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**THE IMPACT OF SOCIAL INTERACTIONS ON RESETTLED REFUGEE
HEALTH**

By

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**MSS IN INTERNATIONAL RELATIONS, UNIVERSITY OF DHAKA,
BANGLADESH**

THESIS

Submitted in Partial Fulfillment of the
Requirements for the Degree of

Masters of Arts

Political Science

The University of New Mexico
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DEDICATION

This thesis is dedicated to the numerous refugees who resettle to a third country every year and begin a new life. Your morale is praiseworthy and inspiring. I hope that the knowledge gained from this project will enable resettlement agency to better promote your health and wellbeing after your resettlement.

ACKNOWLEDGMENT

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THE IMPACT OF SOCIAL INTERACTIONS ON RESETTLED REFUGEE HEALTH

By

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M.S.S., International Relations, University of Dhaka, 2012

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ABSTRACT

The purpose of this thesis is to investigate the effects of social interactions and other factors on the self-reported physical and mental health of former refugees in their host country. Social relationships and interactions consist of different layers extending from individual personal relations, to social networks, to collective activities. Using data from a public opinion survey of newly resettled Bhutanese and Rohingya refugees in Michigan, I find that along with their economic situations, like employment and income, social integration is an important determinant of physical and mental health among resettled refugees. In particular, resettled refugees tend to have better health if they are more socially engaged. This study contributes to the literature on refugee integration through a quantitative analysis of a variety of measures of social interaction and their impact on resettled refugee health.

Keywords: Refugee integration, physical health, mental health, social interaction

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1. Introduction

The 1951 Refugee Convention and its 1967 Protocol defines a refugee as a person who is outside his or her country of nationality or habitual residence owing to a "well-founded fear" of being persecuted because of his or her race, religion, nationality, political opinion or membership in a particular social group, and is unable or unwilling to return to that country for fear of persecution (UNHCR, 2011a). In many cases, refugee populations are generated by wars, civil conflicts, ethnic persecutions, and natural disasters (Cernea & McDowell, 2000). According to the United Nations High Commissioner for Refugees (UNHCR), a record 70.8 million people worldwide were forced from their homes by the end of 2018. Among those displaced, nearly 26 million are refugees¹, many of whom languish in refugee camps or live in limbo in host countries around the world (UNHCR 2019).

Every year, a small fraction of refugees is resettled to a third country. Most countries that take refugees have government and/or private sector programs to assist refugees in the resettlement process. To help with the transition to their new environments, refugees usually require assistance with language and cultural training, employment, housing, education, health care and social interactions. Over time, the physical and mental health of refugees may be highly dependent on the success of this integration process. While many factors may affect the health and well-being of former refugees, in this research, I focus on a particularly important and sometimes overlooked factor in refugee health, social integration.

Broadly defined, integration refers to the inclusion and participation of former refugees, both economically and socially, in their new environments. Economic integration is

¹ <https://www.unhcr.org/en-us/figures-at-a-glance.html>

a cornerstone of American culture, emphasizing that individuals need to become self-sufficient and contributing members of society, and economic success certainly contributes to the health and well-being of individuals in society. But perhaps equally important to immigrant health and well-being is successful social integration. A common measure of social integration is the social relations and networks that newcomers build within their new communities. Research suggests that the degree to which people interact with friends, neighbors, colleagues, and members of the community can affect people's health. Ample evidence indicates that social relationships and interactions have an impact on human health (Berkman & Glass, 2000; Cohen et al. 2000; Uchino et al. 1996). These studies, involving social relations and health, can be traced back to the early 1970s (Cassel, 1976; Berkman and Syme, 1979), and the issue continues to be an area of interest in developed societies (Fujiwara et al. 2016; Mithen et al. 2015). Social relationships benefit health, not only through a buffering process that is in response to stressful events, but also through promoting a positive psychological state (Cohen & Wills, 1985; Cohen, 2004). Conversely, a lack of social interactions leads to social isolation that is associated with poor mental health. The recent social isolation resulting from the pandemic situation of COVID-19 has highlighted this issue. Isolation and quarantine (more extreme forms of social distancing) have precipitated loneliness, depression, anxiety, a weaker immune system, and potential heart problems (Burch, 2020; Douglass, 2020; Venkatesh & Edirappuli, 2020).

The importance of social interactions is similarly relevant for refugee health. Due to traumatic past experiences and the pre-migration process, refugees are more vulnerable than other migrants and other people in general, in terms of their physical and mental health. Socialization promotes a sense of safety, belonging, and security that is particularly

beneficial for refugees' mental and physical health. Although the migration process itself can be a very stress-inducing phenomenon, social relationships can positively influence the health conditions of resettled refugees. This research focuses on the importance of social integration on the self-reported health of a particularly vulnerable population, former refugees. Using data from a public opinion survey of newly resettled Bhutanese and Rohingya refugees in Michigan, I analyzed the association between social interactions and their health conditions. I find that along with factors such as employment and age, social interactions are important determinants of physical and mental health among resettled refugees.

Although it is an under-studied area in refugee integration research, health is important to a refugee's ability to integrate, to learn a language, and to enter employment. Similarly, the physical and emotional wellness of refugees depends upon successful integration. Financial conditions, health care access, and language literacy get the most focus in the literature on refugee health. Social interaction and relations, however, are perhaps equally relevant to the physical and mental health of refugees in host societies. Social relationships and interactions consist of different layers extending from individual close relations, to social networks, to collective activities at a contextual level (Berkman & Glass, 2000). Characteristics of social relationships have been identified in examining their effects on health, such as social support, social connectedness, and social participation.

Social interaction provides the opportunity to build a relationship between refugees and members of the community at large (Ager & Strang, 2008). Several studies outlined the importance of social bonds as a source of emotional support, self-esteem, and confidence (Hamamura et al., 2016; Losi and Strang 2008; Spicer 2008) that lead to better physical

health, happiness, and life satisfaction among people. Since in most cases, refugees are forced to leave their own country and often live temporarily in refugee camps, social relationships and bonds need to be rebuilt in the newly settled host country. The benefits of social interactions are not limited to interactions with other refugees and pre-existing host communities; relationships with a similar ethnic group also appear to have health benefits (Ager & Strang, 2008; Strang & Ager, 2010).

Existing qualitative research suggests how social interactions and relations assist refugee populations in building social capital and facilitating economic and social integration (Ager & Strang, 2008; Strang & Ager, 2010). However, very limited research has been done on the linkage between social interaction and refugee health after resettlement. The relevance of social interaction is the least prioritized area to determine the health outcomes of resettled refugee populations in the exiting literature. The present study is an attempt to fill that void by answering the question: “Do social interactions after resettlement influence resettled refugees’ health?” To answer this question, I argue that social relationships and interactions are an important factor for newly resettled former refugees’ health. I explore different levels of social interactions and their effect on the self-reported health of newly resettled refugees.

This thesis is organized as follows. In the next section, I review literature that is most relevant to my topic of former refugees’ health and social interaction, highlighting in particular the argument by Agar and Strang (2008) that social connectedness promotes a sense of safety and security among resettled refugees and affects their overall health outcomes. Next, I provide a theoretical argument for why social interaction is relevant for the physical and mental health of resettled refugees. Then I provide a description of data and

methods used for this study. Finally, I discuss the result of statistical analysis and conclude by providing several research directions on this issue of social interaction and former refugees' health.

2. Literature Review

Refugee integration is seen as a two-way process in which both the newcomer and the receiving community adapt and learn from each other (UNHCR, 2002). International organizations, as well as most nations accepting refugees, use integration as a benchmark of resettlement. At the international level, the integration of resettled refugees in a local society is measured using legal, economic, social, and cultural indicators (UNHCR, 2014). As a legal process, refugees are granted entitlements and rights on par with local citizens that would lead them to acquire citizenship in the country of asylum. Socio-economic integration is measured by whether or not the refugees attained self-reliance through their participation and contribution to the local economy. Finally, the cultural process on integration looks at whether or not refugees are able to live among or alongside the local population, free of discrimination or exploitation. Successful refugee integration is an ongoing process, which continues even after refugees obtain citizenship in the host country (Roka, 2017).

Although infrequently cited as a core factor in integration processes, across the literature related to refugee integration, good health is widely seen as an important prerequisite for employment and active social engagement in a new society (Ager & Strang, 2008). In the process of refugee integration, health is a cross-cutting issue. Health means more than an absence of disease or disability, but instead involves “complete physical, mental and social wellbeing” (Threadgold & Court, 2005; World Health Organization, 2001). Along with other services like accommodations and education, health is equally important

for the broader integration of new arrivals (Entzinger & Biezeveld, 2002). Physical and emotional wellness, as well as access to healthcare, are the foundations for successful resettlement. Without feeling healthy, it is difficult to work, to go school, or to take care of a family. Unlike other immigrant populations, refugee health is of particular concern because the conditions of refugees prior to immigration may have a particularly negative impact on their physical and mental health (Mitza et al., 2014). Because of their geographic origin or refugee camp conditions, this newly resettled population may face a wide variety of acute or chronic health issues and infectious diseases such as tuberculosis or intestinal parasites, chronic illnesses such as diabetes or hypertension, and mental health issues such as post-traumatic stress disorder or depression (Steel et al., 2009). In addition, without health insurance, an injury or illness could threaten the economic self-sufficiency of the refugee population, particularly in the United States.

Reliable access to health care services is essential for a resettled refugee population in the host country (Carr-Hill, 2000). However, significant barriers to the provision of healthcare, such as language, communication, transportation, lack of insurance, high cost of medical services, medicine, cultural differences, and lack of knowledge of the U.S. healthcare system, can persist in refugee populations (Agrawal & Venkatesh, Asgary et al., 2011; 2016; Brouwer & Rodwell, 2007; Sian et al., 2018). Because many refugee populations come to third countries with fragile health, they face an increased likelihood of major diseases and malnutrition as compared to other immigrants (Kotovicz, Getzin, Vo, 2018). Language difficulties may make it difficult for refugees to communicate with health care professionals. Receiving appropriate treatment is difficult if an individual is unable to communicate with their medical providers, since it may result in false diagnosis (Schilcher

2009; Kapeller & Sprung 2002). Healthcare barriers such as cognitive, structural, and financial barriers can limit access to timely, appropriate, and culturally competent care for resettled refugees in the host country (Morris et al., 2017).

Mental health is a growing area of concern, particularly for resettled refugees and asylum seekers who may have experienced trauma (Woodhead, 2000). While many men, women, and children are exposed to traumatic situations, women are more likely to experience PTSD (Post-traumatic Stress Disorder), anxiety and other mental health conditions because they are more prone to interpersonal trauma such as family separation, domestic violence, and rape (Bartelson, 2018). In addition, other factors such as language barriers, hostility, and social isolation contribute to mental illness in refugee populations. In the United States, resettlement agencies spend the most time on helping newly resettled former refugees to find employment and promoting positive physical and mental health outcomes by providing them primary medical services in the initial period of resettlement. However, access to mental health resources is often time-limited for newly-arrived refugees, which poses another challenge to health professionals attempting to deliver effective and culturally appropriate care that takes into account the unique history and cultural diversity of the refugee population (Murray, Davidson, & Schweitzer, 2010). The period during the asylum claim is also one of uncertainty and unfamiliarity which can lead to mental suffering and psychological distress (Vonnahme et al., 2014, Silove et al., 2017). As a result, many refugees suffer from PTSD symptoms (Vignal and Geny-Benkorichi, 2012). Poorer mental health has also consistently been associated with limited language skills, poor housing, underemployment, and insufficient income (Bogic, Njoku, & Priebe, 2015; Hynie, 2017; Li

et al., 2016). There is, however, a serious lack of research and monitoring in all countries on mental health in migrant groups, including resettled refugees.

One qualitative study, conducted in 2000, identifies several determinants of health status such as biological variation, health behavior, social conditions, access to health care services, and health-related social selection (Carr-Hill, 2000). Similarly, a review of the European literature identified that socio-economic status including housing, education, income, and conditions of work affect physical and emotional well-being, and behavioral patterns. Cultural factors also require attention, as perceptions of health and health care, interpretations of physical and mental well-being, as well as communication patterns and acceptance of treatments, vary by culture (Rudiger and Spencer 2003: 54). Official reports and other qualitative studies also confirm that poverty, working and housing conditions, and limited access to health care services have an impact on migrants' health, including former refugees in the host countries (Council of Europe 2000; Törnell 2003).

Income is found as a powerful determinant of health and affects common mental health disorders in every age group (Braveman & Gottlieb, 2014). Previous studies, both qualitative and quantitative, have investigated the linkage between income and health amongst refugee populations and found income as an important determinant of resettled refugees' health (Bogic et al., 2012; Chen et al. 2017). A 2016 report surveying over 300 refugees settled in Australia found that living on low incomes has a negative impact on health since lower-income leads to financial stress, worry, and cost barriers to health-seeking behaviors (Tyrrell et al., 2016). Similarly, in a mixed method cross national study, employment has been found to be a key determinant for psychological wellbeing, and employment status can reduce odds of major depression among resettled refugees in the host

country (Warfa et al., 2012). In addition, employment affects the sense of self-worth and self-esteem of refugee populations, which are closely linked with their psychological health and wellbeing (Bambra, et al., 2010; Wood et al., 2019). Thus, employment engendered a strong sense of purpose in their lives, and this helps them to feel that they are also worthwhile. Success in the workplace translates into increased self-esteem, and this is beneficial for their mental health (Wood et al., 2019) that leads to better physical health as well. Moreover, employment facilitates good health as it promotes financial security and improves healthcare access for resettled refugees while unemployment is associated with disempowerment, reductions of confidence, mood swings, and suicidal thoughts in extreme cases (Allen et al. 2014). For example, by February 2012, 16 suicides among Bhutanese refugees in the United States were confirmed, a rate of 20.3/100,000, and comparable to the rate of 20.8 documented in the refugee camps in Nepal (Ao et al., 2012; Schinina et al., 2012). Ellis et al. (2015) sought to explain this apparent high rate of suicide among resettled Bhutanese refugees in the context of the Interpersonal-Psychological Theory of Suicidal Behavior (IPTTS). By analyzing structured interviews, they found that poor health was associated with perceived burdensomeness and thwarted belongingness. For men, unemployment and inability to provide for their families are related to feeling burdensome and/or alienated from family and friends whereas, for women, illiteracy, family conflict, and being separated from family members are more associated (Ellis et al., 2015).

Few studies investigate the perceived impacts of volunteering on health and wellbeing in refugee populations. Volunteering provides no financial incentive, but, similar to employment, promotes broader community connections and positive self-worth, preparing refugees for the workforce. Thus, both employment and volunteering held direct positive

benefits for their physical and mental health, improved healthcare access, and promoted cultural and social integration (Wood et al., 2019).

Housing is a cross-cutting issue which has an impact on multiple aspects including social integration and inclusion, health, employment opportunities, and therefore future outcomes. Quality of housing is an important facilitator of good health. Refugees tend to be resettled into poor-quality housing, struggle to afford the housing they have, and experience overcrowding, because of their financial constraints. Evidence from case studies shows that migrants generally live in poorer quality housing, and perhaps in precarious situations, which can influence wider aspects of integration such as social participation and physical and mental health (Bogic et al., 2012; Schilcher 2009).

Refugees often make housing choices related to income. It can be argued that the importance of finding a home is particularly symbolic as it marks the end of a journey, providing stability, and the point at which refugees can start to consider their wider needs. Overall emotional and physical wellbeing are also related to housing situations (Glover et al. 2001). For example, homeownership reflects not only safety and stability but also the sense of their belonging, as in many cases refugees suffer from a lack of legitimacy of their belonging in home countries. Even in refugee camps, they must adjust to a lower standard of living space. It is assumed that overall satisfaction about the life of resettled refugees is associated with homeownership as it reflects their ability to 'feel at home' in host countries (Ager & Strang, 2008). A feeling of safety and stability is also related to the housing situation of refugees in the host society. Therefore, homeownership and a better-quality home assist them to feel satisfied with life and more integrated into the host society.

Adjusting to a different culture is, in the experience of most refugees, not straightforward. In particular, refugees who experience close family ties in their own culture, find their isolation and the lack of a local strong community to be alienating and depressing. Studies suggest that the extent to which refugees feel welcomed or experience hostility has an impact on their mental health. Refugees feel more 'at home' in their localities if they realize 'peaceful co-existence', while local people also need to feel that new arrivals are not causing any unrest in their community (Hynie, 2018). Feeling accepted in one's country of settlement has had a significant impact on mood disorders among refugees from the former Yugoslavia (Bogic et al., 2012). This kind of cooperative and socially supportive environment is associated with subjective health and happiness of refugees (Schweitzer, et al., 2006) while regular experiences of discrimination and exclusion were associated with high levels of stress, anxiety, and depression (Shedlin et al., 2014).

Qualitative studies suggest that refugees face challenges breaking down barriers and forming friendships or associations with members of the receiving population (Ager & Strang, 2008; Strang & Ager, 2010). This is related to language ability, cultural differences such as preferring not to socialize in pubs and bars, the uncertainty of cultural norms, fear of rejection or experiences of racism, time and psychological limitations connected to concerns about finances, employment, housing, family separation, segregation in larger cities, and age. Ager and Strang (2008) also identified social connections as key components of an integrated community. They also examined social interaction across three overlapping areas, social connections, social bridges, and social links. They state that "social bonds describe connections that link members of a group, and social connections between such groups, social links refer to the connection between individuals and the structures of the state, such as

government services” (p. 181). Following this logic, relationships with a co-ethnic group, as well as bridges with non-co-ethnic groups and societal organizations are likely to have health benefits. Interacting with people, from a similar culture, ethnic group, language, or religion, provides a boost for resettled refugees to adapt and integrate into a new country. It also works to release the stress and tension of being excluded in the host society (Beiser, 1993; Muller, 1998).

Several qualitative studies found that the broad social policy context of receiving societies in which asylum seekers and refugees find themselves may have a direct bearing on their mental health. Ager has suggested that policies that seek to rapidly integrate asylum seekers into a host society have poor mental health outcomes. The best approach may be one in which the particular cultural characteristics of groups are recognized and efforts are made to maintain refugees’ cultural identities and networks, while at the same time encouraging a positive relationship between refugees and other groups and organizations in the host society (Ager, 1993).

Besides literature reviews, most of the studies that investigated the determinants of resettled refugees’ health are based on qualitative research. These qualitative studies are based on semi-structured interviews of small sample sizes and lack controls. Because of the lack of quantitative analysis to understand the impact of social interaction on the physical and mental health of refugee populations after resettlement, this research attempts to fill this gap in the literature by investigating the linkage between social interaction and resettled refugees’ health through a quantitative statistical analysis using original data from a public opinion survey of resettled refugees living in Michigan.

3. Theory and Hypotheses

Humans are social beings. They are born in social groups and live their entire lives as a part of society. Therefore, social relationships and social interactions are part of the evolution process of human beings. However, the extent of social interactions and quality of social relationships are affected by the modern way of life at present, which affects human health as well.

In general, growing research acknowledges social relationships and social interaction as the most important factors that affect the physical health and well-being of people in all age groups (Berkman & Glass 2000; Cohen et al. 2000; Uchino et al. 1996, Williams and Braun 2019; Bessaha et al. 2019; Thompson et al., 2020). Although social interactions are complex, they are vital to the physical and mental health of human beings. Many people find it hard to open their hearts and share their feelings and problems. Social interactions provide a platform where people can express their feelings and share their problems with others. Social relationships affect a range of health outcomes, including mental health, physical health, health habits, and mortality risk (Berkman, 1995; Umberson & Mortez, 2010; Cohen & Wills, 1985; Cohen, 2004; Xu, 2019). Connecting with others may not only reduce stress and lead to an increase in cardiovascular health and an improved immune system, but also may lead to a reduced risk of depression and anxiety. In contrast, feelings of loneliness and social isolation are linked with health problems, including poor sleep, blood pressure, high mortality risks, stress and depression (Berkman & Syme, 1979; Cacioppo & Hawkley, 2003; and Cacioppo 2014). Sociologists have also attempted to establish these linkages, in identifying explanations for the impact of social relationships on health, and in discovering

social variation (such as age and gender) in these linkages at the population level (Umberson & Montez, 2010).

I argue that social interaction plays a particularly significant role in the health of resettled refugees. In most cases, refugees are uprooted from their homes and social networks and relocated under harsh conditions making social integration particularly important for refugee populations. Their pre-migration experiences, such as violence, limited or no access to human rights, fleeing from their homes, camp experiences, and the like, all contribute to disrupting their social networks, negatively impacting their physical and mental health (Daynes, 2016; Silove, Ventevogel, & Rees, 2017). In many cases, this group of people suffers from a ‘feeling of exclusion’ in their country of origin as well as the entire world. It is safe to assume that they want to feel ‘settled’ in the host society. They cannot feel that way until they feel a sense of belonging and are integrated into their new host society. Migrants, including refugees, are supposed to adapt and cope with acculturation experiences in their new host cultural environment and this process has an impact on mental health (Kuo, 2014; Yoon et al., 2012). Social interactions and networks assist this newly settled population to adjust and to get information about the norms and culture of the host society (Mena, Padilla, and Maldonado, 1987). In addition, social interactions provide the opportunity for resettled refugees to create bonds and connectedness with the members of pre-existing communities in the host country. These social bonds and connections promote a sense of safety, belonging, and security (Strang & Ager, 2008) that affect not only the overall integration process, but also the physical and emotional wellbeing of resettled refugees, including their health. On the other hand, a lack of social interactions is linked to social isolation and poorer health

(Berkman & Syme, 1979; Hynie, 2018; Porter & Haslam, 2005; Chen, Hall, Ling, & Renzaho, 2017).

Social relationships consist of different layers extending from individual intimate relations, to social networks, to collective activities at a contextual level (Berkman & Glass 2000). In a broader sense, social relationships have both a behavioral dimension (“structural”) such as participation in group activities and an attitudinal dimension (“cognitive”) such as trust in others and reciprocity relationships (Harpham et al. 2002). In examining their effects on the health of resettled refugees, social relations or interactions can be identified and measured as social connectedness and social engagement. Social connectedness includes relationships with family, friends, co-workers, and neighbors (Ager and Strang, 2008; Strang & Ager, 2010). Social engagement refers to the participation of an individual in a broad range of social roles and relationships in the host society (Avison, McLeod & Pescosolido, 2007; Prohaska, Anderson & Binstock, 2012). While public health is generally measured by the occurrence of disease, disability, injury, and mortality rates (Harpham et al., 2002), in addition to quality of life or functional status, self-reported general health (SRH), as a subjective assessment of people’s own physical and mental health condition, is also supported by its strong association with mortality rates (Idler & Benyamini, 1997; Idler & Kasl, 1991). For this study, I examine self-reported physical and self-reported mental health of resettled refugees.

I argue that interactions and relations with individuals from a similar language, culture, and ethnicity have an important impact on the health outcome of resettled refugees in the host society. Relationships with a co-ethnic group also appear to have health benefits. A community-based qualitative study, conducted in Texas on Cuban refugees, indicated that

social support and connections with people from a similar ethnic community are predictive of physical and mental health of many resettled refugees (Barnes & Aguilar, 2007). Social support derived from one's own ethnic community has a significant direct effect on psychological well-being by moderating the risk of developing depressive symptoms, and by enhancing a sense of identity and belongingness for resettled refugees (Barnes & Aguilar, 2007; Tran, 1987; Beiser et al., 1989). This leads to my first hypothesis:

H1a: Physical and mental health is better when resettled refugees interact with individuals from co-ethnic groups.

Similarly, interaction with individuals, from a different language, culture, and ethnicity, is another factor that has an impact on the overall wellbeing (including health) of refugees in the host community. I argue that interactions with local people, like friends and neighbors who are from different culture and background, also has a health benefit for former refugees. Language plays an important role to build the relationship between refugees and host communities. A welcoming attitude of the host community is essential to make refugee feel 'at home' (Ager and Strang 2008; Strang & Ager, 2010). The sense of feeling 'at home' has an impact on the physical and mental health of resettled refugees. Interactions with local people promotes mutual trust which is associated with health outcomes. Several studies found that people living with low social trust were associated with a higher risk of poor health, as compared to people living in high social trust (Kawachi et al. 1999; Poortinga 2006). Having friends from the local community is important not only to learning the local language, but also to knowing about local culture. And it enhances resettled refugees' sense of belonging, self-confidence, and self-worth that directly affect their physical and mental health in the host country. In a survey conducted in 1965, Berkman and Syme (1979) found

that people who were more socially connected (e.g. to family and friends), lived longer than those who were more isolated.

In a qualitative study, Spicer (2008) explained how particular neighborhood experiences affect the psychological wellbeing of resettled refugees. Relations with neighbors is an important factor if there are few or no residents from co-ethnic communities. If neighbors come out as unfriendly in this situation, refugees lack the confidence to build up language skills and local knowledge (Atgfield et al. 2007; Spicer, 2008). Rather they grow increasingly fearful and isolated, which leads to poorer mental health. On the other hand, friendly interactions with neighbors and local people has a significant impact on refugees' sense of safety and security (Ager & Strang 2008; Threadgold & Court 2005), and their health (McKeary & Newbold, 2010). This leads to the second part of my first hypothesis:

H1b: Physical and mental health is better when resettled refugees interact with individuals from non-co-ethnic groups.

Next, I argue that building social networks influences the physical and mental health of resettled refugees in the host society. Larger and supportive networks are associated with lower stress, increased personal well-being, and greater personal self-efficacy while smaller networks have been associated with depression (Balaji et al. 2007; Barnett & Gotlib, 1988). Public events or celebrations like festivals provide a platform for newly resettled refugees to get introduced to pre-existing communities and build social relationships that affect their physical and mental health within the new environment. Attending celebrations and events from one's own culture, such as a traditional festival, assists newly resettled refugees to build social networks and bonds with people who are from a co-ethnic community. Such connections play a large part in their feeling of 'settled' in the host society. Further, this

social connection is outlined as a source of emotional support, self-esteem, and confidence among resettled refugees that influences their physical and mental health (Losi and Strang 2008; Spicer 2008).

Similarly, social networks of non-co-ethnic groups, built through work, school, or social and religious activities, are important for health outcomes of resettled refugees since it generates broader social support from the host community. Social support might be informational and emotional. Celebrations or events from the local culture are a platform for resettled refugees to build social networks and learn the culture, norms, and values of the host country. Attending these events assists in building social bridges and social harmony between refugees and host communities. And social bridges assist resettled refugees to feel more integrated into the host community and positively affects their health. This leads to my second set of hypotheses:

H2a: The physical and mental health of resettled refugees is positively affected by the breadth of social networks developed by attending festival and celebrations of co-ethnic and non-co-ethnic groups.

H2b: The physical and mental health of resettled refugees is positively affected by the breadth of social networks through interactions at work, school, church, and clubs with non-co-ethnic groups.

Finally, I argue that social interactions resulting from collective activities, such as volunteering and participating in political or community organizations, are important to boost the wellbeing of resettled refugees by fostering broader community engagement. Such activities give them a sense of acceptance and belonging to their new environment (Wood et al., 2019). People with supportive friends and family generally have better mental and

physical health than those who lack these networks. The same is true for those who volunteer or participate in social, civic, religious, political, or community organizations and clubs. Volunteering and participating keeps resettled refugees physically active leading to better health. Further, social and civic engagement plays a key role in the integration of refugees and asylum seekers into their host societies and is also closely tied to the mental health of those populations (Niemi et al., 2019). Niemi, et al. argued that social participation is also associated with psychosocial well-being and decreased psychological distress. This is because active social participation enhances resilience, re-establishes social lives, and acts as a protective factor against poor mental health outcomes for resettled refugees. This leads to my third hypothesis:

H3: Physical and mental health is better when resettled refugees are engaged in collective activities in the host society, volunteering and participating in community and civic organizations.

4. Data and Methodology

To test the impact of social integration on self-reported refugee health, I conducted a public opinion survey of newly resettled former Bhutanese and Rohingya refugees currently living in the state of Michigan. These two ethnic groups were chosen for two reasons. First, they have a shared experience of being displaced from their homes as a result of government-sponsored ethnic cleansing yet they differ in that the Bhutanese refugees spent a decade or more languishing in refugee camps in a second country (Nepal) before being resettled, while the Rohingya many of whom fled Myanmar by boat in 2015 and by boat and land in 2017, were resettled fairly quickly to other countries including the United States. Second, large numbers of refugees from these ethnic groups were resettled to the state of Michigan,

particularly the Grand Rapids and Lansing areas, and have stayed in Michigan making surveying them feasible. These areas have also attracted large numbers of Bhutanese and Rohingyas initially resettled elsewhere in the country, making Michigan an interesting case study for this research.

Given resource constraints and the challenges of reaching the target population, and the disruption to the survey because of the COVID-19 pandemic, this study consists of 286 respondents, 216 Bhutanese and 70 Rohingya.² The survey covers policies related to public and private assistance that refugees received upon arrival to the US, as well as past and current aspects of housing, employment, education, job training, health, language, culture, social interactions, and civic engagement. The survey was conducted using a snowball sampling technique. Snowball sampling, or chain referral sampling, is a nonprobability sampling technique that depends on a referral (or referrals) from initially known subjects (or seeds) to recruit additional subjects into the sample (Coleman 1958; Shaghaghi, Bhopal, & Sheikh 2011). Using this method, this research utilized BCM (Bhutanese Community of Michigan, a non-profit organization) as a chain of social networks to reach the targeted populations. The survey began by asking initial Bhutanese and Rohingya contacts to recommend their associates as additional participants who were asked to participate in the survey, and they contacted an enumerator if they were willing to participate. A potential limitation with this technique is that findings are not easily generalizable to the target population, only to the network studied (Shaghagi et al. 2011). Five enumerators (four for

² This study aimed to survey 400 Bhutanese and up to 100 Rohingya from the populations but was interrupted by the covid-19 pandemic shutdown.

Bhutanese population and one for Rohingya population) were hired to conduct this survey³.

The survey was conducted from January 15-March 15, 2020. Respondents, who participated in the survey, were 18 years or older. Non-responses were treated as missing data.

Although this survey covers a wide range of topics related to newly resettled refugees in the United States, this study will focus on the linkages between social interactions and self-reported health outcomes. The dependent variables are self-reported physical and self-reported mental health and are measured by the questions: “Is your physical (or mental) health today better or worse than when you arrived in the US?” Both are ordinal variables measured as worse (1), same (2), or better (3). Among the respondents, 40% reported ‘better’, 40% ‘same’ and 20% reported ‘worse’ physical health than when they arrived in the US while 40% reported ‘better’, 49% ‘same’ and 11% reported ‘worse’ mental health than when they arrived in the US. The main independent variables consist of different measures of self-reported social interactions between the respondent and individuals, social networks, and collective activities of both similar and different ethnic backgrounds (See Appendix Tables 21-22 for descriptive statistics of variables used in this study).

For my focal independent variables of individual level interactions corresponding to my first hypothesis, I use four measures that indicate co-ethnic individual interaction, non-co-ethnic individual interaction, close interactions with individuals of a different culture, and neighborhood relations. Co-ethnic individual interaction is measured by the number of hours resettled refugees weekly interact with the people who share a similar culture, ethnic group, language, or religion. A majority (51%) report interacting between one and three hours per

³ A day-long workshop on research ethics and procedures was conducted for enumerators as per the instructions of The Institutional Review Board (IRB). We also pretested the survey questionnaire with enumerators and made adjustments based on their feedback.

week, with 28% reporting less than one hour and 21% reporting four or more hours per week. Similarly, non-co-ethnic individual interaction is measured by the number of hours resettled refugees weekly interact with the people who are from a different culture, ethnic group, language, or religion. Among respondents, 20% reported ‘no interaction’ while 39% interact four or more hours/week. Besides these variables, I created a count of close interactions with people from a different culture measured by the following question, do you have a person of a culture, ethnic group, language, or religion different from your own:

- whom you can call if you are emotionally upset?
- with whom you can talk if you are emotionally upset?
- who advises you about jobs and other financial matters?
- who advises you about how to get things done here?
- who has ever visited your house or you visited theirs?

Among respondents, 48% do not have a person for any of these activities, while 52% have one or more of these interactions. Neighborhood relations is measured by the question: How comfortable do you feel interacting with your neighbors? Among the respondents, 40% reported ‘very comfortable’ while 7% reported being ‘not comfortable at all’ with their neighbors.

For my focal independent measures of social networks corresponding to my second hypothesis, I use three variables: attending co-ethnic or non-co-ethnic cultural events, and non-co-ethnic social network interactions. The variable, attending a co-ethnic (non-co-ethnic) event, is measured by the question: Have you attended a celebration or event of your (different) culture, ethnic group, language or religion (such as a march, parade, or festival) in the past year? Among the respondents, 71% attended a celebration of their own culture, while

29% did not. For the variable of attending non-co-ethnic event, among respondents, 49% attended a celebration of a different culture while 51% did not. Further, I create a count for social networking, which is measured by the following question: How have you met people of a culture, ethnic group, language, or religion different from your own?

- Through work
- Through my school or my children's school
- Through religious activities
- Through civic organizations
- Through social activities, such a sports event or clubs
- Other_____

Among respondents, 14% do not engage in social networking with non-co-ethnic groups while 84% have had at least one social network interaction through work, school, religious activities etc.

For my focal independent variable of interaction through collective activities corresponding to my third hypothesis, I use participation in organizations and associations and volunteering with organizations or associations. Participation is measured by a count of the following: Which of the following have you participated in?

- Community organization meetings
- Neighborhood association meetings
- School board meetings
- City council/County commissioner meetings
- Religious organizations
- Political rallies/meetings

Among respondents, 34% did not participate any community activity, while 66% participated at least one activity. Similarly, I created a count for the variable of volunteering with community organizations. Volunteering is measured by the question: Have you volunteered your time for any of the following in the past year?

- Community organization
- Neighborhood association
- School organization
- Religious organization
- Political Organization
- Government agency/board
- Social Club

Among respondents, 42% did not volunteer with any organization while 58% volunteered with at least one local organization.

In the multivariate models, I include several demographic control variables in addition to the social interaction measures. Demographic controls include the respondent's employment situation, speaking English, income, housing situation, access to health care, age, gender, and ethnicity. Previous qualitative studies have used these indicators of social economic status in predicting physical and mental health of former refugees (Hynie, 2018). Employment is a dichotomous variable for employed (1) or not (0). Among respondents, 75% are employed while 25% are unemployed. Speaking English is also a dummy variable measured as 1 if the respondent indicated regularly speaking with people whose native language is English, and 0 if not. Among respondents, 62% regularly speak with people whose native language is English, while 38% do not. Income is measured by their family's

monthly income and is an ordinal variable, In the bivariate analyses, income is measured as: low (\$0-\$1500), medium (\$1501-\$3000) and high (> \$3000). In the multivariate analysis, the more detailed eight category ordinal measure is used. Among respondents, 21% respondents reported low income while 47% reported medium and 32% reported high. Homeownership is a dummy for yes (1) and no (0). Among respondents, 46% own a house and 54% do not. Health care access is also a dummy variable, for yes (1) and no (0), with 62% of respondents reporting having health coverage while 38% do not. Age is continuous variable, with average age of respondents at 35. Gender is a dummy variable with 64% male (0) and 36% female (1). Ethnicity is dummy variable for Rohingya (1) and Bhutanese (0). Among respondents, 24% are Rohingya while 76% are Bhutanese.

5. Results

I begin by exploring the impact of different levels of interactions on the physical health and mental health of resettled refugees using bivariate analyses through chi-square tests and percentages in cross tabulation. This is followed by multivariate ordered logit models used to predict physical and mental health by social interactions, controlling for demographic and other factors.

5.1 The Impact of Individual Inter-personal Interactions on Physical and Mental Health

To test the impact of individual level social interactions on the physical and mental health of resettled refugees, my focal independent variables include four measures that indicate the approximate number of hours respondents spend in co-ethnic individual interaction and non-co-ethnic individual interaction per week, along with close interactions with individuals of a different culture, and neighborhood relations.

Table 1 below presents a cross tabulation table and chi-square test of the relationship between physical health and co-ethnic individual interactions. As can be seen, there is a significant relationship ($p < .05$), with 58% of respondents spending more than four hours weekly interacting with co-ethnic people indicating that they have better physical health while only 41% of those with no interactions saying that their health is better. Table 2 below presents the same information for self-reported mental health. The relationship is significant ($p < .05$), with 56% of those who spend more than four hours a week interacting with co-ethnic groups reporting better health, but only 47% of those who do not have such interactions reporting better health.

Table 1: Crosstabulation between Physical Health and Co-ethnic Individual Interactions

Physical Health	Co-ethnic Individual Interactions (Hours)				Total
	0	<1	1-3	>4	
Better	7 41%	22 36%	48 34%	33 58%	110
Same	6 35%	24 39%	62 44%	20 35%	112
Worse	4 24%	15 25%	32 22%	4 7%	55
Total	17 6%	61 22%	142 51%	57 21%	277
N=277 Chi ² = 13.1 df = 6 p = 0.040					

Table 2: Crosstabulation between Mental Health and Co-ethnic Individual Interactions

Mental Health	Co-ethnic Individual Interactions (Hours)				Total
	0	<1	1-3	>4	
better	8 47%	24 39%	49 35%	32 56%	113
same	5 29%	29 48%	77 55%	23 40%	134
worse	4 24%	8 13%	14 10%	2 4%	28
Total	17 6%	61 22%	140 51%	44 21%	275
N=275 Chi^2 = 13.8 df = 6 p = 0.031					

Tables 3 and 4 below presents the same relationships in terms of hours spent interacting with others, but for non-co-ethnic individual interactions. For physical health, the relationship is significant ($p < 0.05$) and shows that better physical health is reported by 50% of respondents who spend more than four hours weekly in inter-personal interactions, but by only 17% of those with no interactions. For mental health in Table 4, 49% of those who spend more than four hours weekly for inter-personal interactions report better mental health, but only 17% of those with no interactions do so.

Table 3: Crosstabulation between Physical Health and Non-Co-ethnic Individual Interactions

Physical Health	Non-co-ethnic Individual Interactions (Hours)				Total
	0	<1	1-3	>4	
Better	10 17%	23 50%	25 37%	53 50%	111
Same	21 37%	18 39%	30 44%	43 40%	112
Worse	26 46%	5 11%	13 19%	11 10%	55
Total	57 20%	46 16%	68 25%	107 39%	278
N=278 Chi ² = 37.3 df = 6 p = 0.000					

Table 4: Crosstabulation between Mental Health and Non-co-ethnic Interactions

Mental Health	Non- co-ethnic Individual Interaction (Hours)				Total
	0	<1	1-3	>4	
Better	10 17%	24 52%	27 41%	52 49%	113
Same	29 51%	21 46%	34 51%	50 47%	134
Worse	18 32%	1 2%	5 8%	5 5%	29
Total	57 21%	46 17%	66 24%	107 39%	276
N=276 Chi ² = 42 df = 6 p = 0.000					

Tables 5 and 6 below use the variable which is a count of close personal interactions with people from a different culture. Table 5 shows that no interactions results in higher reporting of worse health (27%) than those with one or more interactions (14-15%). For mental health, people with no such interactions also report a higher rate of worse health as can be seen in Table 6.

Table 5: Crosstabulation between Physical Health and Close Personal Interactions

Physical Health	Number of Interactions			Total
	0	1	>2	
Better	54 40%	32 43%	26 35%	112
Same	45 33%	31 42%	38 51%	114
Worse	36 27%	11 15%	10 14%	57
Total	135 48%	74 26%	74 26%	283
N=283 Chi^2 = 10 df = 4 p = 0.039				

Table 6: Crosstabulation between Mental Health and Close Personal Interactions

Mental Health	Number of Interactions			Total
	0	1	>2	
Better	56 42%	32 44%	26 35%	114
Same	57 42%	34 47%	46 62%	137
Worse	21 16%	7 10%	2 3%	30
Total	134 48%	73 26%	74 26%	281
N=281 Chi^2 = 12.2 df = 4 p = 0.015				

Table 7 below uses the question, “How comfortable do you feel interacting with your neighbors?” Here the relationship is significant showing that a higher percentage of those who are uncomfortable interacting with their neighbors report worse physical health (34%) than those who say they are very comfortable (14%). For mental health, the comparable percentages shown in Table 8 are 19% and 5%.

Table 7: Crosstabulation between Physical Health and Interactions with Neighbors

Physical Health	Interaction with Neighbors			Total
	Not Comfortable	Somewhat Comfortable	Very Comfortable	
Better	11 17%	49 49%	50 44%	110
Same	33 49%	33 33%	48 42%	114
Worse	23 34%	18 18%	16 14%	57
Total	67 24%	100 35%	114 41%	281
N=281 Chi^2 = 23.6 df = 4 p = 0.000				

Table 8: Crosstabulation between Mental Health and Interactions with Neighbors

Mental Health	Interaction with Neighbors			Total
	Not Comfortable	Somewhat Comfortable	Very Comfortable	
Better	13 19%	46 47%	53 47%	112
Same	41 61%	41 42%	55 48%	137
Worse	13 19%	11 11%	6 5%	30
Total	67 24%	100 36%	114 41%	279
N=279 Chi^2 = 20.3 df = 4 p = 0.000				

5.2 The Impact of Interactions through Social Networks on the Physical and Mental Health

For my focal independent measures of social networks, I use three variables: attending co-ethnic or non-co-ethnic cultural events, and non-co-ethnic social network interactions through work, school, church, and the like.

Table 9 below shows a significant relationship ($p < 0.05$) between physical health and attendance at a co-ethnic cultural event with only 16% of respondents who attend a celebration reporting worse health compared to 32% of those without attendance at a co-ethnic event. Table 10 presents the same information for self-reported mental health with a similar pattern, but the relationship is insignificant.

Table 9: Crosstabulation between Physical Health and Attending co-ethnic Event

Physical Health	Attending Co-ethnic Event		
	Yes	No	Total
Better	81 41%	29 37%	110
Same	85 43%	24 31%	109
Worse	32 16%	25 32%	57
Total	198 72%	78 28%	276
N=276 Chi ² = 9.1 df = 2 p = 0.010			

Table 10: Crosstabulation between Mental Health and Attending Co-ethnic Event

Mental Health	Attending Co-ethnic Event		
	Yes	No	Total
Better	82 42%	30 39%	112
Same	97 49%	35 45%	132
Worse	18 9%	12 16%	30
Total	197 72%	77 28%	274
N=274 Chi ² = 2.3 df = 2 p = 0.300			

Table 11 shows that the relationship between attending non-co-ethnic cultural events and physical health is significant ($p < 0.05$) and that better health is reported by a similar percentage of those who attended or did not attend an event with non-co-ethnics, but a much higher percentage (26% compared to 12%) report having worse health if they did not attend such an event. Table 12 presents similar information for self-reported mental health. The results are similar, with a higher percentage (16% compared to 5%) reporting worse health if they did not attend such an event.

Table 11: Crosstabulation between Physical Health and Attending Non-co-ethnic

Physical Health	Attending Non-co-ethnic Event		
	Yes	No	Total
Better	55 41%	55 39%	110
Same	63 47%	50 35%	113
Worse	17 12%	37 26%	54
Total	135 49%	142 51%	277
N=277 Chi ² = 8.7 df = 2 p = 0.012			

Table 12: Crosstabulation between Mental Health and Attending Non-co-ethnic Event

Mental Health	Attending Non-co-ethnic Event		
	Yes	No	Total
Better	56 42%	57 40%	113
Same	71 53%	62 44%	133
Worse	7 5%	22 16%	29
Total	134 49%	141 51%	275
N=275 Chi^2 = 8.2 df = 2 p = 0.017			

For interactions through social networks such as work, school, church, sports events and the like, as shown in Table 13 below, the relationship with physical health is significant ($p < 0.05$), with worse health reported by 50% of respondents with no social network interactions and worse health reported by only 9% if they have three or more social network connections.

Table 13: Crosstabulation between Physical Health and Social Network

Physical Health	Social Network of Non-co-ethnic Group				Total
	0	1	2	> 3	
Better	3 8%	63 50%	27 36%	19 41%	112
Same	16 42%	44 36%	31 42%	23 50%	114
Worse	19 50%	18 14%	16 22%	4 9%	57
Total	38 13%	125 45%	74 26%	46 16%	283
N=283 Chi^2 = 37.4 df = 6 p = 0.000					

Table 14 below presents the same information for self-reported mental health. The relationship between mental health and social network connections is significant ($p < 0.05$), with worse health reported by 32% of respondents with no social networks, but only 4% for those with three or more social network connections.

Table 14: Crosstabulation between Mental Health and Social Network

Mental Health	Social Network of Non-co-ethnic Group				Total
	0	1	2	>3	
Better	5 13%	62 50%	29 39%	18 40%	114
Same	21 55%	51 41%	40 54%	25 56%	137
Worse	12 32%	11 9%	5 7%	2 4%	30
Total	38 14%	124 44%	74 26%	32 16%	281
N=281 Chi^2 = 31 df = 6 p = 0.000					

5.3 The Impact of Interactions through Collective Activities on Physical and Mental Health

For my focal independent variable of interaction through collective activities, I use participation and volunteering in community and civic organizations and associations.

Table 15 below shows a significant ($p < .05$) relationship between participation and physical health, with 39% of those participating in no organizations reporting worse health, dropping to only 4% for those participating in three or more organizations. A similar pattern is presented in Table 16 for mental health and participation.

Table 15: Crosstabulation between Physical Health and Participation

Physical Health	0	1	2	>3	Total
Better	27 28%	51 55%	24 48%	10 22%	112
Same	32 33%	30 33%	19 38%	33 73%	114
Worse	37 39%	11 12%	7 14%	2 4%	57
Total	96 34%	92 33%	50 18%	45 16%	283
N=283 Chi^2 = 53.8 df = 6 p = 0.000					

Table 16: Crosstabulation between Mental Health and Participation

Mental Health	0	1	2	>3	Total
Better	29 30%	53 58%	22 45%	10 22%	114
Same	47 50%	34 37%	23 47%	33 73%	137
Worse	19 20%	5 5%	4 8%	2 8%	30
Total	95 34%	92 33%	49 17%	45 16%	281
N=281 Chi^2 = 33.1 df = 6 p = 0.000					

For volunteering, Table 17 demonstrate that the relationship with physical health is significant ($p < 0.05$), with 30% of those who did not volunteer reporting better health, but 36% reporting worse health. Those reporting worse health drops to virtually zero as volunteering increases. The pattern for mental health (Table 18) is similar, though not as pronounced and the p value falls just outside of significance.

Table 17: Crosstab between Physical Health and Volunteering

Physical Health	Volunteering				Total
	0	1	2	>3	
Better	35 30%	44 47%	25 50%	6 36%	112
Same	40 34%	38 40%	23 46%	13 59%	114
Worse	42 36%	12 13%	2 4%	1 5%	57
Total	117 41%	94 33%	50 18%	22 8%	283
N=283 Chi^2 = 35 df = 6 p = 0.000					

Table 18: Crosstabulation between Mental Health and Volunteering

Mental Health	Volunteering				Total
	0	1	2	>3	
Better	38 33%	45 48%	23 47%	8 36%	114
Same	58 50%	43 46%	23 47%	13 59%	137
Worse	20 17%	6 6%	3 6%	1 4.5%	30
Total	116 41%	94 34%	49 17%	22 8%	281
N=281 Chi^2 = 12.2 df = 6 p = 0.055					

We can say that overall, the bivariate relationships indicate a strong connection between health and different measures of social interactions. At all levels of interaction, individual, network and collective, virtually all measures demonstrate a significant relationship with physical and mental health.

5.4 Multivariate Analysis

Since my dependent variables, self-reported physical health and self-reported mental health, are both ordinal variables, for the multivariate analysis I use an ordinal regression model (ordered logit) to test my hypotheses. I include measures of individual interactions, social networks, and collective interactions, along with my control variables.

Table 19 reports the results of the ordered regression models for both physical and mental health. Positive coefficients indicate that higher values on the explanatory variable make it more likely that the respondents will be in a higher category of health (better health), whereas negative coefficients indicate that higher values on the explanatory variable increase the likelihood of being in a lower category (worse health). It is interesting to see that social interactions are significant in both models, indicating certain social interactions do have an impact on the physical and mental health of resettled refugees, even when controlling for a number of socio-demographic factors.

For physical health of resettled refugees, interaction with individuals from co-ethnic groups and collective interactions are both found significant at a 0.01 level. Looking at the marginal effects (See Also Figures 1 & 2 in Appendix) reported in Table 20, we would say that for a one unit increase in co-ethnic interaction (i.e., an increase in hours spent on interacting with individuals from a similar culture), we expect a 5% decrease in the estimated probability of a worse physical health outcome (i.e., improve from worse to same), given all of the other variables in the model are held constant at their means. Similarly, there is about an 8% decrease in same health. On the other hand, in terms of health improvements, the impact of a one unit increase in co-ethnic interaction leads to about a 13% increase in those

reporting better health. Overall, spending more time with people of a similar culture has a positive effect on self-reported health outcomes.

For collective interactions, volunteering in an additional organization leads to a 5% decrease in the estimated probability of reporting worse physical health, but a 13% increase in the likelihood of reporting better physical health. Volunteering, which promotes broader community connections and positive self-worth, holds positive benefits for physical health.

Other measures of social interaction, such as interaction with individual from non-co-ethnic groups and social networks, are found to be insignificant in the presence of control variables and other interactions. Among demographic control variables, employment (at 0.1 level) leads to a 16% increase in the likelihood of reporting better health and an 8% decrease in same or worse health. Income and health care access are significant, but the coefficients are unexpectedly negative. In other words, higher income and health care coverage lead to worse physical health, contradictory to previous research findings.⁴ Health care coverage might be explained by people with worse health being more likely to seek insurance and more likely to be diagnosed. Correlations between income and age, homeownership and employment may confound the results, and need further exploring. The dummy variable for Rohingya is also significant indicating that they are 23% more likely to report better health. This might be explained by the younger average age of the Rohingya (25) compared to the Bhutanese (38). Other demographic variables such as speaking English, housing situation, age and gender are found insignificant for the physical health of former refugees in Michigan.

⁴ See Tyrrell et al., 2016

Interestingly, if I drop income from the model due to its large number of missing observations (15%), the results for social interactions remain the same, but age and homeownership become significant in predicting physical health. Older respondents, not surprisingly, report worse health, as do those who own a house. Alternatively, a dummy variable for those who do not report income is insignificant.

For the model of mental health, interactions with co-ethnic individuals is significant at the 0.01 level and volunteering with organizations at the 0.1 level. Here, we would say that for one unit increase in co-ethnic interaction (i.e., an increase in hours spent on interacting), we expect a 2% decrease in the estimated probability of worse outcome of mental health and a 12% increase in the likelihood of reporting better health. For volunteering, we expect about 1.6% decrease in the estimated probability of worse outcome of mental health, and about a 10% increase in the likelihood of reporting better health. Again, other measures of social interactions are found to be insignificant in predicting mental health of resettled refugees.

Among demographics variables, employment, income, and home ownership are found significant in predicting physical and mental health. Like physical health, income and homeownership have a negative impact on mental health.⁵ Employment is positive and significant at the .05 level indicating that those who are employed are 24% more likely to report better health. Demographic variables such as speaking English, access to health care coverage, age, gender, and ethnicity were found insignificant for self-reported mental health, as is the dummy variable for Rohingya. Despite their younger average age, they are not significantly different than the Bhutanese in reporting better mental health outcomes.

⁵ See Bogic et al., 2012; Sehilcher 2009

If income is dropped from the model of mental health, the impact of social interactions remains the same, but age (at 0.1 level) and health care coverage become significant as in the model for physical health. Alternatively, a dummy variable for those who do not report income shows them to have better health, significant at the .10 level. If wealthy individuals are less likely to report, this may explain the negative coefficient on income. And the dummy variable for Rohingya also becomes significant. Again, further research on the impact of income and its interaction with age and health care coverage is warranted.

Table 19: Ordinal Logistic Regression Model for Physical and Mental Health

Variables	Physical health	Mental health
Individual interactions		
Time Spend with Co-ethnic	0.564 *** (0.214)	0.529 ** (0.226)
Time with Non-co-ethnic	0.130 (0.167)	0.100 (0.179)
Close Personal Interact	-0.094 (0.131)	-0.023 (0.137)
Comfort with Neighbor	0.226 (0.239)	0.274 (0.247)
Social interactions		
Co-ethnic Cultural Event	0.063 (0.406)	-0.003 (0.422)
Non-co-ethnic Event	-0.434 (0.362)	-0.389 (0.383)
Social network	0.113 (0.193)	0.040 (0.209)
Collective interactions		
Participation	-0.180 (0.209)	-0.192 (0.227)
Volunteering	0.569 *** (0.210)	0.409 * (0.227)
Controls		
Speak English	0.246 (0.438)	0.623 (0.463)
Employment	0.771 * (0.467)	1.193 ** (0.500)
Income	-0.299 *** (0.102)	-0.336 *** (0.109)
Homeownership	-0.511 (0.360)	-0.863 ** (0.378)
Health coverage	-0.779 ** (0.324)	-0.454 (0.340)
Age	-0.006 (0.014)	-0.006 (0.016)
Gender	0.058 (0.348)	-0.228 (0.369)
Rohingya	0.994 ** (0.481)	0.666 (0.502)
<u>Intercepts:</u>		
worse same	-1.44 (1.22)	-2.71 * (1.27)
same better	1.42 (1.22)	1.02 (1.25)

Note: * p<0.1, ** p<0.05, *** p<0.01

Table 20: Marginal Effect for Physical and Mental Health

Variables	Physical Health Outcome			Mental Health Outcome		
	Worse	Same	Better	Worse	Same	Better
Co-ethnic	-0.050***	-0.078***	0.127 ***	-0.020 **	-0.103 **	0.123 **
Non-co-ethnic	-0.012	-0.018	0.030	-0.004	-0.020	0.023
Close person	0.008	0.013	-0.021	0.001	0.005	-0.005
Neighbor relation	-0.020	-0.031	0.051	-0.010	-0.053	0.064
Co-ethnic event	-0.006	-0.009	0.014	0.000	0.001	-0.001
Non-co-ethnic event	0.038	0.061	-0.098	0.015	0.076	-0.091
Social network	-0.010	-0.016	0.026	-0.002	-0.008	0.009
Participation	0.016	0.025	-0.041	0.007	0.037	-0.045
Volunteering	-0.050 ***	-0.079 ***	0.129 ***	-0.016 *	-0.080 *	0.095 *
Speak English	-0.022	-0.032	0.055	-0.027	-0.112	0.139
Employment	-0.083	-0.076 **	0.158 *	-0.067	-0.172***	0.239***
Income	0.026 ***	0.041 ***	-0.067 ***	0.013**	0.065***	-0.078***
Homeownership	0.045	0.070	-0.115	0.034	0.164**	-0.197**
Health coverage	0.065 **	0.113 **	-0.178 **	0.017	0.090	-0.106
Age	0.001	0.001	-0.001	0.000	0.001	-0.001
Gender	-0.005	-0.008	0.013	0.009	0.044	-0.053
Rohingya	-0.074 **	-0.160 *	0.234 **	-0.022	-0.137	0.159

Note: * p<0.1, ** p<0.05, *** p<0.01

6. Discussion and Conclusion

In the area of refugee integration, health is a cross-cutting issue. Physical and emotional wellness are the foundations for successful resettlement because without feeling healthy, it is difficult to work, to go school, or to take care of a family. Unlike other immigrant populations, refugee health is of particular concern because the conditions of refugees prior to immigration may have a particularly negative impact on their physical and mental health. The physical and mental health of former refugees may be affected by many factors. This study focuses particularly on the relevance of social interactions in the self-reported physical and mental health of resettled refugees. I explore different levels of social interactions, including individual, social, and collective activities. Overall, the results provide evidence in support of the significant impact of social interactions, especially individual level interactions and collective activities, on the physical and mental health of resettled refugees

in the host society. Social interaction facilitates the processes of social connection within and between groups in the community, while lack of social interaction promotes social isolation, fear, and instability that lead to poorer physical and mental health (Agar & Strang, 2008; Strang & Ager, 2010). Among different levels of social interaction, interaction with individuals from co-ethnic groups and volunteering with local organizations are found as the important determinants that have a significant impact on physical and mental health. Voluntary work allows resettled refugees to participate in community activities, establish identities in relation to their occupational motivations, escape isolation and develop their skills that have an impact on their health overall (Tomlinson, 2008; Wood et al., 2019). Results from the present study indicate that former refugees who are involved in different levels of social interaction are more likely to feel better about their physical and mental health.

Previous studies (mostly qualitative) emphasized health care access, employment situations, income, and housing situations in examining the health of resettled refugees (Bogic et al., 2012; Phillbrick, 2017; Hynie, 2017). In the present study, employment is found positively associated with both the physical and mental health of resettled refugees in Michigan. Interestingly, income, health care coverage, and homeownership are founded negatively related to health, which does not support previous research findings and warrants further investigation. Interactions between income, age and employment may confound the results. The linkage between health and health care coverage, which shows that those with health care coverage reported worse physical and mental health, also does not support previous qualitative studies, but it is reasonable in a sense. This is because people with fragile health are prone to buy healthcare coverage since they need to visit doctors

frequently while people with better health might be reluctant to spend money on purchasing health care coverage. Further, this study found that former refugees, who do not own house, reported better health while former refugees, who own house, reported worst health. It is an interesting and contradictory finding that can be further investigated in future research. It is possible that homeownership and having a mortgage introduce additional stress on people's health, especially mental health.

This study involved former refugees from two different backgrounds and demographics, allowing me to investigate a variety of lived experiences. The study addressed the impact of social interaction on resettled refugees' physical and mental health after resettlement, a previously unexplored topic in research of refugee resettlement and integration. Furthermore, this relationship was examined by providing a quantitative analysis. The quantitative nature of this study allows me to provide a statistical and empirical analysis of the relationship between former refugees' health and social interactions in a way that would not have been possible using qualitative methods. The quantitative methods allowed me to investigate the effects of social interactions on physical and mental health, while controlling for demographic factors. This study has important policy implications as well. This study into the health effects of social relations and interactions could inform cost-efficient health initiatives and policies for resettled refugees. Since social interaction influences refugees' health in the presence of demographic controls, we know that interactions may be important for all types of refugees. Policies that promote integration can be used to promote the health and well-being of refugees at the local level in the process of integration.

A potential limitation of this study is the sample size. The survey for this study is ongoing. Due to the pandemic situation of COVID-19, the survey was interrupted. This study used a smaller sample size than expected. A study, with a larger sample, would provide more validity of the findings. All participants were of South Asian background, and their acceptance into the pre-established cultural community in the area may have influenced the findings on the linkage between social interaction and the health of former refugees in the host country. Findings might not be exactly similar for the former refugees of different cultural backgrounds.

This study has demonstrated how social interaction is relevant to the physical and mental health of resettled refugees. This study also revealed the potential importance of different types of social interactions for physical and mental health. Though present findings on the linkage between resettled refugees' health and social interaction answer some questions, there are also gaps in our knowledge that merit further study. Having a family is considered as an important determinant of health outcomes. Many refugees, however, must migrate alone and leave their families behind, especially extended family members. Family separation affects not only the ability to engage in many aspects of the integration process, but also the absence of family may have a long-term negative impact on physical and emotional health (Frick, 2009; Rezai 1998). Therefore, family reunification can be an area of investigation in future research. Relations with family members, including children, is another notable factor that might affect the health of resettled refugees. Finally, the social support refugees received from local resettlement organizations can be included in future research to examine the self-reported physical and mental health of former refugees.

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Appendix

Table 21: Descriptive Statistics

Variables	Observations	Mean	Std. Dev	Min	Max
Physical	283	2.19	0.75	1	3
Mental	281	2.3	0.65	1	3
Co-ethnic	277	1.91	0.9	0	4
Non-co-ethnic	278	1.91	1.29	0	4
Personal interact	286	1.12	1.49	0	5
Neighbors	281	2.1	0.92	0	3
Co-ethnic event	276	0.72	0.45	0	1
Non-co-ethnic event	277	0.49	0.5	0	1
Social network	286	1.5	1.06	0	5
Participation	286	1.2	1.21	0	6
Volunteer	286	0.96	1.1	0	6
English	286	0.63	0.48	0	1
Employment	283	0.74	0.44	0	1
Income	242	5.15	2.08	1	8
Homeownership	281	0.46	0.5	0	1
Health care	278	1.12	1.49	0	1
Age	266	35.31	14.89	18	80
Gender	283	0.35	0.48	0	1
Rohingya	286	0.24	0.43	0	1

Table 22: Pearson Correlations Between All Dependent and Independent Variables

	Physical	Mental	Coethnic	Intergroup	Friend	Neighbors	Ownculture	Diffculture
Physical	1.00	0.81	0.23	0.24	0.00	0.15	0.06	0.08
Mental	0.81	1.00	0.21	0.22	0.00	0.17	0.01	0.07
Coethnic	0.23	0.21	1.00	0.51	0.29	0.09	0.10	0.14
Intergroup	0.24	0.22	0.51	1.00	0.27	0.33	0.12	0.30
Friend	0.00	0.00	0.29	0.27	1.00	0.42	0.08	0.39
Neighbors	0.15	0.17	0.09	0.33	0.42	1.00	0.19	0.44
Ownculture	0.06	0.01	0.10	0.12	0.08	0.19	1.00	0.29
Diffculture	0.08	0.07	0.14	0.30	0.39	0.44	0.29	1.00
Social-network	0.10	0.11	0.24	0.45	0.49	0.40	0.21	0.40
Participation	0.10	0.01	0.19	0.18	0.45	0.22	0.36	0.32
Volunteer	0.19	0.10	0.23	0.23	0.42	0.21	0.28	0.31
English	0.19	0.25	0.14	0.46	0.14	0.43	0.17	0.30
Employment	0.16	0.20	0.21	0.28	0.09	0.25	0.04	0.08
Income	-0.27	-0.28	0.10	0.17	0.27	0.19	0.05	0.07
Ownhouse	-0.15	-0.22	0.10	0.09	0.24	0.02	0.23	0.04
Healthcov	-0.15	-0.08	0.11	0.00	-0.06	-0.14	0.03	-0.02
Age	-0.27	-0.31	-0.12	-0.32	-0.10	-0.37	-0.07	-0.25
Gender	-0.13	-0.18	0.01	-0.06	0.17	-0.13	-0.06	-0.01
Rohingya	0.31	0.31	-0.03	0.03	-0.32	-0.03	0.05	0.07

	Social-network	Participation	Volunteer	English	Employment	Income	Ownhouse
Physical	0.10	0.10	0.19	0.19	0.16	-0.27	-0.15
Mental	0.11	0.01	0.10	0.25	0.20	-0.28	-0.22
Coethnic	0.24	0.19	0.23	0.14	0.21	0.10	0.10
Intergroup	0.45	0.18	0.23	0.46	0.28	0.17	0.09
Friend	0.49	0.45	0.42	0.14	0.09	0.27	0.24
Neighbors	0.40	0.22	0.21	0.43	0.25	0.19	0.02
Ownculture	0.21	0.36	0.28	0.17	0.04	0.05	0.23
Diffculture	0.40	0.32	0.31	0.30	0.08	0.07	0.04
Social-network	1.00	0.32	0.33	0.30	0.29	0.20	0.15
Participation	0.32	1.00	0.78	-0.05	0.15	0.17	0.33
Volunteer	0.33	0.78	1.00	0.05	0.11	0.12	0.22
English	0.30	-0.05	0.05	1.00	0.27	0.12	-0.04
Employment	0.29	0.15	0.11	0.27	1.00	0.30	0.26
Income	0.20	0.17	0.12	0.12	0.30	1.00	0.40
Ownhouse	0.15	0.33	0.22	-0.04	0.26	0.40	1.00
Healthcov	0.07	-0.17	-0.07	0.08	-0.18	-0.04	-0.12
Age	-0.24	0.11	0.05	-0.53	-0.07	0.23	0.28
Gender	0.00	0.12	0.09	-0.22	-0.16	0.16	0.01
Rohingya	-0.23	-0.19	-0.17	0.23	-0.03	-0.53	-0.31

	Healthcov	Age	Gender	Rohingya
Physical	-0.15	-0.27	-0.13	0.31
Mental	-0.08	-0.31	-0.18	0.31
Coethnic	0.11	-0.12	0.01	-0.03
Intergroup	0.00	-0.32	-0.06	0.03
Friend	-0.06	-0.10	0.17	-0.32
Neighbors	-0.14	-0.37	-0.13	-0.03
Ownculture	0.03	-0.07	-0.06	0.05
Diffculture	-0.02	-0.25	-0.01	0.07
Social-network	0.07	-0.24	0.00	-0.23
Participation	-0.17	0.11	0.12	-0.19
Volunteer	-0.07	0.05	0.09	-0.17
English	0.08	-0.53	-0.22	0.23
Employment	-0.18	-0.07	-0.16	-0.03
Income	-0.04	0.23	0.16	-0.53
Ownhouse	-0.12	0.28	0.01	-0.31
Healthcov	1.00	-0.05	0.03	0.00
Age	-0.05	1.00	0.07	-0.39
Gender	0.03	0.07	1.00	-0.28
Rohingya	0.00	-0.39	-0.28	1.00

Figure 1: Marginal Effect for Physical Health

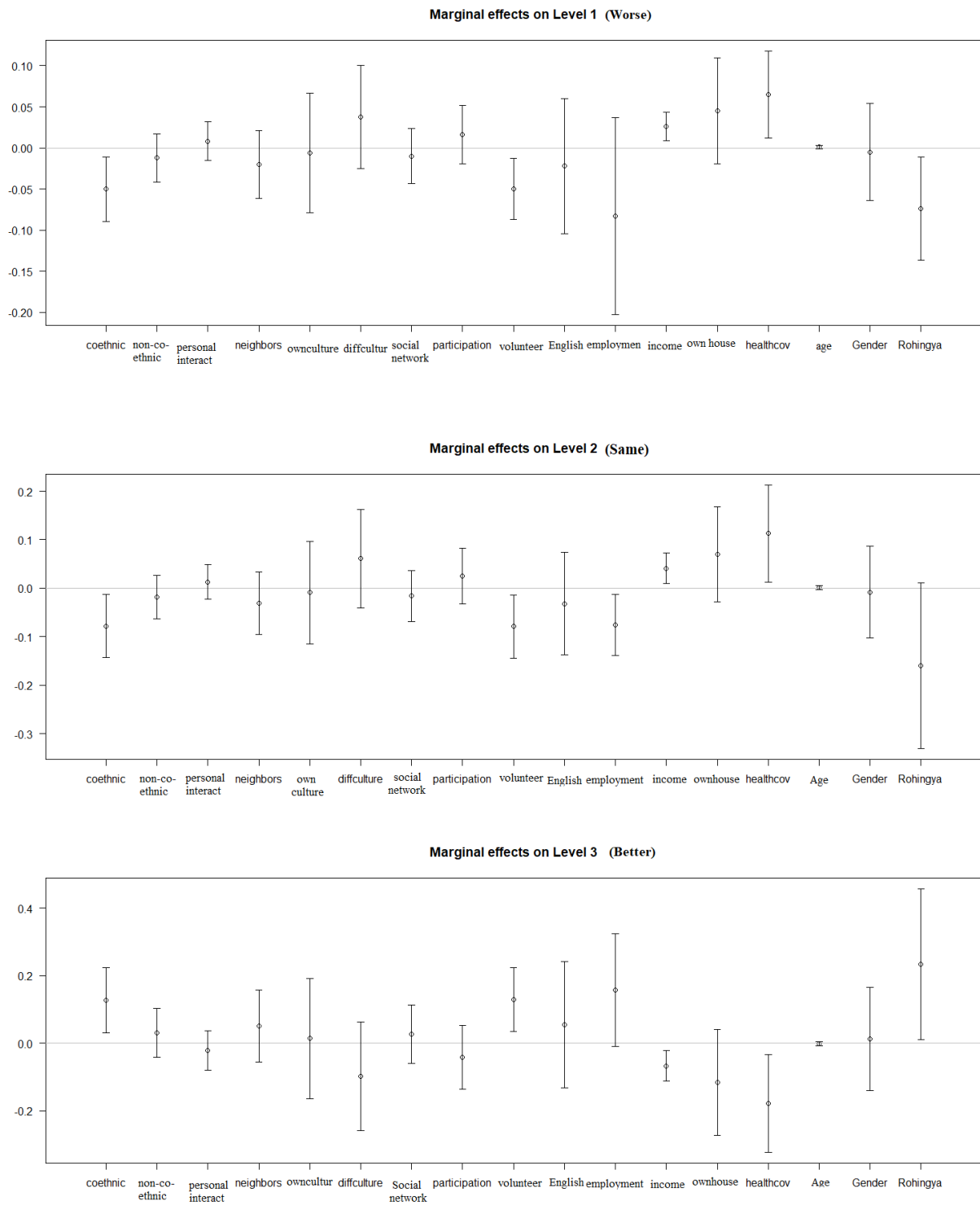


Figure 2: Marginal Effect for Mental Health

