African Americans differ from other diverse group in that the majority has been American citizens for many generations. This makes acculturation less of an issue as well as English language proficiency. However, outrage was much higher in this group towards the agencies themselves rather than the actual hazard (Lachlan, Burke, Spence, & Griffin, 2009). Before Hurricane Katrina, the messages given lead the African American community to perceive the risk of a hurricane to be low, but outrage was high (Lachlan, Burke, Spence, & Griffin, 2009). Instead of risk messages producing the perception of the risk of a hurricane as high, they did nothing to change this perception, which produced low levels of preparedness in this community.

New Mothers

Diverse populations can be made up of people of different cultures and races, but they can also be made up of communities of experiences. New mothers have the added concern about having children and learning the risks that may affect them (Laferriere, 2014). Even in a group of new mothers, the socioeconomic status, English proficiency, and location, all had an influence on risk perception (Laferriere, 2014). Lower socioeconomic status and low English proficiency lead to the new mother having less

control over her environment despite the perception of risk of hazards to her children were high (Laferriere, 2014). Location matters in that living closer to environmental risks raised their perception of risk. Other mothers and the Internet rather than experts (Laferriere, 2014) also influenced their perception of risk more.

Risk Communication in Diverse Communities

The perception of risk helps inform communicators on how to communicate risk to different communities. While each community perceives risk in a different way, the goal of risk communication is to increase or decrease the outrage towards the hazard (Sandman, 1988). When each locality is made up of several different communities, risk communication can be difficult (Vaughn, 1995). In the body of research, communicators used risk communication strategies that either failed or succeeded in many different ways. For instance, how the risk is framed to a particular audience influences how they react to the message (Vaughn, 1995). The framing of a message is determined by who is delivering the message and what the community is most concerned about. In the case of parents, child safety seat misuse is high but the warnings of this misuse are mostly ignored (Will & Geller, 2004). The way to prevent child safety seat misuse is to frame the message to move away from statistics that mean nothing to the parent to stories about the consequences of misuse and what simple steps he or she can do to prevent the issue (Will & Geller, 2004). Another major part of communicating risks is to involve the community in the process. The science is only one part of the issue, but when the community is involved in ensuring they are protected from whatever threat they are at

risk from, the risk communication strategy is clearer and will produce action (Beecher et al., 2005).

Communicating emergency preparedness is difficult because of the lack of a current emergency to drive people to act, but also cultural differences (Vaughn & Tinker, 2009). In order to convey a message about a risk that the public cannot imagine occurring there has to be a trust relationship developed. In the case of pandemic influenza, until 2009 many people had never experienced or have forgotten experiences with previous influenza pandemics (Vaughn & Tinker, 2009). In order to build trust in public health delivering the message of pandemic preparedness, they first had to reach out to community leaders to help tailor the message to each group (Vaughn & Tinker, 2009). The more the message spoke specifically to the audiences concerns, the more likely they were to trust the public health message and public health agencies. However, if the agency is to blame for the risk another outrage component may come into play. Lachlan & Spence (2010) suggest blame outrage as another part to the outrage component of Sandman (1988) risk equation. Blame outrage is simply the need to blame someone for the risk (Lachlan & Spence, 2010). Channeling the blame from the agency (or person) to the hazard can also help build trust within the community (Reynolds, 2002).

Cultural context is an important factor when communicating risk in any community. This is where Sandman's (1987) risk equation does not go far enough. Utilizing the PEN-3 model, the cultural context can be determined and used to inform

risk communication strategies (Iwelunmor, Newsome, & Airhihenbuwa, 2014). Each culture has his or her own identity and issues that need to be considered.

Latino/Hispanic and Migrant Farm Workers

In order to communicate risk to Latino/Hispanic communities, the message had to be delivered by a member of their own community (Eisenman, Glik, Maranon, Gonzales, & Asch, 2009; Melancon, Oomen-Early, & del Rincon, 2009; Scarinci, Bandura, Hidalgo, & Cherrington, 2012; White, Garces, Bandura, McGuire, Scarinci, 2012). This community member can interface with the public health agency and the community. Utilizing the PEN-3 model, many of the issue that hinders communication between Latino/Hispanic communities were able to be determined (Erwin, Johnson, Trevino, Duke, Feliciano, & Jandorf, 2006; Melancon, Oomen-Early, & del Rincon, 2009; Scarinci, Bandura, Hidalgo, & Cherrington, 2012; White, Garces, Bandura, McGuire, & Scarinci, 2012). Utilizing the community member for information dissemination helped to address these issues because he or she was already a trusted member of the community. This goes beyond the typical communication method of taking the message in English tailored to the average American and translating it into Spanish (Melancon, Oomen-Early, & del Rincon, 2009). Communicating with migrant farm workers depended largely on their control of their economic position (Vaughn & Dunton, 2007). When communicating risks to this population, scientific information is less important than communicating information they need to control the outcome (Vaughn & Dunton, 2007). If the communicator merely communicates information about the risk without giving them steps to take control, the message would be lost.

African Americans

One distinct characteristic of African American culture is the leadership. African American families and community leaders are more likely to be matriarchal rather than patriarchal (Erwin, Johnson, Trevino, Duke, Feliciano, & Jandorf, 2006). Another key finding was the influence of religion in African American communities. Communicating risk to this audience may involve conveying information through women and through religious leaders (Erwin, Johnson, Trevino, Duke, Feliciano, & Jandorf, 2006). Outside of these factors, family and friend support for an intervention are important when communicating risk (Cowdery, Parker, Thompson, 2010). When communicating risk without taking into account that a person's family or friends may disagree, the communicator may not be able to adequately reach them (Cowdery, Parker, Thompson, 2010).

Chinese-Americans/Immigrants

Similar to other diverse groups outlined in the literature, Chinese Americans and immigrants' family, community and religion are very important (Yick & Oomen-Early, 2009). One difference is the importance of privacy (Yick & Oomen-Early, 2009). Chinese Americans and immigrants like to keep family issues and dealing with them in their closed circle. There also is distrust of the established government structure, which in the United States focuses on western values, which do not relate to this group (Yick & Oomen-Early, 2009). This means for communicating risk to this group respecting privacy and family boundaries as well as getting to know the non-western structure in which they obtain trusted information.

Emergency Preparedness in Diverse Communities

Because of differences between diverse communities, there are also differences in emergency preparedness. Truman et al., (2009) suggests there may some differences that make some diverse groups more vulnerable than others. What makes some more vulnerable is if they emigrated from another country and do not speak English, American citizenship, and access to medical care (in terms of a severe disease outbreak) (Truman et al., 2009). However, when planning emergency preparedness outreach, many times diverse communities are not served (Andrulis, Siddiqui, & Gartner, 2007). One reason for this may be emergency preparedness programs are not seen as important as other programs (Katz, Staiti, & McKenzie, 2006).

Communicating emergency preparedness is a complex issue among diverse communities. Different groups may misunderstand a weather warning such as a tornado warning; especially if a tornado is not something they experienced previously (Phillips & Morrow, 2007). Without bringing the groups to the table to understand both risk perception and risk communication strategies, emergency preparedness will not take place (Lemyre, Gibson, Zlepzig, Meyer-MacLeod, & Boutette, 2009). If the program has not taken the time to understand where diverse communities are located within their jurisdictions, they may also produce gaps when implementing new preparedness outreach campaigns (Allen & Katz, 2010).

Latinos/Hispanics

Latino/Hispanic groups range from those who were born in the United States and speak English to those who have emigrated from other countries. This diversity in one

community means there is more than one way to communicate emergency preparedness to them. One way is to translate messages into Spanish. However, Spanish is one of many languages that may be spoken within the Latino/Hispanic community (Sloan, 2012). Before emergency preparedness can occur, there needs to be a definition of what an emergency is (Carter-Pokras, Zambrana, Mora, & Aaby, 2007). Without this understanding, it is impossible to ask a group to prepare for something they may see differently. Emergency preparedness increased in this group by using informal networks as opposed to translated materials dispersed by the media (Eisenman, Glik, Gonzales, Maranon, Zhou, Tseng, & Asch, 2009).

Migrant Farm Workers

Migrant farm workers have the addition barrier of not being citizens of the United States. However, when it comes to emergency preparedness in this community, the barrier is less important than others are. Access to emergency preparedness information and supplies was a large barrier to preparedness (Burke, Bethel, & Britt, 2012). When addressing emergency preparedness to risks migrant farm workers were more directly exposed to, preparedness was even less abundant (Vaughn, 1993b). This cites the importance of not only communicating the message and educating the population, but also ensuring they take the necessary measures for self-protection.

Other Diverse Communities

Promoting action in the native Hawaiian community required understanding their preferred communication method as well as family and religion structure (Ka'opua, 2008). In order to persuade native Hawaiians to prepare for emergencies, the use of

spiritual leaders as well as community leaders was important (Ka'opua, 2008). Sharing previous experiences from within the community promoted others to heed the message and do more to protect themselves (Ka'opua, 2008). Use of resources where governments typically post emergency preparedness information (i.e. on the government website with possible translation) was low (Ka'opua, 2008).

Focusing on self-efficacy was an important part of emergency preparedness in Chinese immigrants with limited English proficiency (Yip et al., 2011). Two factors affect self-efficacy, access to family and hazard experience (Yip, et al., 2011). If a person had experienced an emergency previously, he or she was more likely to take steps to prepare as well as communicate this experience to others (Yip et al., 2011). Access to family, which was their preferred method of emergency response, was more important than seeking outside resources to develop their preparedness networks (Yip et al., 2011).

A barrier to emergency preparedness in Slavic immigrants is forcing the community to take a step backwards from where they were in their previous country (Sloan, 2012). For example, a person may have been a medical doctor in his or her home country, but when immigrating to the United States, find their credentials are not accepted (Sloan, 2012). Emergency preparedness is primarily a governmental duty and with this group not trusting government, preparedness messaging would be lost (Sloan, 2012). One way to reach this group may be to tap in to professional expertise they received from their home country to help guide others in their community to prepare.

Emergency Preparedness Among Iraqi Immigrants to the United States: A Gap in the Literature

What was missing from the literature on emergency preparedness in diverse communities was anything about Iraqi immigrants. While in many parts of the United States, immigrants from the Middle East are a very small group, in states such as California and Michigan the groups are much larger (Arab American Institute Foundation, 2011). The reason for not exploring this group is largely unknown; however, one reason may be social stigma due to the September 11, 2001 terrorist attacks (Rousseau, Hassan, Moreau, & Thombs, 2011; Schoeb, Weinstein, & Halpern, 2007). What is known about Iraqi immigrants is how where they came from affected their experiences in the United States, their psychological issues from war and living in a new country, and how religion affects perceptions. Conflict is not a new issue in the Middle East. For decades, cultural differences have given rise to conflict between cultures and nations (Sirkeci, 2005). Two waves of Iraqi immigrants in 1991 and 2003 were due to the 1991 Gulf War and the 2003 Iraq War (Sirkecki, 2005). Even though there are many immigrants that have made a home in the United States, there are distinctions that should be accounted for in immigrants from Iraq. One specific overarching distinction is no matter the education level, male or female, or how long an Iraqi immigrant has remained in the United States, traditional values are very important (Abdulahad, Delaney, & Brownlee, 2009). Part of these traditional values includes a strong tie to religion whether Muslim or Christian. Religion is a place of comfort to Iraqi immigrants, thus tied strongly to personal wellbeing (Schoeb, Weinstein, & Halpern, 2007).

There are also psychological factors that affect how an Iraqi immigrant views life in the United States. Their psychological wellbeing is tied to whether or not the person is resilient (Arnetz, Rofa, Arnetz, Ventimiglia, & Jamil 2013). Resilience was greatly reduced if the person had experienced violence in the home country prior to immigrating to the United States (Arnetz, Rofa, Arnetz, Ventimiglia, & Jamil 2013). Stress in Iraqi immigrant populations was also tied to how recently the immigrated to the United States (Jamil, Nasser-McMillan, & Lambert, 2007). While these are very important in the distinction of Iraqi immigrants, this does not address how this applies to hazards they may face while living in the United States. Ignoring a specific group in the emergency preparedness planning process whether intentionally or not may produce legal consequences that could cost the locality millions (Shelly & Harkins, 2011). As seen in previous disasters, not understanding the communication needs of a group could leave them vulnerable (Erwin, Johnson, Trevino, Duke, Feliciano, & Jandorf, 2006).

Some of the studies with Arab-Americans and Iraqi Immigrants in this literature review utilized qualitative research methods to study cultural factors that influence a particular group's views on different issues (Rousseau, Hassan, Moreau, & Thombs, 2011; Schoeb, Weinstein, & Halpern, 2007; Sirkeci, 2005). Quantitative studies of these groups were limited to specific phenomenon and health problems (Abdulahad, Delaney, & Brownlee, 2009; Arnetz, Rofa, Arnetz, Ventimiglia, & Jamil 2013; Jamil, Nasser-McMillan, & Lambert, 2007). However, a mixed methods study combining the two methods has not been attempted. The goal is to measure a phenomenon, in the case of this study -- outrage, and then answer what cultural factors influence this measure.

Questionnaires were used in all of the studies for both quantitative and qualitative measures (Abdulahad, Delaney, & Brownlee, 2009; Arnetz, Rofa, Arnetz, Ventimiglia, & Jamil 2013; Jamil, Nasser-McMillan, & Lambert, 2007; Rousseau, Hassan, Moreau, & Thombs, 2011; Schoeb, Weinstein, & Halpern, 2007; Sirkeci, 2005). In this study a questionnaire was also be used combining the two methods.

Summary

PEN-3 and the risk equation both ensure emergency management and preparedness professionals are meeting the specific needs of a community and how they perceive a hazard. While many diverse communities have applied these models, they have not been applied to Iraqi immigrants. It is important to understand all groups in the emergency preparedness planning process and this research will bring another group to light and inform all planning partners with this community. The use of both models on their own has contributed to the vast body of literature on communication. However, the models have not been used together and applied to emergency preparedness. In the next chapter, I outline the methods of this study. This includes data collection and data analysis as well as the presentation of the survey instrument.

Chapter 3: Research Method

Introduction

The purpose of this study was to explore the perceptions of Iraqi immigrants in Sterling Heights and Dearborn, Michigan, toward hazards common in Michigan. Although many researchers have examined the perceptions of diverse populations in other U.S. states toward local hazards (Carter-Pokras, Zambrana, Mora, & Aaby, 2007; Eisenman, Glik, Gonzalez, Maranon, Zhou, Tseng, & Asch, 2009; Eisenman, Glik, Maranon, Gonzales, & Asch, 2009; Glik, Eisenman, Zhou, Tseng, & Asch, 2014; Johnson, 2011; Taylor-Clark, Koh, & Viswanath, 2007; Vaughn, 1993a; Vaughn, 1993b; Vaughn & Dutton, 2007; Yip et al., 2011). I found a gap in the literature exploring the perceptions of Iraqi immigrants toward local hazards. In this chapter, I describe my research design and approach, the research setting, size of my sample, and data collection and analysis procedures. I also included an outline of the protection of study participants.

Setting

The setting of this study was Dearborn and Sterling Heights, Michigan. Dearborn is located in Wayne County, which contains the largest city (Detroit) in the state. According to the U.S. Census (2010), Wayne County had a population of 1,792,365 as of 2010. The racial make-up of Wayne County is mainly Caucasian (54%) and African American (43%), though Hispanic (5%) and Arab (4%) persons live there (U.S. Census, 2010). The total number of Arab Americans living in Wayne County was 74,434 (U.S. Census, 2010). The total population of those from Iraq in Wayne County was 5,009 at the time that the Census was conducted. According to the U.S. Census (2010), Dearborn

has a population of 96,470 as of 2010. The racial makeup of Dearborn is mainly Caucasian (92.5%), African American (4%), Hispanic (4%), and Arab (39%) (U.S. Census, 2010). The total number of Arab Americans living in Dearborn is 37,836 (U.S. Census, 2010). The total population of those from Iraq in Dearborn is 2,820 (U.S. Census, 2010). My reason for choosing Dearborn, Michigan, as one of the study sites stems from the city having the highest concentration of Arab Americans and immigrants from the Middle East in the state (Arab American Institute, 2011). Table 1 shows the complete demographic makeup of Wayne County and Dearborn, Michigan, as per the U.S. Census (2010).

Table 1

Demographic Overview of Wayne County/Dearborn, Michigan

Location	Total population	Population of Caucasians	Population of African Americans	Population of Hispanics	Population of Arab Americans	Population of Iraqis
Wayne County	1,792,365	972,953 (54%)	767,212 (43%)	92,931 (5%)	74,434 (4%)	5,009 (0.02%)
Dearborn	96,470	89,224 (92.5%)	3,831 (4%)	3,866 (4%)	37,836 (39%)	2,820 (3%)

Note: Adapted from “American Community Survey – 2006-2010,” by the U.S. Census, 2010.

Sterling Heights is located in Macomb County, which is the northern most metro Detroit suburb. According to the U.S. Census (2010), Macomb County has a population of 840,978 as of 2010. The racial makeup of Macomb County is mainly Caucasian (86%), African American (7%), Hispanic (2%), and Arab (2%) (U.S. Census, 2010). The total number of Arab Americans living in Macomb County is 20,831 (U.S. Census,

2010). The total population of those from Iraq in Macomb County is 6,222 (U.S. Census, 2010).

According to the U.S. Census (2010), Sterling Heights has a population of 129,699 as of 2010. The racial makeup of Sterling Heights is mainly Caucasian (87%), African American (4%), Hispanic (2%), and Arab (6%) (U.S. Census, 2010). The total number of Arab Americans living in Sterling Heights is 8,396 (U.S. Census, 2010). The total population of those from Iraq in Sterling Heights is 4,199 (U.S. Census, 2010). Table 2 shows the complete demographic overview of Macomb County and Sterling Heights, Michigan, as per the U.S. Census (2010). My reason for choosing Sterling Heights, Michigan, as one of the study sites stems from its high concentration of refugees from the Middle East (Arab American Institute Foundation, 2011). ACCESS has a location in Sterling Heights due to the large amount of Arab Americans in the area.

Table 2

Demographic Overview of Macomb County/Sterling Heights, Michigan

Location	Total population	Population of Caucasians	Population of African Americans	Population of Hispanics	Population of Arab Americans	Population of Iraqis
Macomb County	840,978	727,335 (86%)	62,743 (7%)	18,518 (2%)	20,831 (2%)	6,222 (0.07%)
Sterling Heights	129,699	112,658 (87%)	5,692 (4%)	2,804 (2%)	8,396 (6%)	4,199 (4%)

Note: Adapted from “American Community Survey – 2006-2010,” by the U.S. Census, 2010.

Research Design and Rationale

My research questions and hypothesis address how Iraqi immigrants perceive the top five hazards in Michigan. I examined the level of immigrants' outrage towards each of the five hazards and the cultural factors influencing their outrage. Gauging perceptions of a certain group requires a more in-depth picture than can be accomplished with either a quantitative or a qualitative method alone (Creswell, 2009). A quantitative study on outrage to the five top hazards in Michigan would show what the Iraqi immigrants were most worried about, but would neglect why they felt that way (Creswell, 2009). A qualitative study on the cultural factors would show how to educate Iraqi immigrants on the issue of public health preparedness, but would neglect where to focus in terms of hazard (Creswell, 2009). A mixed method study answers both issues. The quantitative hypotheses addresses the worry about each of the five top hazards in Michigan along with a quantitative measure of hazard to come together to measure the risk. The qualitative research question addresses the cultural factors that explain why Iraqi immigrants view hazards in the way that they do. I am confident that using this combined approach will provide a comprehensive picture of to how Iraqi immigrants perceive hazards in Michigan. I hope that my data collection and analysis will guide the development of a more informed emergency communication strategy at both the state and local level.

RQ1: To what degree does the equation $\text{Risk} = \text{Hazard} + \text{Outrage}$ explain the relationship between the top five hazards in Michigan and the outrage of Iraqi immigrants living in Sterling Heights and Dearborn, Michigan?

H₀: There is no statistically difference in the outrage ratings of Iraqi immigrants living in Sterling Heights and Dearborn, Michigan for each of the top five hazards.

H₁: There is a statistically difference in the outrage ratings of Iraqi immigrants living in Sterling Heights and Dearborn, Michigan for each of the top five hazards.

This hypothesis was tested using a survey instrument that contains 45 questions that each has five choices (strongly agree, agree, neutral, disagree, strongly disagree) to measure outrage (See Appendix A). Strongly agree, agree, neutral, disagree, strongly disagree had respective point values of 5, 4, 3, 2, and 1. There are nine questions for each of the five hazards. I measured the outrage factors for this study using the nine questions that pertain to them. The outrage factors include controllability, familiarity, catastrophic potential, understanding, uncertainty, delayed effects, dread, human and natural origin, and personal stake (Sandman & Covello, 2001). The scale for total point was 9-15 points for low outrage, 16-27 point for medium outrage, and 28-45 points for high outrage. The outrage factors were measured and compared with the hazard portion of the risk equation ($\text{Risk} = \text{Hazard} + \text{Outrage}$). The hazard was the independent variable, and kept at a constant level. In this case because each of these five hazards are considered the most likely emergencies to occur in the state of Michigan according to the Michigan Hazard Analysis, all hazards will be set at a high level. The hazard is the actual threat level whereas outrage is the perception. When combining the hazard and

outrage measures, the outcome will be, what method of communication would work best based on the actual threat and the perceived risk.

RQ2: What cultural factors that influence the views of Iraqi immigrants in Sterling Heights and Dearborn, Michigan, with regard to the top five hazards in Michigan?

I collected the data from an in-person survey instrument (See Appendix A). The qualitative portion of the survey instrument asked nine open-ended questions. The questions addressed each factor as part of the three domains in the PEN-3 model (Airhihenbuwa, 1990). The three domains include cultural identity (person, extended family, and neighborhood), relationships & expectations, (predisposition, enablers, and nurturers) and cultural empowerment (positive, existential, and negative) (Airhihenbuwa, 1990). This defined the cultural factors unique to Iraqi immigrants that influence their risk perception.

The answer to this question will derive a community perspective that emergency management and preparedness professionals can use in emergency preparedness planning mainly for the purposes of emergency communication. However, it may also be used for other types of emergency planning. The objective was to discover themes that can help make overall emergency preparedness planning more culturally sensitive as it relates to the Iraqi community. These themes may also drive research for other Middle-Eastern groups as a result.

After much thought on the best way to approach this research a concurrent mixed method study was chosen. The design was appropriate because of two reasons. The first,

the risk equation is best evaluated quantitatively (Sandman, Miller, Johnson, & Weinstein, 1993). The second, the PEN-3 has been shown to best be evaluated through qualitative study (Airhihenbuwa, 1990; Brown, BeLue & Airhihenbuwa, 2010; Cowdry, Parker, & Thompson, 2010; Erwin, Johnson, Trevino, Duke, Feliciano, & Jandorf, 2007; Erwin, Trevino, Saas-Harfouche, Rodriguez, Gage, & Jandorf, 2010; Fitzgibbon & Beech, 2009; James, 2004; Melancon, Oomen-Early, & del Rincon, 2009; Okoror, Airhihenbuwa, Zungu, Makofani, Brown, & Iwelunmor, 2007; Okoror, BeLue, Zungu, Adam, & Airhihenbuwa, 2014; Purcell & Cutchen, 2013; Saulsberry et al., 2013; Scarinci, Bandura, Hidalgo, & Cherrington, 2012; White, Garces, Bandura, McGuire, & Scarinci, 2012). Each part evaluates a different aspect of the picture. The quantitative aspect measures nine specific outrage factors that determines risk perception; however, it does not fill the gap as to why the perception exists within the culture. The PEN-3 model qualitatively determines what cultural factors influence these risk perceptions. I collected the data in one session using a survey instrument that combined the quantitative and qualitative questions.

Role of the Researcher

One of the strengths of this research is I do not have any personal connection with the community I wish to study. I do have a professional relationship with ACCESS because of my position at the Michigan Department of Health of Human Services Bureau of EMS, Trauma and Preparedness. It was the Michigan Office of Refugee Services that inspired this study because of what they found was a clear disconnect between explaining hazards and why refugees should protect themselves and how the refugee viewed the

same hazard. The only issue that I foresee is a power differential between the population and myself. Even though my wish is to understand the person better, there is a possibility that many feel because I am an American and I work for state government that I have power over them. The other power differential would be between male and female. Iraqi culture is patriarchal and the males may not talk to a woman (Fernbrant, Essén, Östergren, & Cantor-Graae, 2013). To mitigate both issues I performed the interviews myself with the aid of an interpreter. I worked with ACCESS to ensure the interviews were interpreted by someone who will be seen as more favorable to talk to that also speaks English and Arabic.

Methodology

Participant Selection

The sample size was calculated using both purposive and probability sampling procedures. The goal is to perform both on the same population instead of attempting to collect two separate samples (Teddlie & Yu, 2007). I first used a probability sampling technique in the form of a cluster sampling strategy to pinpoint participants. The cluster in this case is Iraqi immigrants that live in Sterling Heights and Dearborn, Michigan. Population statistics of this cluster is from the US Census American Community Survey data set. I then applied a purposive sampling technique by the use of snowball and criterion sampling to identify individuals (Creswell, 2013, p.158). Identifying individuals began with close contacts at ACCESS. I utilized ACCESS to identify individuals who fit the criteria of an adult 18 years or older, recently immigrated from Iraq in the last four years, and living in Sterling Heights and Dearborn, Michigan. The attempt was to recruit

an equal amount of males and females. The target sample size was 84 participants. For the qualitative portion of the research, the target number of participants is 30 to 50 for ethnography (Onwuegbuzie, & Collins, 2007). For the quantitative portion, the target number of participants is 84 for a two-tailed hypothesis (Onwuegbuzie, & Collins, 2007). In order to encompass both methods, I chose the higher number to ensure statistical power.

Instrumentation

I developed the instrument I used for the interviews. After searching through the databases for instruments to utilize, there was not one that fit. The instrument developed was pilot tested in order to ensure accuracy of the data collected. If the population will not understand the questions, the instrument will need to be adjusted. One possible issue is the use of the term influenza pandemic. Infectious diseases may not be fully understood by all cultures. When the instrument was in process of initial translation, I worked closely with the translator and experts from ACCESS to ensure the right terminology was used. I revised the instrument with the feedback I received from the pilot test group. Because this was a concurrent mixed methods study, I wanted to create something that could be performed in one session and capture both the qualitative and quantitative aspects. In the quantitative section, there are 45 questions (nine outrage factors for each of the five hazards). In the qualitative section, there are nine open-ended questions. I collected demographic information from each person at the beginning of each interview. Each interview was recorded and the participants were asked at the beginning if he or she consented to being interviewed and can stop at any time. The

participant consented to recording of the interview. The entire survey instrument was translated into Arabic and back to English to ensure accuracy of translation. After each interview, the answers collected from the interview were read back to the participant to ensure accuracy of the answers given after each question. Each person received nominal compensation of a \$10 gift card to a local store for participating. Each interview took no more than one hour, with most lasting 15-30 minutes. I gave each participant the opportunity to ask any questions at the end of the interview. I collected the data in one session with no follow up.

Quantitative

The quantitative portion of the instrument is a Likert scale questionnaire that asks questions of all nine outrage factors with each hazard (See Appendix A). For example, “I am afraid of tornados.” measures the dread each person may feel towards the tornado. If the person chooses high, he or she will perceive a tornado to be a greater risk than if someone answered low. I measured familiarity, understanding, catastrophic potential, natural or unnatural origin, personal stake, delayed effect, uncertainty, and controllability in the same way. I asked the same nine questions of each hazard to ensure constancy of measurement. I added the scores from nine questions together for each hazard for a total point value to determine high, medium, or low. I compared this score with the hazard to determine risk. The definitions of each term are taken from Covello & Sandman (2001):

- *Controllability*. Risks from activities viewed as under the control of others (e.g., releases of toxic chemicals by industrial facilities) are judged to be greater, and

are less readily accepted, than those from activities that appear to be under the control of the individual (e.g., driving an automobile or riding a bicycle).

- *Familiarity.* Risks from activities viewed as unfamiliar (such as from leaks of chemicals, or radiation from waste disposal sites) are judged to be greater than risks from activities viewed as familiar (such as household work).
- *Catastrophic potential.* Risks from activities viewed as having the potential to cause a significant number of deaths and injuries grouped in time and space (e.g., deaths and injuries resulting from a major industrial explosion) are judged to be greater than risks from activities that cause deaths and injuries scattered or random in time and space (e.g., automobile accidents).
- *Understanding.* Poorly understood risks (such as the health effects of long-term exposure to low doses of toxic chemicals or radiation) are judged to be greater than risks that are well understood or self-explanatory (such as pedestrian accidents or slipping on ice).
- *Delayed effects.* Risks from activities that may have delayed effects (e.g., long latency periods between exposure and adverse health effects) are judged to be greater than risks from activities viewed as having immediate effects (e.g., poisonings).
- *Dread.* Risks from activities that evoke fear, terror, or anxiety (e.g., exposure to cancer-causing agents; AIDS) are judged to be greater than risks from activities that do not arouse such feelings or emotions (e.g., common colds and household accidents).

- *Personal stake.* Risks from activities viewed by people to place them (or their families) personally and directly at risk (e.g., living near a waste disposal site) are judged to be greater than risks from activities that appear to pose no direct or personal threat (e.g., disposal of waste in remote areas).
- *Human vs. natural origin.* Risks generated by human action, failure or incompetence (e.g., industrial accidents caused by negligence, inadequate safeguards, or operator error) are judged to be greater than risks believed to be caused by nature or “Acts of God” (e.g., exposure to geological radon or cosmic rays) (Covello, & Sandman, 2001, p. 169-170).

Qualitative

The qualitative portion of the instrument consists of nine questions (See Appendix A). Each question is open-ended and addressed each of the three domains in the PEN-3 instrument: educational diagnosis of health behavior, health education, and cultural appropriateness for health behavior. Each domain had three questions address the “PEN” of each. The answers were translated and transcribed for data analysis. Each person interviewed was asked to review their answers before the interview is complete to ensure the accuracy.

Procedure for Recruitment

I recruited participants through ACCESS. Since ACCESS has direct contact with people who have immigrated to the US recently, I was be able to recruit participants by attending classes held at ACCESS, WIC clinics, and through the case workers. I avoided recruitment via e-mail or written communication due to the uncertainty of literacy of each

participant. For each participant I asked three questions about their age, education level and how long they have lived in the United States.

Data Analysis Plan

Quantitative

For the quantitative portion of this study, I used Statistical Package for Social Sciences (SPSS) version 22 to perform statistical analysis. I examined the quantitative portion of each interview and remove any that are incomplete or illegible. I anonymized all interviews by removing any identifying information. I performed statistical analysis that on the data using SPSS included frequencies and means with standard deviation for each question as well as utilizing the Risk = Hazard + Outrage equation for comparing hazard and outrage. I calculated ANOVA to measure the statistical difference in outrage. I interpreted the results for each question by examining the frequency of each answer whether more people found each factor high, medium, or low outrage. I combined the points for each factor for all nine questions for each hazard and tallied as high, medium, and low outrage overall.

Qualitative

I analyzed the qualitative data by NVIVO version 10. Coding followed major themes that emerge from the interview data. Some possible themes may include religion, family, and understanding. Themes were categorized into themes stemming from each question and those that emerge as overall themes. I analyzed discrepant cases in the same way as the rest of the data. In the results section, I reported these cases with possible reasons deduced from the data as to why the case is different from the rest.

Data Integration

I integrated the data from both the quantitative and qualitative portion by examining which hazards and the level of outrage they produce and compare the answers from the qualitative portion as to why they produce the level of outrage measured. For example, the majority have low outrage towards a tornado from the quantitative section and in the qualitative section finds that many are not familiar with tornados because they have not experienced one before due to the lack of occurrence in their homeland. The goal is for the qualitative data to help explain the quantitative data. The quantitative data provides specific measures that produce the means for a communication method and the qualitative data will determine the best way to carry out the communication method.

Threats to Validity

The biggest threat to external validity is generalizability of the data. One of the issues was the narrowness of the group and setting being examined which may not provide insight for other groups. The way to combat this is to perform the test on other groups (Creswell, 2009, p. 165). This was difficult with the current study because of the limited timeframe of the dissertation process. This means this issue becomes a limitation to the study. Another threat to external validity is the narrowness of the timeframe that may limit generalizability. Again, due to the timeframe of the dissertation I could not follow another group and collect data on a different timeframe (Creswell, 2009 p. 165). Again, this becomes a study limitation. Finally, due to the size of the study sample there was limited generalizability of the results.

Threats to internal validity for this study include selection and mortality. The selection threat may occur from the selection of the participants. Depending on the individuals who choose to participate there may be more of one sex or another, more from one tribe or another, and length of stay in the United States. The way to combat this is to oversee the participant selection and ensure if there is too many from one group, that participants from other groups are more heavily recruited. The mortality threat is more of a concern from when the participant agrees to be interviewed to the time of the interview. The participant may agree initially to participate and then decide to drop out before the interview. There is one way to combat this threat. This is being up front about how long the interviews will take. Each participant will be notified that the interviews will take about an hour. The participant only had to attend one interview. This ensures that everyone who participated in the interview will not be lost if there were subsequent visits.

Issues of Trustworthiness

In terms of the trustworthiness of the data collected in the qualitative section, there are several ways to combat threat to it. First with credibility and dependability, I worked with a culture outside my own so it was important to take time to ensure understanding of the culture. One way to ensure credibility and dependability was to work with contacts at ACCESS to understand the group. The other way was to ensure the survey instrument and procedure was culturally sensitive. I ensured experts from ACCESS were involved in instrument validation and developing the procedures. In terms of transferability, participant selection was important. The goal was to have Iraqi immigrants of all ages, religious affiliation, tribal affiliation, both sexes. As participants

were collected, I assessed the progress and worked with those that are recruiting subjects to ensure there is a good mix of participants. I addressed confirmability by creating a solid audit trail from participant selection to data analysis to the results and conclusions.

Ethical Procedures

This study obtained Walden University Institutional Review Board (IRB) approval before any recruitment of study subject for both the pilot of the survey instrument and gathering of study participants. I performed the study under Walden IRB approval number 02-24-15-0071099. I obtained an agreement with ACCESS in order to recruit participants. As there was no intervention with this study, only asking participants for their thoughts, the adverse events were minimized. I anonymized the data by assigning each person a number before the interview begins. I protected all data via encrypted drives that I only have access to.

Summary

This chapter outlined the methodology for this study. It described the details of the study design and an overview of the demographics of the population from which the participants were selected. It outlined the data collection and analysis procedures as well as a detailed survey instrument. Finally, ethical procedures were described to establish safety for those participating in the study.

Chapter 4: Results

Introduction

The purpose of this study was to explore the perceptions of Iraqi immigrants in Sterling Heights and Dearborn, Michigan, toward the top five hazards in Michigan. I gathered the perceptions through this research to apply the finding to emergency preparedness planning in Michigan with a specific focus on communication. I measured outrage and cultural factors to explain immigrants' perception toward hazards. The information presented in this chapter includes the results of the pilot study, the demographics of the study participants, and the results of the study.

Pilot Study

I conducted the pilot study at ACCESS in Sterling Heights and Dearborn, Michigan. I recruited five participants from English as a second language classes held at ACCESS. I recruited the participants in person at the end of class with the aid of an interpreter. Each person was told that the interview might last 1 hour. I gave all participants a \$10 gift card and a copy of the consent form at the conclusion of the interview. I conducted the interview using the survey instrument. I would read each question in English, after which the interpreter would read the same question in Arabic. The interpreter relayed any questions from the participant to me, and they subsequently relayed my response back to the respondent.

I revised the survey instrument after the pilot study interviews, several of the questions on the survey instrument to be more understandable to participants. Initial data showed of a strong possibility for the participant to be illiterate. However, this was not

the case and it was found after the pilot study that having a copy of the survey instrument in Arabic for them to follow helped their comprehension of the questions. I also changed the question on the survey instruction concerning how long participants had lived in the United States from 6 months or less to 4 years or less. I made this change because few participants had lived in the United States for 6 months or less. Expanding the range allowed for more people to participate in the study.

Setting

All of the participants in this study had immigrated to the United States as refugees from Iraq. With the time in the United States to be 4 years or less, none of the participants had obtained U.S. citizenship. I found that many of my interviewees were educated with many holding at least a high school diploma and some with at least a bachelor's degree. Many of the interviewees described themselves as working professionals who had been doing well before being forced to leave their home country. Since coming to the United States, several interviewees said they were not able to work in the same capacity as their home country (Sloan, 2012). During the interviews, many expressed a desire to continue with their field of work in the United States.

Demographics

The full study contained 84 participants. All participants were Iraqi immigrants or refugees living in Sterling Heights and Dearborn areas. All participants were adults over 18 years of age with an average age of 30.2. The average time living in the United States was 40.25 months. Most of the interviewees had obtained either a high school diploma (37%) or a bachelor's degree (19%). Thirty-one percent were male, and 69%

were female. Table 3 shows the age distribution of participants while Table 4 shows participants' education levels. I asked each participant his or her age and level of education at the beginning of each interview.

Table 3

Age of Participants

Age range	Number (percent) of participants
18-28	16 (19%)
29-39	29 (35%)
40-50	18 (28%)
51-61	14 (17%)
61+	7 (8%)

Note: Data are based on surveys that were conducted March-November 2015.

^a *n* = 84

Table 4

Education Level of Participants

Education	Number (percent) of participants
Less than High School	27 (32%)
High School	31 (37%)
Some College	5 (6%)
Bachelor's Degree	16 (19%)
Graduate School	1 (1%)
Other	4 (5%)

Note: Data are based on surveys that were conducted March-November 2015.

^a $n = 84$

Table 5 reports how long the interviewees had lived in the United States at the time that the interviews were conducted. I included the time that interviewees had lived in Michigan and in other states.

Table 5

Length of time in the United States in Months

Months in the United States	Number (percent) of participants
Less than 12	13 (15%)
12-23	9 (11%)
24-35	23 (27%)
36-48	39 (46%)

Note: Data are based on surveys that were conducted March-November 2015.

^a $n = 84$

Table 6 and 7 shows the sex of participants and whether they lived in the Dearborn or Sterling Heights area at the time that interviews were conducted. Most of the participants (69%) were female and were living Sterling Heights (68%). The reason for most of the participants being recruited from Sterling Heights is the time I spent at the ACCECC Sterling Heights location. I added Dearborn later on in the participant selection process due to lack of numbers from week to week in Sterling Heights. Giving each location a two-week period in which to recruit participants led to more participants to interview at each location.

Table 6

Sex of Participants

Sex	Number of Participants/Percent
Male	26 (31%)
Female	58 (69%)

Note: Data are based on surveys that were conducted March-November 2015.

^a *n* = 84

Table 7

Location of Participants

Sex	Number of Participants/Percent
Sterling Heights	57 (68%)
Dearborn	27 (32%)

Note: Data are based on surveys that were conducted March-November 2015.

^a *n* = 84

Data Collection

I collected data from 84 participants in both Dearborn and Sterling Heights, Michigan, at the ACCESS Community Health and Research Centers. I interviewed each participant in person at each location during one session. I conducted all of the in less than 30 minutes with the exception of two interviews. I input responses during each interview by using an electronic version of the survey instrument on my laptop computer; I also used an electronic voice recorder during each interview. As with the pilot study, I read each question in English, after which an interpreter would ask the same question in Arabic. The interpreter would then relay an interviewee's answer to me in English. I gave each participant a \$10 gift card and a copy of his or her consent form. As I found with the pilot study, providing a copy of the survey instrument to each participant made it easier for him or her to understand the interview questions.

Data Analysis

Then, in the qualitative section, I transcribed the answers to each question during every interview. I compared the answers with the recordings and edited for completeness and accuracy. I then coded the transcribed interviews by key words or phrases. Themes emerged from the frequency of several key words and phrases. With an ethnography, the goal is to describe how an ethnic group views a subject (Creswell, 2013. pg. 197). Twenty-eight major themes emerged from the key word and phrase frequency.

For the quantitative section, I recorded the answers to each question on the survey instrument during the interview. I compared the answers recorded to the audio recording to ensure accuracy. I transferred each answer to a Microsoft Excel spreadsheet. The

Excel spreadsheet was set up to automatically calculate total outrage level for each hazard as well as mean and median for all questions and hazard totals.

Results

Qualitative

This section presents the qualitative data collected utilizing the survey instrument. I asked the following questions of each participant. Each question addresses one component of the PEN-3 model.

1. What do you think your family would do if a disaster were to happen today?
(Predisposition)
2. Did you take a class about disaster preparedness? What did you think about it?
(Enabler)
3. Does your family have any information about disaster preparedness? (Nurturer)
4. Where/how do you find your information on disasters that may happen in Michigan? (Person)
5. Does your family understand what disasters may happen in Michigan? (Extended Family)
6. Do you think the Iraqi community is aware of disasters that may happen in Michigan? (Neighborhood)
7. What do you want us to do to help Iraqi immigrants learn more about disasters in Michigan? (Positive)

8. Of the five top emergencies in Michigan (severe tornado, influenza pandemic, severe flood, electricity outage, and snowstorms) are any of them new to you?
(Exotic)
9. What do you think the barriers are for Iraqi immigrants to learning about emergencies in Michigan? (Negative)

I organized the themes by factor of the PEN-3 model.

Cultural Appropriateness For Health Behavior

Predisposing. I measured predisposing was measured by asking each participant about how they think their family would react in a disaster. The goal was to measure what the person already knew about reacting to disasters. This would also measure any perceptions the participant had from the past about disasters. Thirty-two themes emerged from this question. Four major themes emerged from the answers.

I don't know. This was the most dominant theme. Many of the interviewees expressed lack of knowledge of what their families would do in an emergency. Most of the people who gave this answer had a high school education or less with an equal distribution of males and females. Time in the country did not predict the answer-- the range was between four months and four years.

Protect themselves. This was the second most dominant theme. Several interviewees said they would take steps to protect themselves. Some would get together with their families to protect themselves. Examples of comments are:

- “My family would get together and figure out a way to help each other and get out if. Find a way to do something about it.”

- “Her family will take positive steps to get to safety.”
- “They gonna think about how they will save their lives and how they’re gonna act.”

Some said they would make appeals to authority to protect themselves.

- “They will try to protect themselves as much as they can until the authorities can help.”
- “Seeking for some protection like calling 911.”

The rest stated that they would protect themselves any way they could.

Stay home. This was the third most dominant theme. The interviewees that said they would stay home spoke of staying together with their families. All interviewees that gave this answer were female and had a wide range of education.

Evacuate. This was the fourth most dominant theme. The interviewees described evacuating as leaving the house or finding a safe area. Only one interviewee gave specifics on what they would do for different types of emergencies. “He said they would it depends on what happened. Let’s see if electricity they will look at the place they could be away from any electrical outage and stuff like this. If it’s a water they will go try to run to a dry place. So they will try their best to use their thinking in order to prevent or to risk themselves.” The interviewees that gave this answer were mostly female with an education level of high school or above.

Enabler. I defined the enabler in this case as being part of an emergency preparedness class. The idea was taking an emergency preparedness class would enable someone to be better prepared for emergencies. There were two major themes were that

they had taken a preparedness class and they had not taken a preparedness class. The majority of the interviewees said they had not taken an emergency preparedness class. For those that said they had taken a preparedness class, there were five locations where the classes took place: Jordan, Iraq, the state of Georgia, in school, or at Lutheran Social Services of Michigan. Everyone who took a preparedness class said it was good.

Nurturer. Families nurture beliefs in how a person may react in disasters. The goal of this question was to see if the participant's family had disaster preparedness information. There were 12 total themes in this domain. There were two main themes, those that felt their families had disaster information and those that did not. Only a few interviewees said parts of their family had this information. I cited these as the husband, children, siblings, and the wives. Others said where they received the information as from the schools, the news, and common sense. Twelve interviews said they did not know if either their families had disaster information or that they had little information.

Yes. Most of the interviewees that said their families had disaster information did not elaborate on why. Only one person gave more information, "They know about such disasters but they have a lot of informations [sic] on what they should have an emergency case." Most of the interviewees who answered this way were female with time in the US from four months to four years. Education level of respondents was varied.

No. This was the most common answer given by interviewees. Most of the interviewees that said their families did not have disaster information again and did not elaborate on why they did not. One interviewee said “Not at all. Kid’s schools do not mention anything about it.” Most of the interviewees who answered this way were female with high school or a bachelor’s degree.

Educational Diagnosis for Health Behavior.

Person. One way to ensure a health message gets to the intended audience is to know how a person best finds their information. The goal for this question was to determine how each person locates emergency preparedness information. Twenty sub-themes emerged from the interviews. Four major themes emerged from this group: word of mouth, television, radio, and Internet. These were found to be the main ways each person located emergency information.

Internet. This was the most common way the interviewees found their emergency information. Most of the interviewees stated they found their emergency information either online or the Internet. Five interviewees mentioned social media, specifically YouTube and Facebook. Six interviewees specifically mentioned the search engine Google. Most answers were short with mostly one to two word answers.

Television. This was the next most common answer. Most of the interviewees answered with TV or television. Three interviewees specifically mentioned the Weather Channel. Only one interviewee gave a longer answer: “Weather channel sometimes human beings can get that from the weather.”

Radio. Even though the radio is becoming a less common way to gain information, this was the third most common way the interviewees found emergency information. The majority of the answers were the single answer of “radio”. One interviewee gave a more specific answer about warnings: “The city puts warnings on the radio”.

Word of mouth. The fourth most common answer was word of mouth. Many of the answers centered on finding information from people, friends, and family. If from other people: “People talking about it.” and “People who know.” One interviewee made a specific response that may display insight into the culture: “Through family everyone calls everyone.”

Extended Family. Understanding how a person’s family views disaster preparedness is a way to understand how the person also views it. If the family view disaster preparedness in one way, it may be likely that the person may also hold this view. The goal of this question was to find out if the interviewee felt their family understood Michigan disasters. There were 12 sub-themes that emerged from the interviews with two main themes: the family understands and the family does not understand.

The family understands. Most of the answers were a one word of “yes”. Thirty-four interviewees felt their family understood disasters that may happen in Michigan. One interviewee stated, “Yes, but they haven’t noticed.” This could mean they felt their family understands the disasters exists, but may not be prepared for them.

The family does not understand. Most of the answers again were a one-word answer of “no”. Twenty-five interviewees felt their families did not understand disasters that may happen in Michigan. One interviewee stated, “She said they are not prepared and since they came here following the weather news.” This may mean the family follows the weather and news, but does not take steps to prepare themselves.

Neighborhood. The neighborhood in this part of the interview is the Iraqi community in Michigan. I designed this question to find out how each participant felt the Iraqi community was aware of Michigan disasters. The most common themes were no they were not aware, yes they were aware, and it depends on the circumstances.

No they are not aware. This was the most common theme among the interviewees with 33 giving this answer. The most common answer was one word. However, others elaborated on their answers. They did not think the Iraqi community was aware, but also said why they were not aware.

- “I don’t thinks so. They don’t know what they should do.”
- “No. I’m the first one to ever know.”
- “No. They don’t have any idea.”
- “No. They might talk about it without the knowledge of what to do.”

- “No. We only have a good knowledge of sandstorms from the Middle East.”
- “No. Nature is completely different here.”

This answer was most common in females with a high school education or a Bachelor’s degree from four months to four years in the United States.

Yes they are aware. This was the second most common them among the interviewees with 24 giving this answer. Most gave the one word answer of yes. Others did elaborate on why they thought the Iraqi community was aware of disasters in Michigan.

- “She said that many people that came to Michigan state, they knew about information on what happens here. It depends on the circumstances.”
- “They read something about or hear about it they will know.”
- “They would know from the TV”
- “Yes if they decide to learn about it.”
- “Yes. They would communicate with the people here”
- “Yes. It’s not like before anymore. Always on the news looking for the weather and also on internet. So she think they do have this knowledge.”

Most of the interviewees who gave this answer were female with a high school education and in the US for less than one month to four years.

It depends on the circumstances. This was the third most common theme among interviewees with 13 giving this answer. Many of the answers were “maybe”, “some yes and some no”, and “not all of them.” One interviewee gave a more detailed answer, “I would say 70% of them are actually aware of that. 30% will go panic.” Most of the interviewees who gave this answer were female with a high school education from four months to four years in the US.

Health Education.

Positive. These positive behaviors would help promote disaster preparedness among Iraqi immigrants. I developed the question to learn more about what each participant saw were things organizations that promoted disaster preparedness could do to promote positive behaviors. Twenty-nine total sub-themes emerged from the interviews with three main themes. The three themes were training, presentation, and class. The three themes suggest most of the interviewees wanted to have in-person sessions to help them learn about disasters in Michigan. Sixty-four interviewees had one of the three themes related to their answer. Many said just classes, lectures, trainings, or presentations. Many elaborated on what they wanted to see. Some select quotes:

- “Educational training for such disasters and how to prepare ourselves in order to stay alive and pass it. Something similar to the classes at LSSM (Lutheran Social Services of Michigan) and ACCESS. Include some general information on what they have to do.”

- “Since there are refugee newcomers the information should be presented in one setting as prepare them for what happen in the State of Michigan or the state that they are living in.”
- “After that they can figure a schedule for courses or trainings to such refugees to come in the States in order to be aware.”
- “Lectures to do that provide it in different places. ACCESS, Mosques and churches.”

Exotic. Exotic in the terms defined by Airhihenbuwa (1990) are behaviors that are unfamiliar practices and should not be changed. I used this and framed the question in terms of what Michigan disasters were unfamiliar. Defining what is unfamiliar to each participant defines what an organization should put their efforts into educating this population. Educating on the familiar may lead to the population feeling as though the organization may not understand them. There were six total themes, electricity outage, flood, tornado, influenza pandemic, snowstorm, and none are new to me. Snowstorm was the most common theme with tornado, flood, and none are new to me tied for the second. Electricity outage was not exotic at all to the interviewees. Forty-one total interviewees felt a snowstorm was new to them. Twenty-nine total interviewees cited a tornado as new. Twenty-eight total interviewees said flood and none are new to me. Each interviewee would name the disaster, which was new to them out of the five presented in the question.

Negative. Airhihenbuwa (1990) defines negative behaviors as behaviors that are harmful to a person’s health. Instead focusing on negative behaviors, I focused on

barriers to disaster preparedness. What prevents a person from preparing for a disaster in this community. There were 20 total sub-themes for this question. The three most common themes are language, no barriers, and does not know. Language was the most common theme. Those that said does not know were not sure what barriers there were for the community. Those that said no barriers did not feel there were any barriers for the community to learning about emergencies in Michigan.

- “Everything is easier to get from the channels and the cell phone. No barriers.”
- “No barriers unless Iraqis decline to attend the sessions.”
- “There shouldn’t be. If they want to know they should know.”
- “Those that attempt to search and know there would be no problem with it.”
- “She won’t think there are any barriers. She seen more disasters than this.”

Qualitative research question.

RQ2: What cultural factors influence the views of Iraqi immigrants living in Sterling Heights and Dearborn, Michigan, with regard to the top five hazards in Michigan?

The cultural factors found from the qualitative results were most of the interviewees were not sure how their families would handle an emergency. Most would not have had previous emergency preparedness information and each interviewee did not believe their family had emergency preparedness information. Most would find their

Michigan disaster information from the Internet. They felt their extended family understood what disasters might happen in Michigan, but the Iraqi community does not. This means a family may know about disasters, but does not have any of the information to prepare for them. Classes would be the best way for the Iraqi community to learn about disaster information with a snowstorm being the most unknown to them. The largest barrier is the English language.

Quantitative

$$\text{Risk} = \text{Hazard} + \text{Outrage}$$

Along with the qualitative data, which assessed cultural factors that influenced risk, I measured the outrage each person felt for each of the five hazards. I measured the outrage by nine Likert scale questions for each hazard. The outrage score was the sum of all nine questions. Nine-15 total points corresponded with low outrage. Sixteen-27 total points corresponded with medium outrage. Twenty-eight-45 corresponded with high outrage. I calculated the hazard score as a total number of occurrences over the last ten years with a corresponding score over a ten-point scale.

Outrage.

Table 8 shows the average outrage score for each of the five hazards as well as the median. I used the mean outrage scores as the outrage component of the risk equation calculation for each hazard.

Table 8

Mean and Median Outrage Scores for the Top Five Hazards in Michigan

	Mean	Median
Severe Tornado	28.5	28.0
Pandemic	26.7	27.0
Influenza		
Power Outage	23.7	24.0
Snowstorm	31.7	32.0
Severe Flood	28.3	29.0

Note: Data are based on surveys that were conducted March-November 2015.

^a $n = 84$

Hazard.

Table 9

Hazard Frequency from 2004 to 2014

	MSP ^a Average Annual Events	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	Total	Hazard Frequency per Year
Severe Tornado ^b	16	9	4	8	8	8	1	12	12	4	3	7	76	7.6
Pandemic Influenza ^c	unknown	0	0	0	0	0	1	0	0	0	0	0	1	0.1
Power Outage ^d	No Rating	5	7	2	7	10	6	8	16	9	10	4	84	8.4
Snowstorm ^e	2.2	21	16	12	20	33	18	7	11	13	18	19	188	18.8
Severe Flood ^f	>1	19	12	4	4	14	3	6	7	2	5	4	80	8

^a From the Michigan Hazard Analysis 2012 pg. 16 Hazard Analysis Summary Table ^b From the National Climate Data Center. Michigan number of days

with the event – Tornado ^c From the World Health Organization. Global Influenza Programme – Evolution of a pandemic A(H1N1) 2009. ^d From the US

Department of Energy. Number of Events – Power Outages – Michigan ^e From the National Climate Data Center. Michigan number of days with the event –

Winter Storm ^f From the National Climate Data Center. Michigan number of days with the event – Flood

Table 9 shows the number of occurrences of each hazard as well the average hazard frequency per year. The number of occurrences was collected from several sources including the World Health Organization and the National Climate Data Center. These numbers were compared to the Michigan Hazard Analysis summary data. The average hazard frequency per year was created by taking the total number of occurrences and dividing this total by 10 for the per year average. I plugged in the average hazard frequency per year in the Risk Equation in order to calculate total risk.

I performed ANOVA on the hazard frequency to compare between hazards. Table 10 shows the ANOVA calculations performed on frequency of hazard. The ANOVA calculation shows there is a significant difference between the five hazards but does not give the details on which ones are different.

Table 10

ANOVA – Frequency of Hazard Occurrence

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1615.345	4	403.836	19.768	.000
Within Groups	1021.455	50	20.429		
Total	2636.800	54			

Table 11 gives the details on what which hazards show a significant different between each other, if any. The data shows there is a significant difference between the tornado, pandemic influenza, and snowstorm. There is a significant difference in pandemic influenza and all other hazards. There is a significant difference between power outages, pandemic influenza, and snowstorms. There is a significant difference

between snowstorms and all other hazards. Finally, there is a significant difference between a severe flood, pandemic influenza, and snowstorms. The greatest difference in hazard is with snowstorms and pandemic influenza which showed the most and least frequency of events in Table 9. Tornado, severe flood, and power outages did not show a significant difference.

Table 11

Post Hoc Test – Tukey HSD – Hazard Comparison

(I) Hazard	(J) Hazard	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Tornado (1.0)	2.0	6.8182*	1.9273	.008	1.364	12.272
	3.0	-.7273	1.9273	.996	-6.181	4.727
	4.0	-10.1818*	1.9273	.000	-15.636	-4.728
	5.0	-.3636	1.9273	1.000	-5.817	5.090
Pandemic Influenza (2.0)	1.0	-6.8182*	1.9273	.008	-12.272	-1.364
	3.0	-7.5455*	1.9273	.002	-12.999	-2.092
	4.0	-17.0000*	1.9273	.000	-22.454	-11.546
	5.0	-7.1818*	1.9273	.004	-12.636	-1.728
Power Outage (3.0)	1.0	.7273	1.9273	.996	-4.727	6.181
	2.0	7.5455*	1.9273	.002	2.092	12.999
	4.0	-9.4545*	1.9273	.000	-14.908	-4.001
	5.0	.3636	1.9273	1.000	-5.090	5.817
Snowstorm (4.0)	1.0	10.1818*	1.9273	.000	4.728	15.636
	2.0	17.0000*	1.9273	.000	11.546	22.454
	3.0	9.4545*	1.9273	.000	4.001	14.908
	5.0	9.8182*	1.9273	.000	4.364	15.272
Severe Flood (5.0)	1.0	.3636	1.9273	1.000	-5.090	5.817
	2.0	7.1818*	1.9273	.004	1.728	12.636
	3.0	-.3636	1.9273	1.000	-5.817	5.090
	4.0	-9.8182*	1.9273	.000	-15.272	-4.364

Note: * the mean difference is significant at the 0.05 level.

Risk.

Table 12

Total Risk for the Top Five Hazards in Michigan Utilizing the Risk = Hazard = Outrage Equation

	Hazard Frequency per Year	Mean Outrage Score	Total Risk
Severe Tornado	7.6	28.5	36.1
Pandemic Influenza	0.1	26.7	26.8
Power Outage	8.4	23.7	32.1
Snowstorm	18.8	31.7	50.5
Severe Flood	8.0	28.3	36.3

Note: Data are based on surveys that were conducted March-November 2015.

^a *n* = 84

Table 12 shows total risk for each of the top hazards in Michigan. I calculated risk for each hazard by plugging in the mean total outrage score and hazard score into the risk equation and adding the numbers. The snowstorm was shown to be of the highest risk followed by severe flood and severe tornado, power outage, and pandemic influenza.

Qualitative Observations. There were some observations of note that occurred during the quantitative portion of the interview. When asking the questions that pertained to power outages, many of the participants laughed aloud at the beginning. Many stated during their interviews that power outages occurred every day in Iraq. The data showed a correspondence with a most people answering agree or strongly agree to this question.

The pandemic influenza questions seemed to not be understood completely by the participant even with a definition at the beginning. Seventy out of 84 participants said disagree or strongly disagree to the question “I have experienced an influenza pandemic

before.” Since everyone interviewed was over 18, everyone should have been able to answer agree or strongly agree to this question because of the 2009 H1N1 influenza pandemic.

Hypotheses.

H₀: There is no statistically difference in the outrage ratings of Iraqi immigrants living in Sterling Heights and Dearborn, Michigan for each of the top five hazards.

H₁: There is a statistical difference in the outrage ratings of Iraqi immigrants living in Sterling Heights and Dearborn, Michigan for each of the top five Hazards.

To calculate whether a statistical difference exists, I utilized variance between hazards. I determined the difference in outrage scores by calculating ANOVA using the total outrage scores for each person per hazard. Table 13 shows the results of the ANOVA test. This test showed there was a significant difference between outrage scores per hazard. However, it did not show which outrages scores that pertained to each hazard were the most different.

Table 13

ANOVA – Comparing Outrage Scores

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2887.533	4	721.883	73.612	.000
Within Groups	4069.750	415	9.807		
Total	6957.283	419			

Note: Data are based on surveys that were conducted March-November 2015.

^a *n* = 84

Table 14 shows the post hoc multiple comparisons results. Outrage scores for tornados were significantly different from all other hazards with the exception of severe floods. Pandemic influenza, snowstorm, and power outage outrage scores were significantly different from all other hazards. Severe flood outrage scores were significantly different from all other hazards with the exception of tornados. This shows there is a statistical significant difference between all hazards with the exception of tornados and severe floods. Therefor H_1 is accepted for pandemic influenza, snowstorm, and power outage and rejected for tornado and snowstorm.

Table 14

Post Hoc Test – Tukey HSD – Hazard and Outrage Comparison

(I) Hazard	(J) Hazard	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Tornado (1)	2	1.929*	.483	.001	.60	3.25
	3	4.845*	.483	.000	3.52	6.17
	4	-3.167*	.483	.000	-4.49	-1.84
	5	.190	.483	.995	-1.13	1.51
Pandemic Influenza (2)	1	-1.929*	.483	.001	-3.25	-.60
	3	2.917*	.483	.000	1.59	4.24
	4	-5.095*	.483	.000	-6.42	-3.77
	5	-1.738*	.483	.003	-3.06	-.41
Power Outage (3)	1	-4.845*	.483	.000	-6.17	-3.52
	2	-2.917*	.483	.000	-4.24	-1.59
	4	-8.012*	.483	.000	-9.34	-6.69
	5	-4.655*	.483	.000	-5.98	-3.33
Snowstorm (4)	1	3.167*	.483	.000	1.84	4.49
	2	5.095*	.483	.000	3.77	6.42
	3	8.012*	.483	.000	6.69	9.34
	5	3.357*	.483	.000	2.03	4.68
Severe Flood (5)	1	-.190	.483	.995	-1.51	1.13
	2	1.738*	.483	.003	.41	3.06
	3	4.655*	.483	.000	3.33	5.98
	4	-3.357*	.483	.000	-4.68	-2.03

Note: * the mean difference is significant at the 0.05 level.

Quantitative Research Question.

RQ1: To what degree does the equation Risk = Hazard + Outrage explain the relationship between the top five hazards in Michigan and the outrage of Iraqi immigrants living in Sterling Heights and Dearborn, Michigan?

The equation explains the relationship between hazards in Michigan and outrage in only one dimension. For example, power outages explained using only the risk equation does not show the true worry about this hazard. The total risk shows this risk is medium; however, the qualitative notes from the quantitative portion of the interview show many of the interviewees had extensive experience with power outages. However, it did accurately explain the worry about snowstorms. This shows that the quantitative questions cannot be posed only using an online form. To more accurately predict the worry about a hazard, the qualitative data were able to better explain the answers.

Evidence of Trustworthiness

In terms of the trustworthiness of the data collected in the qualitative section, there are several ways to combat threat to it. First with credibility, I worked with a culture outside my own and spent several months at ACCESS to understand the group I was working with. The case workers at ACCESS assisted with the pilot study and ensured the final survey instrument was appropriate for the participants. In terms of transferability there was every attempt made to ensure an equal number of males and females as well and equal number from each location. However, in order to reach the high number of participants for this study it was down to who was available and able to participate. I addressed dependability by creating a solid audit trail from participant

selection to data analysis to the results and conclusions. I only handled all items collected and distributed. This included keeping all physical records of gift card purchases and gift cards distributed copies of consent forms and original copies of signed consent forms in a locked box. Electronic copies of data collected included interview transcripts, quantitative analysis, and interview recordings were kept and accessed only by myself from a secure location. I logged all travel and meetings electronically to ensure an accurate audit trail of when events took place. With confirmability, there was reflection throughout on my role as the researcher and budding understanding of this group. In the beginning, I updated terminology during the pilot throughout the survey instrument to reflect what was better understood by the culture. For example, I initially used the term “power outage” to reflect a loss of electricity. After the pilot, the term was changed to “electricity outage” because it was better understood. During the quantitative portion of the interview, a few emergent findings presented themselves. While these did not change the questions in this section, they helped to describe why someone from Iraq might view hazards from Michigan differently. As the researcher, I did have assumptions on what the results would show, however, I put those aside see what the people would tell me. Some were confirmed as in the lack of worry over a power outage. Some also surprised me like some people were not as worried as previously thought about something more unusual like a snowstorm.

Summary

This chapter presented the results of this study. It described the details of the qualitative and quantitative results. With the quantitative results it was determined snowstorms were the highest risk to this population and power outages the lowest. With the qualitative results it was determined the awareness level of this population to disasters in Michigan was low with several cultural factors contributing to this. One of the most important finding was language to be a main barrier to gaining information. The findings show more emphasis needs to be placed on informing this population on hazards like snowstorms and less on power outages to which they are familiar. It is also important to ensure the information is in the correct language as many of the interviewees were not be able to speak English.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this study was to gauge the perceptions of recent Iraqi immigrants to Michigan of top hazards in the state. Iraqi immigrants base their perceptions on their experiences in both the United States and Iraq. Hazards that were unfamiliar or exotic were more likely to be worried about than those that were more familiar, like hazards they experienced in their home in Iraq. In this study, snowstorms were the least familiar to Iraqi immigrants where power outages were the most. A snowstorm is common in Michigan whereas a power outage is common in Iraq. In this chapter, I will present my findings, outline recommendations, and consider the implications of this study.

Interpretation of Findings

I found cultural adaptation to the culture in the United States as one of the reasons to look beyond outrage to find out why the outrage was higher for some hazards compared to others. I found that in many ways cultural adaptation was a process of varied speed. Some interviewees were quicker to adapt to hazards in Michigan, while others, even after having lived for 4 years in the United States, were not able to adapt.

One reason for varying lengths of time needed for cultural adaptation may be that interviewees' lives are very different in the United States from in Iraq. During the interviews, I discovered that many respondents were not able to continue in their professions in the United States because employers did not recognize their degrees. Nineteen percent of interviewees had received a bachelor's degree. Another barrier for some respondents was the requirement to pay for testing and further education (in order

to obtain licensure, for example), which, as Sloan (2012) noted, may be difficult for many immigrants.

In terms of communication strategies, each hazard posed its own unique issues. Data showed that all of the hazards measured were of medium risk with only snowstorms shown as high risk. However, during the course of the interviews there was much more variability and showed how there were some hazards that this culture could teach us about. Snowstorms measured at a high risk to Iraqi immigrants mostly due to interviewees' unfamiliarity with them. In Iraq, snowstorms do not exist (NOAA, 2009). Moving to Michigan, interviewees had to acclimate to this new hazard. Snowstorms are the top hazard that citizens of Michigan face (Michigan State Police Emergency Management and Homeland Security Division, 2012). Data collected from the survey instrument suggests that more emphasis needs to be placed on teaching about snowstorms to Iraqi immigrants. Tornados and floods were less of a risk mostly because these hazards are easy to understand. Most of the interviewees understood these dangers. Some had experienced the 2013 Metro Detroit floods. A tornado was equally worrisome as a flood because it was not a common experience from Iraq, but less so than snowstorms. The information Iraqi immigrants gathered about floods and tornados from the Internet and television displayed the destructive potential.

Power outages and pandemic influenza were the two hazards that had the most variability in the responses. Quantitative data showed power outages to be of medium risk to those living in the study setting; however, interviewees' risk assessments for these two hazards were different. Although the interviewees took power outages seriously,

they were not worried about them because of their prior experience. Several mentioned experiencing power outages in Iraq on a daily basis.

In terms of the influenza pandemic, the greatest issue for interviewees is in understanding the difference between seasonal influenza and pandemic influenza. Even with a recent pandemic occurring in 2009 (World Health Organization, 2013), many interviewees still looked at influenza as being only a seasonal occurrence. The most common answer to the question “I have experienced an influenza pandemic before” was “disagree.” Based on this finding, I believe that Iraqi immigrants need to be given more information on the difference between pandemic influenza and seasonal influenza. It is important to provide this education because historically an influenza pandemic has the potential to kill a large amount of people around the world (World Health Organization, 2013). The 2009 H1N1 influenza pandemic, while considered a mild pandemic, killed thousands worldwide (World Health Organization, 2013). Dawood, et al. (2012) estimated the worldwide deaths due to the 2009 H1N1 influenza pandemic to be 151,700 to 575,400. Even with this prior knowledge, educating on this topic may be difficult as memories of the 2009 influenza pandemic fade for immigrants and the general population. According to researchers, familiarity with a hazard lessens outrage towards it (Covello & Sandman, 2001). In the case of pandemic influenza, many of the interviewees thought of something more familiar, seasonal influenza. However, if this study took place in 2009 rather than over five years past the event, familiarity to pandemic influenza would have been higher.

Limitations of the Study

Several limitations are present to this study, one of which is generalizability. Data illustrate the outlooks and beliefs of one set of Iraqi immigrants. Findings may not be the same for others (e.g., Arab-Americans in California, which has a very different hazard outlook than Michigan). Earthquakes are not a concern in Michigan (Michigan State Police Emergency Management and Homeland Security Division, 2012), but in California they are a likely hazard based on their occurrence several times in recent history (United States Geological Society, n.d.). Each Iraqi immigrant population is unique based on their location and previous experiences and will need to be assessed differently.

Another limitation of the study stems from translation of the interview questions. To ensure that interviewees understood interview questions, I had the survey instrument professionally translated and verified. The pilot test allowed for updates to the instrument to ensure that the questions made sense to the participants. I also provided a copy of the interview questions to each participant to aid in understanding of the questions. Many times the interpreter had to explain the questions during the interviews. This extra communication could have swayed some interviewees' answers. When the interviews were completed, there were several questions I would like to edit for better understanding.

Recommendations

Based on my study findings, I recommend conducting additional research on other Iraqis living in other parts of the United States as well as other Middle-Eastern

immigrant populations in the country. This research might provide insight as to whether my results are specific to Michigan and whether there are cultural similarities in other populations. The data from such a study would show what information would be generalizable to all immigrants from the Middle East and what would not be. Further research using my survey instrument with other populations might yield further insight about other populations and their views of local emergencies. The information would be helpful for the emergency management and preparedness community to make their plans more inclusive (FEMA, 2011).

Implications

I believe that my findings have far-reaching implications for positive social change. For local and state government agencies, understanding the populations they serve helps them better protect the general population (FEMA, 2011). My findings provide insight about how to get the right message out before an emergency and how public health and emergency personnel might learn about resilience during an emergency from the study population. The findings not only informs the population, but also helps the government agency get to know whom everyone is and how to best communicate. Allowing the population to teach about how they are resilient during emergencies familiar to them as well might help an agency find new ways to share emergency information with others.

During an emergency, it is the ability to get messages out to the population in the fastest way possible. Part of the survey instrument specifically addresses how a person obtains emergency information. Having such information may assist government

agencies in getting their messages out during emergencies. In addition, looking at the barriers noted may help ensure that personnel are able to convey effectively the messages. After an emergency, understanding the population is key to understanding their resilience. The previous experiences of a culture will show their path to resilience (Sirkeci, 2005). If the population has survived conflict and other hardships in their home country, they may have information that might help the whole community (Sirkeci, 2005).

Conclusion

The goal of this study was to understand the perceptions of Iraqi immigrants toward top hazards in Michigan. The focus should be on Iraqi immigrants' perceptions and cultural factors. Iraqi immigrants have different concerns than others in Michigan, which should be addressed by culturally sensitive emergency preparedness communication. Power outages are normal for Iraqi immigrants and less so for the majority of Michiganders. Emergency management and preparedness professionals should utilize the knowledge of Iraqi immigrants of how to be more resilient during power outages to teach others. This information may help governments' better plan for Iraqi immigrants' inclusion in emergency management plans. It may also help public health and emergency personnel make connections with immigrant populations before emergencies. My findings support the goal of emergency management in the state of Michigan to ultimately save more lives if an emergency occurs (Michigan State Police Emergency Management and Homeland Security Division, 2012).

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Appendix A: Survey Instrument - English

Demographic Questions

Male or Female?

How old are you?

What is your education level?

How long have you been in the US?

Outrage Measurement

Please answer the following questions about how you view each type of emergency. There will be 45 questions in this section. Each is a short answer and there are five types of emergencies with nine questions for each. Answer each question with strongly agree, agree, Neither Agree or Disagree, disagree, or strongly disagree. Strongly agree or disagree means that you feel strongly positively or negatively. Neither agree nor disagree means that you don't have strong feelings in either agreement or disagreement. The same nine questions will be given for each type of emergency.

Strong Tornado

1. I understand what a strong tornado is. (understanding)

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

2. I have experienced a strong tornado before. (familiarity)

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

3. I think a strong tornado could kill a lot of people at once if one occurred in Michigan. (catastrophic potential)

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

4. I am afraid of strong tornados. (Dread)

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

5. I think a strong tornado comes from nature. (natural or unnatural origin)

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

6. I feel I am at risk of experiencing a strong tornado where I live in Michigan.
(personal stake)
- | | | | |
|-------------------|-------|---------------------------|----------|
| Strongly Agree | Agree | Neither Agree or Disagree | Disagree |
| Strongly Disagree | | | |
7. If a strong tornado were to happen today it would destroy my neighborhood right away. (delayed effect)
- | | | | |
|-------------------|-------|---------------------------|----------|
| Strongly Agree | Agree | Neither Agree or Disagree | Disagree |
| Strongly Disagree | | | |
8. I think a strong tornado would happen to me where I live in Michigan.
(uncertainty)
- | | | | |
|-------------------|-------|---------------------------|----------|
| Strongly Agree | Agree | Neither Agree or Disagree | Disagree |
| Strongly Disagree | | | |
9. I feel I can control whether or not a strong tornado occurs. (controllability)
- | | | | |
|-------------------|-------|---------------------------|----------|
| Strongly Agree | Agree | Neither Agree or Disagree | Disagree |
| Strongly Disagree | | | |

Influenza Pandemic (to the interviewee: which is more severe than the normal influenza virus. It's not like a cold or flu that you would get in the winter time every year.)

1. I understand what an influenza pandemic is.
- | | | | |
|-------------------|-------|---------------------------|----------|
| Strongly Agree | Agree | Neither Agree or Disagree | Disagree |
| Strongly Disagree | | | |
2. I have experienced an influenza pandemic before.
- | | | | |
|-------------------|-------|---------------------------|----------|
| Strongly Agree | Agree | Neither Agree or Disagree | Disagree |
| Strongly Disagree | | | |
3. I think an influenza pandemic could kill a lot of people at once if one occurred in Michigan.
- | | | | |
|-------------------|-------|---------------------------|----------|
| Strongly Agree | Agree | Neither Agree or Disagree | Disagree |
| Strongly Disagree | | | |
4. I am afraid of influenza pandemics.
- | | | | |
|-------------------|-------|---------------------------|----------|
| Strongly Agree | Agree | Neither Agree or Disagree | Disagree |
| Strongly Disagree | | | |
5. I think an influenza pandemic comes from nature.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

6. I feel I am at risk of experiencing an influenza pandemic where I live in Michigan.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

7. If an influenza pandemic were to happen today it would destroy my neighborhood right away.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

8. I think an influenza pandemic would happen to me where I live in Michigan.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

9. I feel I can control whether or not an influenza pandemic occurs.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

Electricity Outage

1. I understand what an electricity outage is.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

2. I have experienced an electricity outage before.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

3. I think an electricity outage could kill a lot of people at once if one occurred in Michigan.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

4. I am afraid of electricity outages.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

5. I think an electricity outage comes from nature.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

6. I feel I am at risk of experiencing an electricity outage where I live in Michigan.
 Strongly Agree Agree Neither Agree or Disagree Disagree
 Strongly Disagree

7. If an electricity outage were to happen today it would destroy my neighborhood right away.
 Strongly Agree Agree Neither Agree or Disagree Disagree
 Strongly Disagree

8. I think an electricity outage would happen to me where I live in Michigan.
 Strongly Agree Agree Neither Agree or Disagree Disagree
 Strongly Disagree

9. I feel I can control whether or not an electricity outage occurs.
 Strongly Agree Agree Neither Agree or Disagree Disagree
 Strongly Disagree

Snowstorm

1. I understand what a snowstorm is.
 Strongly Agree Agree Neither Agree or Disagree Disagree
 Strongly Disagree

2. I have experienced a snowstorm before.
 Strongly Agree Agree Neither Agree or Disagree Disagree
 Strongly Disagree

3. I think a snowstorm could kill a lot of people at once if one occurred in Michigan.
 Strongly Agree Agree Neither Agree or Disagree Disagree
 Strongly Disagree

4. I am afraid of snowstorms.
 Strongly Agree Agree Neither Agree or Disagree Disagree
 Strongly Disagree

5. I think a snowstorm comes from nature.
 Strongly Agree Agree Neither Agree or Disagree Disagree
 Strongly Disagree

6. I feel I am at risk of experiencing a snowstorm where I live in Michigan.
 Strongly Agree Agree Neither Agree or Disagree Disagree
 Strongly Disagree

7. If a snowstorm were to happen today it would destroy my neighborhood right away.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

8. I think a snowstorm would happen to me where I live in Michigan.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

9. I can control whether or not snowstorm occurs.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

Severe Floods

1. I understand what a severe flood is.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

2. I have experienced a severe flood before.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

3. I think a severe flood could kill many people at once if one occurred in Michigan.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

4. I am afraid of severe flooding.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

5. I think a severe flood comes from nature.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

6. I feel I am at risk of experiencing a severe flood where I live in Michigan.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

7. If a severe flood were to happen today it would destroy my neighborhood right away.

Strongly Agree	Agree	Neither Agree or Disagree	Disagree
Strongly Disagree			

8. I think a severe flood would happen to me where I live in Michigan.
Strongly Agree Agree Neither Agree or Disagree Disagree
Strongly Disagree

9. I can control whether or not a severe flood occurs.
Strongly Agree Agree Neither Agree or Disagree Disagree
Strongly Disagree

PEN-3 (Airhihenbuwa, 1990) Assessment

Please answer the following questions to the best of your knowledge. These questions are open answer and there are no right or wrong answers. There are nine total questions in the section. After the questions of this section are completed, the interview is done.

Educational Diagnosis of Health Behavior

What do you think your family would do if a disaster were to happen today? (Perception)

Did you take a class about disaster preparedness? What did you think about it? (Enabler)

Does your family have any information about disaster preparedness? (Nurturer)

Health Education

Where/how do you find your information on disasters that may happen in Michigan? (Person)

Does your family understand what disasters may happen in Michigan? (Extended Family)

Do you think the Iraqi community is aware of disasters that may happen in Michigan? (Neighborhood)

Cultural Appropriateness for Health Behavior

What do you want us to do to help Iraqi immigrants learn more about disasters in Michigan? (Positive)

Of the five top emergencies in Michigan (severe tornado, influenza pandemic, severe flood, electricity outage, and snowstorms) are any of them new to you? (Exotic)

What do you think the barriers are for Iraqi immigrants to learning about emergencies in Michigan? (Negative)

Appendix B: Permission Letter – PEN-3 Figure



Kerry Chamberlain <kerry.chamberlain@waldenu.edu>

Re: PEN-3 Model Figure Usage Permission

1 message

COLLINS O AIRHIHENUWA <aou@psu.edu>

Sun, May 25, 2014 at 1:26 PM

To: Kerry Chamberlain <kerry.chamberlain@waldenu.edu>

Dear Kerry,

Yes, you have my permission to use the graphic and any other information related to PEN-3. Good luck with your research.

COA.

Collins O. Airhihenuwa
Head of Biobehavioral Health
Penn State

"Be Comfortable with Being Uncomfortable"

Sent from my iPhone

> On May 25, 2014, at 7:47 AM, Kerry Chamberlain <kerry.chamberlain@waldenu.edu> wrote:

>

> Dr. Airhihenuwa,

>

> My name is Kerry Chamberlain and I am a doctoral student in the Public Health program at Walden University. I am in the process of writing the dissertation and am using the PEN-3 model as a basis of assessing Iraqi immigrants views on common emergencies in Michigan. The goal is to inform emergency preparedness communication strategies in Michigan and other states with the same population. I would like to include a figure that shows the PEN-3 model in my dissertation, but need your permission to use it.

>

> May I use the graphical representation of your PEN-3 model in my dissertation?

>

> Thank you,

>

> Kerry Chamberlain