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**KNOWLEDGE, BELIEFS, AND EXPERIENCES ABOUT IMMUNIZATION AMONG  
REFUGEES RESETTLED IN THE UNITED STATES FROM THE THAILAND-  
MYANMAR BORDER**

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**RUNNING TITLE**

**Immunization- Refugees in the United States**

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## **Knowledge, Beliefs, and Experiences about Immunization Among Refugees Resettled in the United States from the Thailand-Myanmar (Burma) Border**

### **Abstract**

**Objectives:** The purpose of this study was to investigate immunization-related experiences among Karen refugees from the Thai-Myanmar border currently living in the U.S. Understanding of how Karen refugees perceive immunization programs in the U.S. is seriously lacking. Exploration of knowledge, beliefs, and experiences of immunization among Karen refugees will help strategize education programs to enhance immunization among Karen refugees.

**Methods:** Karen refugees resettled in the United States from the Thai-Myanmar (Burma) border (n=120) completed a survey on their perceptions and experiences related to immunizations.

**Results:** Older age was associated with higher levels of perceptions that immunizations were safe and longer-term residence in the US was associated with lower levels of perceptions that immunizations were safe. While long-term side effects of immunizations are not commonly perceived, perceived short-term side effects are prevalent.

**Conclusions:** With improved understanding on demographic factors related to immunization belief and perception, the healthcare system in the United States can strategize culturally fit intervention programs that alleviate potential concerns Karen refugees might have regarding vaccination. Future research should expand to study more Karen refugee populations across the nation and develop vaccination health education programs specifically aimed at these refugee populations.

**Keywords:** immunizations, perceptions, refugees, resettlement, Myanmar, USA

## INTRODUCTION

A number of refugees worldwide has been growing since 2010 [1]. Resettlement is one of the ways to protect refugees from a number of urgent risks [1]. The United States (U.S.) is currently experiencing an influx of refugees seeking an asylum from their homeland due to persecution, war, or violence [2]. Over three million refugees have resettled in the U.S. since 1975 [3]. Refugees entering into a new nation have complex medical needs and are a vulnerable population in a new environment [4]. Not only have refugees often faced conflicts in their home country, but many continue poor health, and issues with the migration process by way of finding access to resources or services in their new country [4]. Oftentimes, before coming to the U.S., these refugees have spent time living in refugee camps where they may be especially susceptible to communicable diseases and hunger [5].

When refugees are resettled in the U.S., they are required to have a medical examination, which includes screening for specific diseases, and evaluation of immunization status to find out which vaccinations the refugee might still need [6]. Unlike most other immigrant populations, refugees are not required to receive any vaccines before entering the U.S. due to lack of availability vaccines [7]. However, regardless of the vaccination requirements, immigrants should undergo vaccination as a necessity for public health management [4]. Even though refugee vaccinations upon arrival into the U.S. are recommended but not required, refugees who apply for legal permanent residency after living in the U.S. for a year are required to be fully vaccinated [6]. In 2013, the Center for Disease Control and Preventions (CDC) developed a Vaccination Program for U.S.-Bound Refugees [6]. This program helps improve the overall health of refugees before and during their resettlement, reduces the risk of vaccine-preventable disease outbreaks upon arrival into the U.S., and helps refugee children enter school quicker upon arrival [6]. Despite the importance of vaccination and immunization, very little is known about how refugees perceive existing immunization program. Perceptions of immunization are important predictors of whether people will obtain a vaccine [8]. Perceptions of immunizations can serve as barriers to refugee immunization; therefore, it is important to address these concerns to promote health of refugees resettled in the U.S. or another country.

This study focused on resettled refugees from the Thailand-Myanmar (Burma) border to the U.S. Since 1975, more than three million refugees have been resettled in the U.S. [9]. Among these 3 million refugees, more than 75,000 Karen refugees arrived in the U.S. since 2006, coming from camps and urban settings along the Thai-Myanmar (Burma) border [10]. The Karen are one of the many ethnic groups within the large Burmese population that has relocated to the United States during this time [11]. In 1948, civil war erupted across the country of Burma (Myanmar) leading to the displacement of the Karen to refugee camps along the Thai-Myanmar (Burma) border [12]. As Karen refugees have been resettled in the U.S. throughout the past decade, research has been conducted primarily focusing on the mental health of these Karen refugees [10,13]. Ongoing civil war and human rights violations in Myanmar (Burma) place Karen population at a higher risk for experiencing chronic mental health disorders, such as post-traumatic stress disorder (PTSD) and depression [10,13]. In addition to mental health issues, this population is susceptible to a variety of other health risks, including infectious diseases, malnutrition, Type 2 diabetes, anemia, and hypertension [14]. Relatively little is known about Karen refugees' perceptions of immunizations or their past immunization-related experiences. A greater understanding of these perceptions will provide insight into past and current experiences and attitudes surrounding vaccinations of the Karen refugee populations resettled in the U.S.

In a study of post-arrival screening among Karen Refugees in Australia, it was found that Karen refugees had inadequate immunity to vaccine-preventable diseases, increasing the need for accessible immunization programs in early stages of resettlement [4]. Another study conducted

in England aimed to understand the reasons parents in general decide against vaccinating their children against influenza [15]. After reviewing the surveys of 1,001 participants, it was found that the most common reason parents chose not to vaccinate their child was that they believed their child was generally healthy and they were not worried about them catching influenza [15]. The second most common reason was the perception that the vaccination causes negative side effects [15]. This study shows that beliefs and perceptions regarding immunizations can greatly influence whether or not parents choose to vaccinate their children and can also influence the rate at which adults choose to vaccinate themselves.

Studying Karen refugees' perceptions will help to gain a greater understanding of how this refugee population perceives the process of receiving immunizations after becoming residents of the United States, since most Karen refugees will end up residing in the U.S. permanently due to continued violence in their home nation [12]. Karen refugees, among other refugees, may face barriers or hesitations to receiving immunizations after being resettled in the United States [16,17]. In a systematic review of barriers, it was found that cultural norms, knowledge gaps, insufficient access to healthcare, and anti-vaccination beliefs all affected a refugee's perception of immunizations [17]. Refugees' perceptions of immunizations resulting in vaccination hesitancy upon arrival in the U.S. include belief in low risk of infection, concern about side-effects, belief that the vaccinations are unnecessary or optional, perceived low effectiveness of vaccines, mistrust, and concern about newness of a vaccine [17]. These perceptions could be a result of past, childhood experiences or a general lack of knowledge about immunizations [17].

The purpose of this study was investigate immunization-related beliefs, experiences and perceptions among Karen refugees from the Thai-Myanmar border currently living in the U.S. Knowledge about the perceptions of immunizations among Karen refugees is lacking. Such knowledge is important to develop health education programs that provide accurate knowledge about immunizations with the goal to increase immunization uptake among Karen refugees. Similarly, the results of this study can assist in developing strategies to address issues surrounding immunization attitudes immunizations early on in resettlement of Karen refugees and other refugee populations.

## **METHODS**

### **Data Collection and Participants**

This study was approved by the Institutional Review Board (IRB). Data was collected using self- or interviewer-administered surveys in Salt Lake City, Utah where there are approximately 1,000 Karen refugees. Participants were recruited through flyers, in-person contacts, snowball sampling, networking within the refugee community, and through organizations that serve Karen refugees. The survey instrument and consent cover letter were written in English. Three student research assistants who were fluent in the languages spoken by the Karen refugees collected the survey. The languages used in survey collection included English, Karen, Poe Karen, Burmese, and Karenni. Participants who were fluent in English took the surveys as self-administered. If participants were not fluent in English, they were given interviewer-administered surveys. Consent was obtained from all participants. No personal information was collected from the participants.

### **Measures**

#### ***Perceptions about safety of immunizations***

Beliefs regarding general safety of childhood vaccinations and fear of vaccine side effects were found to be associated with vaccine hesitancy and vaccine refusal among parents [18-20]. In this study, we assessed the extent to which Karen refugees believed in the safety of vaccines for

children using a three-item scale: 1) “Vaccines (shots) are very safe for children;” 2) “A lot of research is done to make sure vaccines (shots) for children are safe;” and 3) “Side effects from vaccines (shots) for children are usually not very severe”). A 5-point Likert scale (1= Strongly disagree, 5 = Strongly agree) was used to measure perceptions about the safety of immunization. Scoring was based on mean. Higher scores indicate higher levels of perceptions that immunization is safe. Cronbach alpha for the study participants was 0.612.

### ***Immunization related experiences***

Another factor associated with childhood vaccination decisions is parents’ own experience with vaccines or their perception or knowledge about experiences of others. Parents who recall having adverse reaction to childhood vaccines or cases of adverse outcomes among friends or family members may be reluctant to follow the vaccination guidelines for their children [21,22]. To gain an understanding of adult Karen refugees’ immunization experiences, we included the following questions in the survey instrument: “Did you receive vaccines (for example, Chickenpox, Diphtheria, Hepatitis B, Measles, Mumps, Polio, Rubella, Tetanus) as a child (before age 6)?;” “Did you receive vaccines (for example, Flu, HPV, MMR, Chickenpox, Hepatitis B) as a child (between age 7 and 18)?;” “Did you or anyone you know experience short-term side effects of childhood vaccination (for example, fever, rash or pain during and after injection)?;” “Did you or anyone you know experience severe or long-term side effects of childhood vaccination (life-threatening side effects or side effects that lasted for many years)?; ” and “If you have children, did they receive vaccinations recommended for their age?”

### ***Socio-demographic characteristics***

This study asked participants to disclose several socio-demographic characteristics: age, sex, highest level of educational attainment, marital status, current employment, a number of children living in their household, and how many years they have lived in the US. The socio-demographic characteristics allowed us to understand basic information on the Karen refugee population and how each participant fits within the larger United States population.

### ***Data Analysis***

The data from this study was analyzed using SPSS version 22 (IBM Corp., Armonk, NY, USA). Multiple linear regression was used to examine associations between perceptions towards immunizations and demographic characteristics, past experiences, and perceived side-effects. Variables were tested for skewness and collinearity prior to performing the regression analysis.

## **RESULTS**

Table 1 summarizes the characteristics of the 120 participants. Approximately 40% of the participants were female (n=50, 41.7%). The average age of participants was 29.59 (SD=13.95). About 38% of the Karen refugees did not graduate from high school (n=45, 37.5%). One-third of participants were married (n=40, 33.3%) and about half worked full-time (n=54, 45%). The average length of residence in the US was 8.03 years (SD=3.00). On average, the Karen refugees had 2.43 children in each household (SD=2.23).

Table 1 also describes immunization attainment among the participants. Approximately 30% of the participants had received vaccines before the age of 6 (n=34, 28.3%). More than half of the participants (n=66, 55.0%) had received them between the age of 7 and 18. Participants perceived short-term side effects in self (n=29, 24.2%), family (n=23, 19.2%), friends or neighbors (n=12, 10.0%), or other person(s) (n=13, 10.8%). Over half of all participants (n=66, 55%) did not report being exposed to short-term side effects of vaccination in self or others. Participants perceived long-term side effects in self (n=9, 7.5%), family (n=5, 4.2%), friend or neighbors (n=2, 1.7%), other person(s) (n=9, 7.5%), and over 80% did not have direct or indirect

experience with long term side-effects of vaccinations (n=98, 81.7%). Only half of participants reported that their child received recommended vaccines (n=60, 50.0%).

Table 2 presents the results of regression analysis that indicated the predictors of beliefs regarding the safety of immunization. Older age was associated with higher levels of perceptions that immunizations were safe ( $p < 0.01$ ). Longer-term residence in the US was associated with lower levels of perceptions that immunizations were safe. ( $p < 0.01$ ).

## DISCUSSION

This study examined and described immunization-related perceptions and experiences among Karen refugees from the Thai-Myanmar border currently living in the U.S. The results indicated three main findings. First, older age among the participants whose average age of 29.59 years were associated with higher levels of perceptions that immunizations were safe. Second, long-term residence in the U.S. was associated with lower levels of perceptions that immunizations were safe. Third, while long-term side effects are not commonly perceived, perceived short-term side effects are prevalent.

It has been reported that increased age is strongly associated with increased vaccination uptake, specifically with the influenza and pneumococcal polysaccharide vaccine (PPV) vaccines [23,24]. In a study that focused on adult PPV vaccination disparities among foreign-born populations residing in the United States, while 13.7% of immigrants between 18-64 were vaccinated, while 40.5% of immigrants 65 or older were vaccinated [24]. This shows a dramatic increase in vaccination coverage that could be due to different factors including increased immunization education or fear of getting ill from various vaccine-preventable diseases due to older age [24]. In this current study, possible factors for the strong association between age and increased perception of immunization safety might be due to increased education to older Karen populations. Future research should examine these factors and other factors that may affect their perceptions of immunizations.

The results of this study suggest that longer-term residence in the U.S. by the Karen refugees is found to lead to mistrust of immunizations and the perception that they are less safe. When studying potential barriers to immunizations in the Hmong immigrant population living in California, it was determined that nativity, or years living in the U.S., did not predict perceived barriers [16]. Reasons why longer-term residency and acculturation in the U.S. may lead Karen refugees to believe that immunizations are unsafe are barriers within our healthcare system, low socioeconomic status, anti-vaccination rhetoric through media, language constraints, and/or increased difficulty for accessing immunizations the longer a refugee resides in the U.S. [25]. When first arriving to the U.S., health care workers may take extra time informing Karen refugees of the vaccinations they need to receive [6]. However, after living in the U.S. for an increased period of time, health care workers may cease to properly educate refugees of the importance of receiving vaccines [26]. The lack of information may make these Karen refugees feel as though the initial push to receive vaccinations was part of a marketing practice, which can lead to distrust in the health care workers and the overall health care system. Future research should attempt to determine these reasons for feeling as though vaccinations are increasingly unsafe the longer they live in the U.S. in order to properly educate this particular population.

Lastly, the results showed that long-term side effects were not generally perceived, whereas short-term side effects were commonly perceived to come as a result of receiving an immunization. This aligns with research that shows short-term or minor side effects, including pain at the injection site, low-grade fever, chills, headache, and/or fatigue, as the most common side effects after receiving an immunization [27]. Long-term and more serious side effects are

rare [27]. Therefore, the most commonly reported side effects from vaccinations will most likely be short-term side effects that generally go away within a day [27].

While this study provides insightful information about the Karen refugee's perceptions on immunizations in the United States, there are some limitations to this study. First, the sample population size was relatively small (n=120). However, this small sample size should be considered in context of the relatively small number of Karen refugees residing in the greater Salt Lake area. The second limitation is that the sample included in the study may not be fully representative of all the Karen refugees that are currently residing in the U.S. because the survey was collected only in one county. However, because refugees are considered a vulnerable population, it is often difficult to obtain a "fully" representative sample. Future studies should aim to study other Karen refugee groups in varying U.S. locations to provide a richer representation of Karen refugees. Another limitation of this study might be due to its cross-design that does not help determine causal directions among variables. A longitudinal study could be beneficial for future research on perceptions of immunizations to see how perceptions might shift, morph, or remain the same over time. Furthermore, the reliability of the scale measured the perceptions of immunization safety was somewhat low. It is necessary to develop a scale with higher reliability for future research, which will allow comparisons across different refugee groups.

This study has important implications for addressing refugee health and cultivates ways of limiting poor perceptions of immunizations among Karen and potentially other refugee populations. With improved understanding on demographic factors related to perceptions of immunization, the healthcare system in the U.S. can strategize culturally fit intervention programs that alleviate potential concerns Karen refugees might have regarding vaccination. This research can also potentially be applied to other minority refugee populations. Future research should expand to study a larger number of Karen refugee populations across the nation and the globe and develop vaccination health education programs specifically aimed at these refugee populations.

## **CONFLICT OF INTEREST**

The authors have no conflicts of interest associated with the material presented in this paper.

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