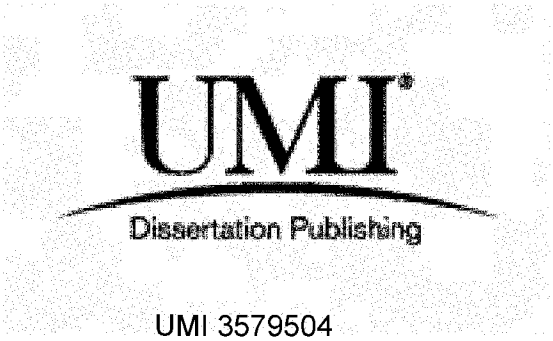
OCCUPATIONAL HEALTH AND SAFETY PRACTICES OF VIETNAMESE AMERICAN NAIL SALON WORKERS

by

Lori A. Edwards, BSN, MPH, RN, PHCNS, BC

A dissertation submitted to Johns Hopkins University in conformity with the requirements for the degree of Doctor of Public Health in the Department of Environmental Health Sciences, Division of Occupational and Environmental Health

Baltimore, Maryland
May 2012



ProQuest LLC
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106-1346

ABSTRACT

Vietnamese American nail salon workers, a growing and vulnerable population, comprise nearly half of all nail salon workers in the United States. They are exposed on a daily basis to several occupational health risks—including ergonomic stressors related to the tasks they must perform; as well as chemicals, many of which have known toxic properties. Nail salon workers have reported health symptoms that may be related to work exposures, and recent studies have detected concentrations of airborne contaminants that exceed recommended safe levels for ambient air. Recognizing this occupational health issue, government and advocacy groups have taken the initiative to develop best practice guidelines to protect the health and safety of nail salon workers, focusing specifically on Vietnamese workers in this industry. This study evaluated adherence to these guidelines and identified factors that promote or inhibit their adoption.

Vietnamese American nail salon workers are subject to health disparities due to cultural factors and lower socioeconomic status. They are known to be difficult to reach for a variety of reasons, including language barriers, and also because they tend to work long hours in isolated small businesses, and they often do not cite their health care as a priority. Our research, therefore, has been based on community-based participatory research methods. Using this approach, in partnership with Vietnamese community organizations, we conducted a cross-sectional survey of Vietnamese nail salon workers.

In addition to looking at the frequency and contexts of policies and communication strategies recommended by the best practice guidelines, this study examined predictors of the use of protective equipment; specifically: tables with ventilation, trashcans with self-closing lids, comfortable hand tools, and three features related to chairs. The potential promoters and barriers to their use represented

components of the integrative model of behavioral prediction as the conceptual framework.

The sample size was 176 Vietnamese American nail salon workers whose ages ranged from 18 years to 61 years. The majority were female (80%), and 20% were owners or managers of salons. A significant proportion rated their financial status as "getting by" or "having few resources," and 37% did not have health insurance.

With the exception of back-supported chairs, the strongest predictors of use were training about the equipment and the belief that it would protect workers' health. For equipment that minimized chemical exposures (trashcans and tables with ventilation), workers were 4.5 to 7.4 times more likely to use these if they were trained about them. If they believed that the equipment would protect their health, they were 6.2 to 7.2 times more likely to use it. For ergonomic practices, workers were 13.5 times more likely to use hand tools if they believed that they protected their health, and they were 3.5 times more likely to use this equipment if they had been trained about it. For chairs that swivel and chairs that are height adjustable, training about chairs was a significant predictor of users compared to non users. Owner/managers differed in their beliefs regarding the importance of materials in Vietnamese versus in English, despite the fact that almost all participants completed their surveys in Vietnamese.

Community-based organizations are in the best position to access members of the community, and, as such, they should play a vital role in delivering training, as well as in developing innovative methods of delivering health and safety information. Our survey found that 60% of our population would prefer to receive health and safety information through Internet sources. Linking with license renewal, perhaps delivered by cosmetology schools or through Internet courses, may be a means of reaching the widest audience.

Policy changes should include proof of continuing education as a requirement for license renewal. We found that 45% of our population supported this, and 65% believed this policy measure would protect the health of workers. Additionally, legislation that would require salons to follow those recommended health and safety practices aimed at worker health—in contrast to only client health—may need to be promulgated across states.

We also propose revising hazard communication methods to include major revisions in the use of chemical information. For example, Material Safety Data Sheets are often not in Vietnamese and may be incomprehensible to these workers. There is a growing interest in protecting the health of this workforce by facilitating adherence to best practices. Policy approaches at the organizational level and at the regulatory level will ultimately protect the health of this vulnerable working population.

Thesis Readers:

Jacqueline Agnew, Ph.D.
Advisor
Professor, Department of Environmental Health Sciences

Janice Bowie, PhD, MPH
Associate Professor, Department of Social and Behavioral Sciences

Peter S.J. Lees, PhD, CIH
Professor, Department of Environmental Health Sciences

Mary Lopez, PhD, Colonel (R)
Consultant, Director Department of Defense 360 Program

Laura Morlock, PhD
Professor, Department of Health Policy and Management
Associate Dean for Education

PREFACE AND ACKNOWLEDGEMENTS

Every dissertation has a story to tell.

Mine began in 1969.

Although this year was part of the Vietnam War era, that's not the full story. It is, however, ironic that, decades later, I would have the privilege of working closely with a population of people whom I had learned about when war was the focus. What could be farther from the truth of their story and my experience 40 years later? The Vietnamese bring beauty to the world, as nail salon workers and as an inspiring immigrant population. My advisor, Dr. Jackie Agnew, and I attended a large community event in 2005, where we learned this lesson, one of many community-based participatory research lessons, greatly valued, along this dissertation journey. Attending a banquet entertainment event with more than 700 nail salon workers and their families, we were enlightened by Vietnamese community leaders who described the professional values of nail salon workers. As proclaimed by these leaders, their mission for working in the beauty industry is to "give beauty to customers, and, in turn, this gives them quality of life." This statement was an important piece of qualitative data that illuminated, for me, the reason why nail salon workers do what they do: to promote quality of life in the world.

And back to 1969, when my story to improve quality of life began.

Every good story begins with "Once upon a time ..."

And so: Once upon a time, I began my career as an epidemiologist and environmental health scientist with my sixth-grade science project. My mother smoked cigarettes, and I decided to explore the health risks associated with tobacco. This passion to improve the health of people began with my experiment with "lab" mice. I

placed four mice in one cage and four mice in another and created an epidemiologic cohort study, exposing cage 1 to tobacco smoke and cage 2 (the control cage) to regular care with no tobacco exposure. With a few very yellow mice (and a few less mice), I showcased my findings. The relative risk was 2.0, with a greater chance of dying after exposure to cigarette smoke. The judges were quite amazed by my research, and I won first prize for my first study. (My mother later quit smoking cigarettes, which was another prize.)

The following year, I also won first prize for my seventh-grade science project about lightning, and I then took the show on the road to the Maryland state science fair, where I won a state-wide award. Interestingly enough, the state science fair was held at Johns Hopkins University, thereby initiating my career at Johns Hopkins. All that being said, the rest of the story continues to this day—a long career at Johns Hopkins University, and my "living happily ever after" as I complete this phase of research as a Doctor of Public Health from the Johns Hopkins Bloomberg School of Public Health. My heartfelt goal continues to this day: to improve quality of life, for Vietnamese nail salon workers, and for all.

"***Gratitude is the inward feeling of kindness received***."

(Henry Van Dyke, in Williamson, 2012)

The list of people who have helped me in the accomplishment of this doctoral degree is endless. Although to name everyone would fill several volumes, I would like acknowledge each person who has helped me along the way, at the very least, in my heart and soul and prayers—with gratitude for their kindnesses, humbly received. Below, in no specific order, is a random sampling of my gratitude list.

The community part of the story

First and foremost, I must express my deep appreciation for the Vietnamese community, for the wonderful nail salon workers, for community leaders, and for my Vietnamese friends and colleagues. I am very grateful for their willingness to share their story with me and to help in this study. The Maryland Vietnamese Mutual Association has been a great community partner, including its leaders, Yen Le, Diane Vy Vu, and Thomas and Tuyet Tran. In attending countless community events, I always felt welcomed and embraced by them, even as the tall white woman.

A few special Vietnamese friends deserve important recognition.

Hien Tran has been a wonderful research assistant. Her constant guidance about how to work with her community has been invaluable. Together, we have shared many laughs, enjoyed Vietnamese meals, and participated in fascinating community events. I look forward to many more years of working closely with her and watching her son, Bach, become a future leader for the Vietnamese community.

Dr. Tam Nguyen, a very close friend, has helped me understand the Vietnamese culture. It's been very special to share the doctoral process with her and to reflect together on the deeper meaning of life.

MyDzung Chu was my bright and shining star research assistant. She was my life saver, and I could not have done data collection without her. I can't wait to see her pursue her doctoral degree and become a future community leader, following in her father's footsteps. Kelly Huynh was also a gracious research assistant who helped me to gain access to workers within her family's nail salon businesses. She is a true community advocate.

The Johns Hopkins University part of the story

I gratefully acknowledge the funding that I received from the following resources:

* The Department of Environmental Health Sciences, Division of Occupational and Environmental Health, NIOSH-funded Education Research Center for Occupational Safety and Health (ERC)

* The Alice Gifford Award

* The Center for Health Disparities, Johns Hopkins University School of Nursing

As a student in the ERC, I would like to express my overwhelming gratitude for the incredible support of so many faculty and staff.

But first and foremost, I express my deepest gratitude for my advisor, Dr. Jackie Agnew. Several years ago, an anthropologist said to me that the doctoral process is about choosing a long-term relationship, and that one should select an advisor with whom you could drink scotch with, or at the very least have lunch with. Well certainly, the long-term part has been true, considering that Jackie was also my advisor for my MPH program. Many years later, I don't drink such beverages, but in terms of spending time together, there could be no better advisor. Jackie has joined in on the fun of countless community-based adventures, co-learning along with me. She is an amazing advisor who got out of the proverbial ivory tower and engaged with the Vietnamese community. She deserves endless accolades and a medal of honor for her dedication to improving workers' health. I am incredibly grateful for her dedication to my professional and academic development, for her mentoring, for teaching me how to say no, and for her tireless guidance every step of the way. Although she may consider all of her efforts as simply perfunctory, Jackie is extraordinary in every way.

A special thank you is due to Dr. Sheila Fitzgerald for her constant support and encouragement, and for her reminders such as "Just ride on your laurels!" Sheila is a constant source of inspiration for stamina, strength, and optimism. She is a true hero.

For the rest of the ERC team—Dr. Maureen Cadorette, Mary Doyle, Keith Choi, and Jane Taylor—a big thank you! Thanks for always welcoming me at the "lunch table," and for always being willing and able to help with anything. A giant THANK YOU to Jane for her incredible technical assistance.

My research committee members deserve special acknowledgement. I am overwhelmed by their kindness and support, technically and personally.

Dr. Janice Bowie has guided my community-based participatory research "approach." Her cheerleading has been a constant source of support. She is a true role model.

Dr. Peter Lees has contributed greatly to my knowledge about industrial hygiene. His guidance in my research has been extremely helpful, and I look forward future research collaborations with him.

Dr. Mary Lopez has played many vital roles in my doctoral journey. She started out as my ergonomics teacher, then she was the parent of one of my nursing students, then later she became my long-distance committee member, and now I am happy to call her a friend. Because of her specialty area in ergonomics, I have been able to address an important issue for this workforce. I am so grateful for all that I have learned from Mary and for her constant investment in my success.

Dr. Laura Morlock deserves a special thank you for her leadership in the DrPH program and as a member of my committee. Her kindness, flexibility, and insight are greatly appreciated.

Dr. Hee-Soon Juon has graciously offered her assistance with the design of my study. Her work with Asian Americans and the Vietnamese community is commendable, and she has been a great mentor in this work.

A special gratitude goes out to Dr. Pat Gucer and Dr. Melissa McDiarmid at the University of Maryland School of Medicine's occupational health program. They have

been incredibly helpful in the design of my study and in suggestions for my analysis. For their generous mentoring, I am very indebted and grateful.

I also must acknowledge my gratitude for many colleagues and friends at the Johns Hopkins University School of Nursing who have supported me along this doctoral process. A special recognition goes to my public health nursing team of colleagues and close friends, including Carm Dorsey, Kelly Bower, Sara Groves, Joan Kub, and Shirley Van Zandt. They have been the best of friends—through the worst of times and the best of times. For their sharing of our workload and for truly being great team players, I am grateful. I could not have done this without their support. Go team!

A big giant thank goes to my nursing students, who have contagious enthusiasm that inspires me every day. The gift of sharing in their career-building journey has been a constant reminder about why I have pursued this doctoral degree.

A big hug and thank you goes out to one special student, Kirsten Blomberg, for her generous data entry skills. She has been my sunshine with her "light up the room" persona. She has also taught me the art of storytelling and writing from the heart. From the Peace Corps to nursing, Kirsten is going places, and she will light up the world wherever she goes. She is my vision for the future of nursing.

The friends and family part of the story

Of great importance, I would like to acknowledge the powerful role that my parents and my family have played in my life. I am so grateful for my mother, Betty Edwards, who encouraged me to pursue my scientific career and my nursing degree. She pursued her passion to care for others by completing her nursing degree later in life. Although she passed away from breast cancer at the age of 61, her influence is still felt to this day. Her sister, my Aunt Shirley, is a constant source of my mothers' presence. She is my great encourager and my close friend. I give thanks to my loyal father, Duane Edwards,

who built mice cages for my first science project, and who continues to build the foundation of strength in my life, coaching me every step of the way. He is my proud dad, and I am proud to be his daughter. With gratitude for my sister, Susan Dean, another nurse in the family, who listened tirelessly, and for that alone I am indebted.

With the deepest gratitude for my life partner, Chuck Alexander IV, who has danced this journey with me, built sculptured gardens out of messy grounds in order to beautify our world, and constantly reminded me to stop and smell the flowers, see beauty, and listen to the sounds of nature. For the countless times he encouraged me to keep going—and to "just write your paper!"—I say thank you, my gardener and my dance partner.

Additionally, our family together has played a vital role. I am grateful for all of Chuck's family members, who provided amazing support every step of the way: Chuck's two children, Calli and Wes, and their families, and Chuck's six siblings and their families. Although too numerous to mention, they have all supported me in incredible ways. I offer a special thank you to Miriam Miller, Chuck's sister, for her network sampling and her prayers, all (literally) saving graces. And special gratitude for all of the cheerleading by Chuck's daughter, Calli Hensley, and for our grandkids Isa and Oli, who were always so understanding when Grandma Lori had to go work in the coffee shop instead of going to the zoo. Now I can enjoy trips to the zoo with my grandkids! The constant presence of a loving family is my lifeline.

Friends are the key to "forgetting about it." For the dance community, my dance partners, and my social network, I am so grateful. A few special friends in the dance community have been incredibly supportive: For Melanie, my florist friend, I am grateful for her regular delivery of flowers; for Bob, Sabra, Stefan, and Steve, who help every Friday night. All of my dance friends and dance partners have helped me laugh, offering weekly support with questions like "How are you doing?" "Are you still in school?" "When

will you be able to take lessons again?" They gave me moments of letting go. Dancing is the best therapy.

My lifelong circle of friends has been my mainstay. Several deserve honorable mentions, including my best friend from nursing school. Thank you to Cindy Maloney, RN extraordinaire. She counted down the days to my final defense, sending daily handmade cards and gift packages, encouraging me to "keep going" with mantras such as "You can do it," "You are strong," "Slow and steady wins the race," and "You are incredible, even though I don't know why you are doing this crazy thing!" She always knew what I needed and when I needed it. Now I can visit her in warm and sunny Florida.

Countless other dear friends, while too numerous to acknowledge, all deserve credit for their support and loving presence in this doctoral process: My Institute of Notre Dame sisters; my longstanding nursing friends; my powerful girlfriends; my prayer partners; mountain woman, Sita; my guy friends, especially Marty; my workout buddies; and my close circle of girlfriends.

The key to a healthy life is to be active. I could not have survived this endurance test without my workouts, guided by my personal trainer, Debbie Schultz, who was my constant cheerleader. Thanks to Debbie for her flexibility with my schedule changes and for her weekly health and nutrition tips. And then along came another, Karen Alexander, my water workout trainer. Karen not only makes me laugh hysterically while trying to stay afloat in deep water, but her coaching has conditioned me to be able to go the extra mile, in water and in all of life. What life savers they both are, literally.

A special thank you to a wonderful mentor, another Karen, who coached me from the inside out, teaching me to say NO to distractions in order to say YES to my dreams. Because you believed in me, I believed in me!

My dear friend and physical therapist, Mary Wilson, taught me all about ergonomics for my own personal needs. Another "I could not have done this without you" goes out to her.

Finally, I would like to acknowledge my dear friends who have gone before me in the doctoral process, as well as those who have passed away.

First, my friends and colleagues who completed this degree in the Division of Occupational and Environmental Health have been my guiding light. Dr. Terry Yeo has been with me since our MPH years. We are bonded for life, and her presence in my journey was felt on a daily basis. Another special acknowledgement is due to Dr. Joanna Gaitens for her generosity of time spent teaching me STATA and more. She is an outstanding teacher, and for all that she has done to help me, I am grateful. A big thank you also goes to Dr. Pat McLaine, who has always listened. My sweet friend Dr. Plernpit Suwan-ampai is now back in Thailand, yet still encourages me from the other side of the world.

And finally, I am grateful to my friends who have inspired me even in their passing. I believe that the death of a friend or a loved one puts things in perspective and deepens our gratitude for this precious gift of life and love that sustains us throughout our ups and downs.

My friend Ginny Worthington, an IND sister, passed away from breast cancer after completing her doctoral degree. Throughout my doctoral journey, I have remembered her and have been inspired by her motivation with a desire to continue her legacy.

In March 2012, a very dear friend, Marnie Holden, passed away after her longstanding battle with lymphoma. Her last words to me were: "Just do what you need to do to finish, and then we will have a big celebration together!" I know she is now celebrating with me in heaven—probably drinking her favorite drink, margaritas. I

celebrate her legacy, her faith, and the joy her life brought to the world. My life has been richly blessed by Marnie and by the third person in our trio of friends, Suzanna Duvall. Marnie, Suzanna, and I have been prayer partners and soul sharers, and their encouragement along the way was always uplifting.

With deep gratitude for all kindnesses received; for the blessings of supportive mentors, family, and friends; and for all of the ways that everyone has touched my soul and helped me to succeed. My success is only possible because of the success and support of others. Near the end of this doctoral journey, my friend Suzanna reminded me of one of the most important truths: "To God be the glory." And to that I say, "Amen!"

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF OTHER APPENDICES

ABBREVIATIONS

BLS	Bureau of Labor Statistics
CBPR	Community-based participatory research
EPA	United States Environmental Protection Agency
IMBP	Integrative Model of Behavioral Prediction
MMA	Methyl Methacrylate
MSDs	Musculoskeletal Disorders
MSDS	Material Safety Data Sheets
MVMA	Maryland Vietnamese Mutual Association
NIOSH	National Institute for Occupational Safety and Health
NT	Nail technician
OMH	Office of Minority Health
OSHA	Occupational Safety and Health Administration
PPE	Personal Protective Equipment

CHAPTER 1: INTRODUCTION

Goals

This study addressed potential occupational health threats and protective measures for Vietnamese Americans working in the nail salon industry. Within the Asian American population, Vietnamese Americans are one of the most rapidly growing immigrant groups. These individuals comprise the fourth-largest Asian American ethnic group, and are among the minority immigrant workers who are at substantially higher risk for occupational injuries (Office of Minority Health [OMH], 2007). Health disparities are an issue for Vietnamese Americans, possibly related to their unique immigration history, lower socioeconomic status, and cultural health beliefs and barriers that perpetuate their marginalization and isolation (Schulmeister & Lifsey, 1999). Additionally, lack of health insurance, limited access to care, and infrequent healthcare provider visits can further compromise their overall health status.

Similar to other ethnically grown small businesses, the nail salon industry has become an employment opportunity for many Vietnamese Americans. Across the United States, the nail salon workforce is now primarily comprised of Vietnamese Americans, who own 40-50% of nail salons. Many of these workers are living with a familiar immigrant narrative, having come to the United States to seek a better life, to find a job to support one's family, hoping that their children will receive a good education towards a promising future. To accomplish this goal, nail salon workers work hard and for long hours.

For the past five years, there has been increasing attention to a number of occupational health issues related to work conditions, chemical exposures, and social and ecological factors experienced by Vietnamese American nail salon workers. Of

these concerns, research has primarily focused on chemical exposures. At least one study has detected concentrations of commonly used substances at levels higher than those recommended for ambient air (Quach et al., 2011). Studies of health effects have focused on reports of symptoms, but specific links to causality have not been identified (Harris-Roberts et al., 2011; Quach, Nguyen, Doan-Billings, Okahara, Fan, Reynolds, 2008; Roelofs, Azaroff, Holcroft, Nguyen, & Dona, 2008; Quach et al., 2011). Nevertheless, because some chemicals used in nail salons have known toxic properties, government and advocacy groups have issued recommendations for best practices to minimize worker exposures. Although some of these chemicals have been eliminated from use or substituted with less toxic materials, engineering modifications and the use of personal protective equipment remain among the recommended protective measures.

In our preliminary work with a Vietnamese community-based organization in Maryland, nail salon workers identified musculoskeletal complaints as a primary concern. Similar complaints were found in studies conducted in Massachusetts and Great Britain (Roelofs et al., 2008). However, despite the fact that they are often preventable, injuries related to ergonomic stresses for nail salon workers have not been studied. Ergonomic principles and the application of interventions, such as redesign of work stations and tools, have been effective at reducing work related musculoskeletal disorders (MSDs) in work settings (Cohen, Gjessing, Fine, Bernard, & McGlothilin, 1997; Van Eerd, Hogg-Johnson, Cole, Wells, Mazumder, 2012). The above mentioned recommendations address some of these protective strategies.

While we would like to ensure that nail salon workers are protected from harmful occupational hazards, they remain an isolated population that is very difficult to reach. Our approach in this study, therefore, was to employ community based participatory research (CBPR) methods to capitalize on the community's expertise and to build bridges between researchers and community members. This approach has been shown

to be successful in identifying and responding to workers' health and safety risks. CBPR also brings the advantage of promoting the sustainability of interventions that may evolve from our findings.

The overall objective of this research was to identify strategies by which workers can more effectively protect their own health. To this end, we explored adherence to the recommended best practices along with factors that promote or inhibit protective behaviors. The conceptual framework that guided the study design was the integrative model of behavioral prediction (IMBP) which offered a means of investigating the influence of knowledge, training, attitudes, beliefs, self efficacy, perceived risks, and environmental factors on worker health promotion behaviors (Fishbein, 2008).

Specific Aims

Specific aims of the study:

1. Describe the demographic characteristics and immigration status of a population of Vietnamese American nail salon workers.
2. Examine the presence of equipment, supplies and policies that, according to a set of best practices, are intended to protect the health of this population in their workplaces.
3. Determine the extent to which nail salon workers adhere to the set of best practices.
4. Identify predictors of adherence to recommended health and safety practices for nail salon work.

CHAPTER 2: BACKGROUND AND SIGNIFICANCE

Vietnamese immigrants and the growth of the nail salon industry

Over the past two decades, the nail salon industry in the United States has grown substantially, leading to complex issues affecting a vulnerable population of Vietnamese immigrant workers. In 1993 there were approximately 125,000 nail salons in the United States, employing as many as 190,000 nail technicians (Gjoslstad, Thorud, Molander, 2006; Kurtzweil, 2006; Ly, 2003). The number of licensed nail technicians subsequently rose as high as 375,000 by 2010 (NAILS Magazine, 2010; Gjoslstad et al., 2006). This growth spurt occurred partially because of the rising number of Vietnamese immigrants who found employment from this economic opportunity. The trend for the nail salon industry to be dominated by this ethnic group, still one of the fastest growing Asian American populations in the United States, has now expanded nationwide. Forty to fifty percent of nail salons are now owned by Vietnamese Americans (Quach, Nguyen, Doan-Billings, Okahara, Fan, Reynolds, 2008; Roelofs, Azaroff, Holcroft, Nguyen, & Doan, 2008). In California that number is even higher. Nearly 80% of all nail salon workers in that state are Vietnamese Americans (Quach et al., 2008).

The nail salon industry

The U.S. Bureau of Labor Statistics (BLS) classifies the nail salon industry as a service sector industry (sector 721) which includes nail technicians, nail salon owners, and nail suppliers (Bureau of Labor Statistics [BLS], 2012). The BLS classifies nail salon workers, including manicurists and pedicurists, as personal appearance workers (BLS, 2012). In contrast to the numbers cited above, which were based on annual surveys conducted by the industry trade journal *NAILS Magazine,* the BLS reported a census of only 81,700 personal appearance workers (BLS, 2012). BLS has projected a continued and

substantial growth for this industry: 19%, over the next several years (BLS, 2012). Controversy over the accuracy of nail salon worker population estimates raises two concerns. First, if this population is being undercounted by federal agencies, then more attention may be due this working population, as sheer numbers alone often alert a response. Secondly, undercounting illustrates that this is a hidden and marginalized population of workers who are difficult to reach and even more difficult to access for purposes of protecting their health.

In 1995, the Food and Drug Administration estimated that consumers spent $5.2 billion on nail services, an increase of over a half billion dollars since 1994 (Kurtzweil, 2006). It is now a $7.3 billion industry (NAILS Magazine, 2012). With this industry's growth, regulations and policies that could minimize hazardous occupational exposures for workers have not kept pace.

Social ecological factors and occupational health risks for nail salon workers

A social ecological framework has been used to describe influences on health, which includes individuals' factors, interpersonal factors, organizational factors, economic factors, community influences, and policy (Campe et al., 2011; Ward, 2007). This complex interplay of social ecological factors may contribute to the occupational health risks for Vietnamese nail salon workers.

At the individual and interpersonal levels, cultural values held by Vietnamese nail salon workers may influence their ability to protect themselves against hazards at work. Ly (2003) described overarching Asian values which emphasize self-sacrifice and suffering in order to succeed and support one's family. For example, researchers concluded that Vietnamese women had higher rates of cervical cancer due in part, to their marginalization, a cultural barrier influencing their limited health screening practices (Schulmeister & Lifsey, 1999). If Vietnamese Americans do not perceive themselves to

be at risk then they do not seek care and this may impede their perception of risk related to exposures in the workplace (Ly, 2003).

At the organizational level, the Vietnamese work ethic may interfere with health and safety protection (Ly, 2003). Many Vietnamese Americans nail salon workers prioritize customer satisfaction over their personal health concerns (Ly, 2003). Nail salon workers have long work days which can be tiresome and limiting for personal needs. Their work week is typically 50 to 80 hours, in contrast to all service industry employees, who work an average of 32.8 hours per week. In the nail salon business, workers are expected to work 10- to 12-hour days whenever the salon is open for business, and it is not uncommon for workers to maintain this schedule for five to seven days per week. These businesses are often family run and workers are expected to be there, not only for their employment but for family obligations (Ly, 2003). Of concern is that their work hours may pose additional hazards related to longer durations of exposures (Phan, Steel, & Silove, 2004). These organizational policies and other factors such as work related stress may contribute to workers' health risks.

Socioeconomically, this working population and its low income status may contribute to their health disparities risk (OMH, 2007). Approximately 31% of Vietnamese Americans as a whole live below the poverty level (Migration Information, 2012). The average median annual earnings for Vietnamese Americans is $31,573 for males and $24,028 for females. Median family income for a Vietnamese American family is $47,103, the third lowest compared to all other Asian Americans (OMH, 2007). According to BLS (2012), the median annual wage for nail salon workers is $19,650, even lower than the median income of all Vietnamese Americans. Another issue that has been raised has been the potential for lost productivity due to occupational illnesses or injuries, which could have a detrimental economic impact for these workers, who are already employed in a low-wage industry. Education levels for Vietnamese immigrants

are generally low; approximately 38% do not have a high school education (Migration Information, 2012).

Community influences that add to their vulnerability are related to social isolation. Although the sense of community is an asset for most Vietnamese Americans, limited English language skills minimize outside community networks (Ly, 2003). Community based organizations facilitate these immigrants to maintain cultural customs and values and have been instrumental in working with nail salon workers (Ly, 2003; Roelofs et al., 2008). However, nearly 75% of Vietnamese Americans speak little or no English and approximately 50% of Vietnamese nail salon workers have limited English language proficiency (NAILS Magazine, 2007). This language barrier is thought to limit workers' comprehension of health and safety information and little is known about their perception of dangers in their workplace (Ly, 2003).

On a policy level, more than 25% of nail salon workers are uninsured which adds to their risk for health disparities (NAILS Magazine, 2012). The majority of nail salons do not provide employer-sponsored health insurance plans and owners often prioritize business success over protecting workers' health through employer sponsored health insurance plans (Ly, 2003). With limited health insurance and generally low income status, access to health care adds to potential health disparities..

These multifaceted issues place this working population at risk for adverse health outcomes. This combination of social, cultural, and economic dimensions highlight areas of concern for Vietnamese nail salon workers.

The business of nail salons

The business model for nail salons plays an important part in understanding risks for workers. Nail salons are small businesses, ranging from 2 to 20 workers, most often with fewer than five (Roelofs et al., 2008). Most nail salon workers are not considered

employees, but are independent contractors who rent space or a booth in the salon. Income is generated on commission and gratuities. Job insecurity is a worry for workers, due in large part to high turnover of nail salon owners (Liou, 2008).

Because they are small independent businesses, little is known about how health and safety information is provided to workers. At the time of license renewal, owners must comply with Boards of Cosmetology and related safety regulations but there is limited ongoing monitoring. Employers are responsible for informing employees about potentially hazardous chemicals. However, there are inconsistent provisions about safety information. Because workers in this industry are often self-employed, owners are not held to the same standards if they were employees (Gorman & O'Connor, 2007). As small establishments, owners are unable to hire health and safety staff and few resources are available to focus on this issue (Ly, 2003). Small businesses in general have been known for inadequate health and safety programs for workers, and the nail salon industry is no exception (Eakin, 1992; Hu, Harley, Yeung, 2012; Ly, 2003).

Description of nail work

Nail work includes performing manicures or pedicures, nail coloring, nail sculpting, nail extensions, or artificial nails. A nail salon consists of rooms with several small tables for manicures and another area for pedicures which includes water spas. Nail salon technicians work with solvents, glues, polishes, silica, and several nail care products that contain a complex of chemicals—some known to be carcinogens and some that are suspected to cause cancer, allergies, respiratory problems, dermatologic problems, neurological effects, endocrine disruption, or reproductive harm.

Nail care involves several different tasks with various risks associated with each step or process, depending on the specific chemicals used, the mode of exposures, and the labor involved in any of these procedures. The process of nail work includes:

removal of nail polish using acetone or other solvents; soaking cuticles with softening agents, such as potassium hydroxide; using nail clippers and emery boards or files to shape the nails, or a Dremel tool for artificial nails; using hand lotions; and applying polishes or lacquers to nails, or artificially creating nails. When artificial nails are applied, acrylics, gels, fiberglass, porcelain tips, or powders such as silica are applied to the nail or brushed onto the nail and attached with glue or hardening agents. Artificial nails are hardened and filed into shape, which creates dust. While performing manicures, nail technicians sit at tables facing clients. For pedicures, nail technicians sit at the feet of clients, often in awkward positions. The client's hand or foot is approximately one to two feet below the breathing zone of the worker, a work design that allows the nail technician to perform fine detailed work within their visual field, but can be problematic in terms working close to vapors and dust (Linden, Scudder, Dowsett, Liebelt & Woolf, 1998).

A majority of nail salons offer additional personal care services such as waxing, facials, or other beauty services. With additional services there are added risks related to exposures to other chemicals or products.

Chemicals in nail salons

Chemicals used in the nail salon industry have toxic properties and potentially hazardous ingredients. A list of nail work including associated chemicals and potential toxicities is presented in Table 2-1 (U.S. Environmental Protection Agency [EPA], 2007; Linden et al., 1998; Roelofs & Do, 2012). According to the U.S. National Institute for Occupational Safety and Health (NIOSH) of the nearly 3,000 chemicals used in cosmetology, 30% are classified as toxic substances (Stock & Cone, 1997). The most hazardous chemicals currently used in this industry include ethyl methacrylate, acetone, toluene, formaldehyde, and several other solvents and materials, such as fiberglass and

silica (Aydin, Attila, Dogan, Aydin, Canacankatan & Kanik, 2002; Hiipakka & Samimi, 1987; Maxfield & Howe, 1997).

The numerous chemicals have a range of toxicities depending on levels of exposure. The health effects of concern are primarily dermatologic, respiratory, allergic, or neurologic (Roelofs & Do, 2012). Although each chemical may cause a specific health response, the synergistic effect of multiple chemicals raises alarm (Roelofs et al., 2008).

Some chemicals used in nail products have been eliminated or substituted, either by law or by voluntary actions within the industry itself. Examples include the recent removal of toluene, formaldehyde, and dibutylphthalate from nail polishes by selected manufacturers (Guo, Batarseh, Wong, & Raphael, 2012). However, manufacturers have falsely proclaimed this removal, placing workers at risk who believe they are using safe products and instead harmful chemicals are still present (Guo et al., 2012).

Methyl methacrylate is another harmful chemical which workers are exposed to despite regulatory changes that have focused on minimizing their risks. In 1974, the U.S. Food and Drug Administration (FDA) restricted the use of nail products with 100% methyl methacrylate (MMA) to limit occupational exposures (Roelofs et al., 2008). Another methacrylate polymer, ethyl methacrylate (EMA), was substituted for this hardener used in the preparation of artificial nails. However, both methacrylates - EMA and MMA - have similar toxic properties, potentially causing dermal and respiratory symptoms (Gjolstad et al., 2006). Meanwhile, there are reports that MMA is still used in nail salons for reasons not fully known (Gorman & O'Connor, 2007). Ly (2003) recounted that Vietnamese nail salon workers used MMA because it is still available and without accurate information about its risks or restrictions it is their preferred product.

Nail care continue to expose nail salon workers to hazardous chemicals which cause adverse health outcomes. Workers' limited knowledge about products and safety adds a layer of complexity for controlling for these risks.

Table 2-1. Nail processes, chemical ingredients, and possible health effects or toxicities

Process / products	Chemical ingredients	Selected possible health threats or toxicity, with overexposure
Nail polish removal	Acetone	Irritant eyes, nose, throat; headaches; dizziness; central nervous system depression; dermatitis
	Ethyl acetate	Irritant eyes, skin, nose, throat; dermatitis
	Butyl acetate	Irritant eyes, skin, mouth, nose, upper respiratory system; headaches, drowsiness, confusion
Nail polish (includes base coats, top coats, colors)	Ethyl acetate	Irritant eyes, skin, nose, throat; dermatitis; confusion
	Butyl acetate	Irritant eyes, skin, upper respiratory system; headaches
	Ethyl alcohol	Irritant eyes, skin, nose; headaches]; CNS; anemia; reproductive effects
	Isopropyl alcohol	Irritant eyes, nose, throat; headaches; CNS; dry cracking skin
	Acetone	Irritant eyes, nose, throat; headaches; CNS; dermatitis
	Methyl ethyl ketone	Irritant eyes, nose, throat; headaches; CNS; dermatitis; drowsiness, vomiting
	Toluene	Irritant eyes, nose, throat; headaches; CNS; dermatitis; paresthesias; liver, kidney damage
	Xylene	Irritant eyes, nose, throat; headaches; CNS; dermatitis; corneal damage; reproductive effects
	Dibutyl phthalate	Irritant eyes, upper respiratory system, stomach; reproductive effects
	Toluene Sufonamide	Dermatitis
	Titanium dioxide	Lung fibrosis; potential occupational carcinogen
Nail hardeners	Formaldehyde	Irritant eyes, nose, throat, respiratory system; cough; wheezing; dermatitis; suspected carcinogen
Artificial nails (acrylic polymers, hardeners, primers, dehydrator)	Ethyl methacrylate	Irritant eyes, skin, nose, throat; dermatitis; asthma
	Methyl methacrylate**	Irritant eyes, skin, nose, throat; dermatitis; asthma; shortness of breath
	Butyl methacrylate	Irritant eyes, skin, nose, throat, dermatitis; asthma
	Methacrylic acid	Irritant eyes, skin, mucous membranes; burning of eyes or skin sensations; central nervous system depression
	Methyl ethyl ketone	Irritant eyes, nose, throat; headaches; CNS; dermatitis
Artificial nail	Acetone	Irritant eyes, nose, throat; headaches; CNS; dermatitis

removers	Acetonitrile	Irritant nose, throat; asphyxia; nausea, vomiting; chest pain; CNS syndrome; convulsions; in animals: liver, kidney damage
	N-methyl pyrrolidone	Dermatitis; reproductive effects
Cuticle softeners	Potassium hydroxide	Corrosive
Filing	Formaldehyde	Irritant eyes, nose, throat, respiratory system; cough; wheezing; dermatitis; suspected carcinogen
	Dibutyl Phthalate	Irritant eyes, upper respiratory system, stomach; reproductive effects
UV Light		Irritant eyes; skin; suspected skin carcinogen

Sources:
Roelofs, C. & Do, T. Exposure Assessment in Nail Salons: An Indoor Air Approach. International Scholarly Research Network. ISRN Public Health. Volume 2012, Article ID 962014, 7 pages. From Sources, ACGIH, 2002 TLFs and BEIs; NIOSH Pocket Guide to Chemical Hazards; nail products Material Safety Data Sheets.

United States Environmental Protection Agency, 2007. Protecting the health of nail salon workers. EPA no. 774-F-07-001. March 2007.

**Typically not used, banned from use by FDA.

Strategies for controlling hazards

The Hierarchy of Controls Framework can be applied to potential health hazards in nail salons, proceeding from the most protective to the least effective control measures. The most protective strategy is the elimination of an exposure by substituting a less hazardous substance for a hazardous one. The least effective approach is at the individual level where workers are expected to apply controls to minimize their exposures to hazards.

Substitution or elimination controls

An example of substitution in the nail salon industry is banning of products with 100% of methyl methacrylate (MMA) by FDA, as described previously and substituting it with EMA (Roelofs et al., 2008). Industry manufacturers are adopting this substitution approach, focused on the three most toxic chemicals: dibutylphthalate, formaldehyde, and toluene. Although chemicals are being substituted, other chemicals are in use and little is known about how workers protect themselves, or if they are aware of any of the control measures. Just as methyl methacrylate is still thought to be used in nail salons, nail products with dibutylphthalate, formaldehyde, and toluene are still used. Even with this substitution to reportedly less toxic chemicals, the process of nail work continues to expose workers to a wide array of chemicals and to several complex compounds, with the additional concern regarding synergistic and cumulative chemical exposures (Roelofs et al., 2008).

Engineering controls

The next approach in the hierarchy is the use of engineering controls such as redesigning processes. For example, in the nail salon industry, ventilation systems are recommended and regulated to limit inhalation exposures. Salons by and large have been found to be poorly ventilated and to have inadequate indoor air quality (Quach et al., 2008). Quach et al. (2008) found that only 45% of nail salons used local exhaust

ventilation, which is recommended by NIOSH and the U.S. Occupational Safety and Health Administration (OSHA) to reduce chemical exposures for nail salon workers (U.S. National Institute for Occupational Safety and Health [NIOSH], 1999; Department of Labor Standards, 2012). Furthermore, recommended built-in table ventilation systems are thought to be either improperly used, not maintained, or absent in a majority of nail salons across the United States (Roelofs & Do, 2012). While state boards of cosmetology have regulations that mandate salons to have "adequate ventilation," this term is loosely defined and varies from state to state (Roelofs & Do, 2012). It is still unknown whether workers or owners are adequately trained or informed about the importance of ventilation, or if other barriers prohibit proper use of recommended ventilation systems that protect workers from inhalation exposures.

Because nail salon workers have reported musculoskeletal complaints as a primary concern certain engineering controls have been devised to promote workers' musculoskeletal health (Harris-Roberts et al., 2011). The Oregon Collaborative for Healthy Nail Salons has recommended designing work tasks to improve ergonomic positioning (Oregon Collaborative for Healthy Nail Salons, 2008). Some hand tools have been designed to improve workers' comfort and to prevent injuries. Ergonomic workstations and adjustable chairs are available in a wide array of designs to aid in workers' comfort. What is unknown, however, is the extent to which nail salons and workers make use of these items or what barriers prohibit use. There is limited data regarding musculoskeletal issues and current practices in the industry and this territory begs exploration (Harris-Roberts et al., 2011).

Administrative controls

The next level of the hierarchy is administrative control, including regulating policies, changing work practices, providing education, and conducting training.

Licensure is an administrative control for this industry. All salon workers and salons must be licensed. Salons are licensed after inspection by State Boards of Cosmetology. Boards require nail salon workers to have a minimal number of classroom hours and practical training before becoming licensed, although the number of required hours varies from state to state. Applicants in Maryland, for example, are required to have at least 250 hours of training in a cosmetology school, or to have completed eight months as a registered apprentice in a licensed beauty salon (Maryland Board of Cosmetology, 2011). Licensing does not require nail technicians to know potential health risks or to identify hazardous chemicals. Furthermore, continuing education is not required for license renewal in Maryland, nor in most other states.

Individual controls

The use of personal protective equipment (PPE) is one of the least effective approaches in the hierarchy of controls for protecting workers' health. Organizations may require workers to use PPE, but workers' compliance is often a problem. Individual workers are the ultimate decision makers regarding use of PPE. Additionally, workplace environmental factors may limit adherence to PPE use, particularly if it is unavailable. In the nail salon industry, some workers use masks because to decrease their exposures but are reportedly using inappropriate masks (Roelofs et al., 2008). NIOSH has proposed dust masks to minimize inhalation of particles, but workers may be using them to prevent inhalation of chemicals and do not use the proper types of N-95 masks which would be protective (EPA, 2007; Roelofs et al., 2008). Although nitrile gloves have been recommended to prevent dermatologic absorption of certain chemicals, workers report the unavailability of this equipment (Agnew & Edwards, 2006). Accurate and consistent PPE use is reportedly an issue because workers are unfamiliar with the appropriate types of masks, gloves, or other equipment and supplies that would best protect them from exposures or hazards (Roelofs et al., 2008). No studies to date have examined

adherence behaviors of nail salon workers regarding their use of PPE or what barriers exist that prohibit use.

In particular, identifying the predictive determinants of PPE use is an important research question to determine how to control risks for nail salon workers. From a theoretical perspective based on the hierarchy of controls, the preferred practice is to eliminate the hazard; or to substitute products that are hazardous; or to redesign an engineering element, such as ventilation, in conjunction with administration and PPE controls. Yet, in order to determine intervention strategies, exploration into workers' individual protective practices is needed.

Regulations to protect nail salon workers

Administrative controls via regulations are varied depending on the government agency. The U.S. Food and Drug Administration (FDA) is responsible for regulating the cosmetic industry, but only after products have been introduced to consumers and with an expectation that industries will practice the precautionary principle and produce safe products (Hu et al., 2012). Products are regulated and are to be free of harmful substances if used according to their intended purpose (U.S. Food and Drug Administration [FDA], 2012). However, nearly 90% of the 10,000 chemicals used in personal care products have not been assessed for their safety (Quach et al., 2011). Nail product safety is conducted by the Cosmetic Industry Review, but they have only reviewed 11% of all cosmetic ingredients in nail products (Roelofs et al., 2008). Although many regulations apply to products used in the nail salon industry, the extent to which they control workers' exposures is of concern.

Federal policy includes some oversight and monitoring of salons and protection of workers through OSHA. OSHA set standards for safe and healthy working conditions, including standards for chemical exposures. OSHA's permissible exposure limits (PELs)

regulate chemical exposures based on eight hour time weighted average concentrations of specific chemicals. Of concern, nail salon workers are exposed while working 10- to 12-hour work days, so time weighted averages can be inaccurate for this working population. PELs are thought to be inaccurately considered safe for protecting nail salon workers because they were established decades ago, in the 1960s, when the focus was on the prevention of acute and severe exposures (Gorman & O'Connor, 2007).

OSHA administrative regulatory approaches include a Hazard Communication Standard, 29CFR 1910.1200(a)(2) (U.S. Occupational Safety and Health Administration [OSHA], 2012), which mandates salons to follow policies aimed to protect workers, including requiring the presence of Material Safety Data Sheets (MSDS) to inform workers about specific chemicals and requiring that a list of hazardous chemicals to be present in the salon. However, it is unknown if these communication policies exist or are followed, or if MSDS are even available. If they are on hand, questions have been raised regarding whether information materials are in Vietnamese (Hu et al., 2012).

While nail salons are subject to OSHA regulations, they are not routinely inspected by OSHA, partly because of their small business status. The majority of U.S. nail salons have five or fewer workers. Only 12% of Vietnamese nail salons have more than 10 workers (NAILS Magazine, 2010). OSHA's enforcement for small employers in low-hazard industries is limited because establishments with 10 or fewer employees are exempt from programmed safety inspections (OSHA, 2012). Therefore, inspections have not been performed on a routine basis (Yeung, Genaidy, Karwowski, & Leung, 2002). Furthermore, occupational health-related complaints in nail salons have not been tracked by federal agencies. Complaints to OSHA have usually been filed by community residents or by customers, instead of by workers (Ly, 2003). Although OSHA has been aware of potential problems in the nail salon industry, regulations have not been enforced or updated (Gorman & O'Connor, 2007). When workers in California were

issued citations, they reported a lack of comprehension about their violations (Quach et al., 2011).

Ly (2003) found that the small business aspects of this industry were among the greatest factors limiting stronger compliance of safety and health measures by nail salon owners. She concluded that, above all else, nail salon businesses are not in the position to hire occupational health and safety staff and are not able to conduct surveillance or routinely monitor hazards (Ly, 2003). Although OSHA requires employers to inform their workers about potential hazards, many workers are not aware of their rights to a safe workplace or fear reporting any problems (Hu et al., 2012). There is a gap in the ability of this agency or other regulatory agencies to support this workforce.

Agencies and their advocacy for nail salon workers

Throughout the Unites States, nail salon advocacy organizations have taken the lead to promote the health and safety of nail salon workers. Several organizations and government agencies have suggested improved policies to protect the health of these workers. Many have developed and circulated educational and informational resources. Numerous groups have become crusaders for safer chemicals, administrative changes, and policy controls. Other agencies have moved forward with training interventions.

One of the largest advocacy groups, the California Healthy Nail Salon Collaborative, has advanced a national agenda to champion for the health of nail salon workers (Quach et al., 2010). They partnered with researchers, government agencies, community-based organizations and workers, and summarized their community needs assessment. This report included perspectives from 73 nail salon workers about their working conditions, and identified three general areas of nail salon workers' concerns (Quach et al., 2010) First, workers believed the workplace environment itself had affected their physical and ergonomic health, particularly with regard to reproductive

health. Second, workers reported stress that they perceive as being related to workplace experiences such as low wages, lack of health care access and health insurance, lack of job security, lack of Vietnamese language materials, and conflicts with government agencies regarding inspections and regulations. Third, workers wanted to learn more about how to protect themselves and how to improve health and safety at their workplace. (Quach et al., 2010) This last point, in particular, has guided the focus of this study to identify factors that will help workers improve their health and safety at work.

Agencies and their educational initiatives

Several other national agencies have developed initiatives to educate and inform nail salon workers. In 2007, The U.S. Environmental Protection Agency Office of Pollution Prevention and Toxics (EPA) initiated a "Nail Salon Project" to recommend policies and practices for nail salon workers (EPA, 2007). The EPA developed a training guide for nail salon workers, published in Vietnamese and in English, focused on reducing workers' risks of chemical exposures. Although EPA's purpose is not focused on protection of workers but rather on protecting the environment, it nevertheless initiated this leading approach, creating "A Guide to Protect Nail Salon Workers and their Working Environment." EPA subsequently delivered training in a few selected regions, primarily in Texas. This program focused on helping workers to understand MSDS (EPA, 2007). It also promoted best shop practices to minimize inhalation and skin exposures; promoted shop cleanliness; and supported practices for OSHA compliance. This guide targeted owners and managers as well as workers (EPA, 2007). Information related to prevention of musculoskeletal injuries was not included. Based on communication with national advocacy organizations, most workers are not familiar with this EPA document or MSDS. Although this guide is thorough, it is not known if workers in this industry are knowledgeable about its content or if such material is useful. These sources were used

in the design of the survey as they outline the recommended safety practices and allow us to determine if workers are aware of this specific content. (See Tables 2-2, 2-3, 2-4.)

The Oregon Collaborative for Healthy Nail Salons, in affiliation with Oregon OSHA, developed a "Best Practices Checklist" (Oregon Collaborative for Healthy Nail Salons, 2008). This checklist focused on policies and practices to guide owners and all workers to regularly monitor their compliance in order to reduce violations for which they could be cited upon inspection (Oregon Collaborative for Healthy Nail Salons, 2008). This checklist was also intended to promote workers' health and safety. These best practices were adopted for use in our survey to determine workers' use of protective equipment, salon ventilation, and ergonomic practices. (See Tables 2-2, 2-3, 2-4.)

Additionally, the beauty industry has several professional organizations which have taken the lead to support their workforce. Several web sites, conferences, and trade publications have provided health and safety information. The Professional Beauty Association is one of the largest industry groups and in addition to health advocacy they have developed guidelines specifically to address the prevention of musculoskeletal disorders, a guide for ergonomics for nail salon workers. A selected list of best ergonomic protective measures are in Table 2-4 which were used in the development of the survey.

Across the United States, health and safety information for nail salon workers is increasing in its availability. However, it is unknown if workers have access to this information or if it is effective at protecting their health. The overriding concern of all advocacy organizations remains that workers do not have accurate or accessible health and safety information, let alone in their language and that numerous barriers limit their ability to use recommended best practices.

In our survey these educational resources were used to develop a list of best practices: the EPA guide, the Oregon Collaborative for Healthy Nail Salon's list of best

practices and the Professional Beauty Association's guide for ergonomics (EPA, 2007; Oregon Collaborative for Healthy Nail Salons, 2008; Professional Beauty Association, 2010). While some work has been done to train workers, it is unknown what will ultimately be most effective to ensure health and safety protection for workers, and inquiry into the presence of these best practices is needed.

Table 2-2. Recommended best practices and sources of recommendations (worker practices)

Recommendations	EPA*	Oregon**	PBA***
Recommended equipment or supplies			
Gloves	✔	✔	
Face masks	✔	✔	
Goggles (for eyes)	✔	✔	
Tables with built-in ventilation (fans)	✔	✔	
Chairs that are adjustable for height (move up & down)		✔	✔
Chairs that swivel (side to side)			✔
Chairs with back support			✔
Hand tools that are comfortable to use		✔	✔
Wrist supports for workers			✔
Trash cans with self-closing lids	✔	✔	
An eye wash station			
Recommended safe practices			
Washing hands after handling chemicals	✔	✔	
Washing hands after each client	✔	✔	
No smoking in work areas	✔		
No eating or drinking in work areas	✔		
Keeping records of injuries or health problems	✔	✔	
Taking rest breaks		✔	✔
Precautions when transferring chemicals from large container to smaller ones	✔	✔	
Keeping containers closed when not in use	✔	✔	
Keeping room ventilation on during working hours	✔	✔	
Reporting injuries			

*United States Environmental Protection Agency, Office of Pollution Prevention and Toxics, March 2007. "Protecting the Health of Nail Salon Workers."

**Oregon Collaborative for Healthy Nail Salons, "Best Practices Checklist for Nail Salons - 7/1/2008" (http://www.oregonhealthynailsalons.org/images/Best_Practices_Checklist.pdf); and State of Oregon Health Licensing Agency, "Self-Inspection Check List" (http://egov.oregon.gov/OHLA/COS/docs/Publications/Self_Inspection_Checklist.pdf).

***Professional Beauty Association, National Cosmetology Association, and Nail Manufacturers Council, "Ergonomic Basics for Nail Salon Professionals" (http://probeauty.org/docs/nmc/Ergonomic_Basics_Rev_8_1_22_10.pdf).

Table 2-3. Recommended best practices and sources of recommendations (salon specific)

Recommendations	EPA*	Oregon**	PBA***
Safety Communication			
Written materials about chemicals in nail products (Material Safety Data Sheets) in English	✔	✔	
Written materials about chemicals in nail products (Material Safety Data Sheets) in Vietnamese	✔	✔	
Labels on containers that hold chemicals	✔	✔	
A list of products that contain hazardous substances	✔	✔	
Training on the effects of chemicals in nail products	✔	✔	
A workplace safety committee		✔	
Salon Policies			
General safety policies	✔	✔	
Washing hands after handling chemicals	✔	✔	
Washing hands after each client	✔	✔	
No smoking at work	✔		
No eating or drinking in work areas	✔		
Keeping records of injuries or health problems	✔	✔	
Taking rest breaks		✔	✔
Precautions when transferring chemicals from large container to smaller ones	✔	✔	
Keeping containers closed when not in use	✔	✔	
Keeping room ventilation (room fan) system on during working hours	✔	✔	
Reporting injuries			
A trash can with a self-closing lid at every work station	✔	✔	

*United States Environmental Protection Agency, Office of Pollution Prevention and Toxics, March 2007. "Protecting the Health of Nail Salon Workers."

**Oregon Collaborative for Healthy Nail Salons, "Best Practices Checklist for Nail Salons - 7/1/2008" (http://www.oregonhealthynailsalons.org/images/Best_Practices_Checklist.pdf); and State of Oregon Health Licensing Agency, "Self-Inspection Check List." (http://egov.oregon.gov/OHLA/COS/docs/Publications/Self_Inspection_Checklist.pdf).

***Professional Beauty Association, National Cosmetology Association, and Nail Manufacturers Council, "Ergonomic Basics for Nail Salon Professionals" (http://probeauty.org/docs/nmc/Ergonomic_Basics_Rev_8_1_22_10.pdf).

Table 2-4. Recommended best practices and sources of recommendations (ergonomics)

When I work in nail salon performing manicure or pedicure tasks ...	Oregon*	PBA**
I use hand tools and instruments in positions that are comfortable	✔	✔
I use hand tools and instruments that are shaped comfortably for my hand	✔	✔
I use hand tools and instruments without pressure when grasping	✔	✔
I use furniture that is adjustable to minimize strains on my body	✔	✔
I use chairs that are adjustable	✔	✔
I use tables that are adjustable	✔	✔
I hold clients' hands or feet with relaxed minimal strain on my body	✔	✔
I use furniture that provides back support		✔
I sit straight with my back fully against the back support of the chair		✔
I use chairs that are comfortable when I perform a pedicure	✔	✔
I use chairs that are comfortable when I perform a manicure	✔	✔
I do my work tasks without repeated lifting of my arms above my shoulders	✔	✔
I do my work tasks without holding my elbows out and away from my body		✔
My legs and feet have enough clearing space so that I can get close enough to the table	(NIOSH)	
I keep my hands or wrists in a neutral position when I am working	✔	✔
My hands are wrists are straight and not bent while performing pedicures and manicures		✔
I work without bending my neck forward	✔	✔
I work without bending my back forward	✔	✔
When I sit, my feet are flat on floor with thighs parallel to floor		✔
When I sit, I place my feet on a box		✔
I position clients' hands and feet to prevent straining on my body		✔
My arms are not leaning against the edge of the table		✔
My tasks and tools are in front of me		✔
Clients' feet are placed on stool, not on my lap		
I do not have to reach more than 12 inches for my tools to perform tasks		✔

*Oregon Collaborative for Healthy Nail Salons, "Best Practices Checklist for Nail Salons - 7/1/2008" (http://www.oregonhealthynailsalons.org/images/Best_Practices_Checklist.pdf); and State of Oregon Health Licensing Agency, "Self-Inspection Check List" (http://egov.oregon.gov/OHLA/COS/docs/Publications/Self_Inspection_Checklist.pdf).

**Professional Beauty Association, National Cosmetology Association, and Nail Manufacturers Council, "Ergonomic Basics for Nail Salon Professionals" (http://probeauty.org/docs/nmc/Ergonomic_Basics_Rev_8_1_22_10.pdf).

Studies related to the nail salon industry and workers' health

The primary studies related to the nail salon industry can be found in Table 2-5. More than 15 years ago, a few selected peer-reviewed studies and one unpublished report initiated an awareness of the occupational health risks for nail salon workers. These studies described rudimentary exposure assessments conducted in nail salons, summarized case studies, and provided a descriptive analysis of the industry (Hiipakka & Samimi, 1987; LoSasso, Rapport, & Axelrod, 2001; Ly, 2003; Maxfield & Howe, 1997; Spencer, Estill, McCammon, Mickelsen, & Johnston, 1997). In these early studies, measurements of chemicals were consistently found to be below standards (PELs) for occupational exposures (Hiipakka & Samimi, 1987; LoSasso et al., 2001; Maxfield & Howe, 1997; Spencer et al., 1997).

Within the past five years, due to the rapidly growing nail salon worker population as well the increased concerns about this vulnerable immigrant workforce, additional studies have been conducted. Researchers in Massachusetts, California, England, and at NIOSH have recently explored this topic in more depth, primarily identifying health concerns and summarizing chemical exposures. Two studies focused on the identification of risks and summarized health symptoms reported by workers (Roelofs et al., 2008; Harris-Roberts et al., 2011). In preliminary findings, respiratory complaints and musculoskeletal discomfort were found to be the issues of greatest significance (Roelofs et al., 2008; Harris-Roberts et al., 2011). Roelofs et al. (2008) used a symptoms checklist to quantify these results. Neither of these studies were able to link specific chemicals as causal factors to respiratory symptoms. For musculoskeletal pain, there was an association with years of employment in the industry (Roelofs et al., 2008). Reutman et al. (2009) examined lung function of 62 nail technicians. There was a positive association with pulmonary function tests and inflammation levels, as measured by exhaled nitrous oxide (ENO), which was related to job latency and hours of contact

with methacrylates (Reutman et al., 2009). In the United Kingdom, Harris-Roberts et al. (2011) conducted a survey with 71 nail salon workers and found musculoskeletal complaints as their primary concern (Harris-Roberts et al., 2011). This issue of musculoskeletal disorders has therefore guided the focus of this study.

Quach et al. (2011) used a Community Based Participatory Research (CBPR) approach with 20 California based Vietnamese nail salons. In their study, they collected work shift air concentrations samples of toluene, ethyl acetate, and isopropyl acetate (Quach et al., 2011). This was the first study in recent years to determine air contaminants in the work zone, finding 80 nail salon workers with higher concentrations for each chemical using personal air monitors compared to stationary monitors (Quach et al., 2011). They also found concentrations of methyl methacrylate, the same chemical that has been banned from use, in levels three times greater than what is recommended by the EPA (Quach et al., 2011). Levels of toluene were also higher than the California EPA's recommended ambient air levels of 0.08 parts per million (Quach et al., 2011). Additionally one-third of the workers experienced acute health symptoms after they began working in the nail salon industry, with the predominant problems of irritation of skin, eyes, nose, and throat (Quach et al., 2011).

The overriding concern expressed in all studies to date remains the same, that several volatile and toxic chemical compounds are used, often in poorly ventilated nail salons, and continue to threaten the health of workers who are largely immigrant and non-English speaking. Without control measures and without baseline knowledge of workers' health protection practices adequately addressing these risks remains a complex challenge.

Table 2-5. Epidemiological studies focused on nail salons, nail salon workers, and/or nail technicians

Author/ Year/Title/ Publication Journal	Country	Study Population	Study Design	Exposure Assessment	Outcomes	Comparison Adjusted OR, RR (95% CI) Conclusions
Hiipakka, D, and Samimi, B. (1987) *Exposure of acrylic fingernail sculptors to organic vapors and methacrylate dusts.* American Industrial Hygiene Association Journal. March 1987, 48(3): 230-237.	U.S.	16-17 workers in sample 20 cases and 20 controls	Personal air samples measurements of exposure to toluene, ethyl methacrylate acrylic, isopropyl alcohol and butyl acetate solvents, vapors, and polymethacrylate nuisance dust in nail sculptors, using gas chromatography. Also used a self-administered questionnaire designed to elicit symptoms caused by exposure to air contaminants generated during the sculptured nail process. Measured the frequency of some adverse health effects related to repeated exposure to	MEASUREMENT OF EXPOSURE: Air samples of nail sculptors for toluene, ethyl methacrylate acrylic, isopropyl alcohol and butyl acetate solvents, vapors, and polymethacrylate nuisance dust in nail sculptors. Not possible to measure full shift samples.	All TWA well below the OSHA PEL and ACGIH TLV (natural dilution may be part of the reason). 20 cases and 20 controls: Statistically significant: nail sculptor throat irritation and lower extremity numbness and tingling. Complaints of airborne polymethacrylate dust in nasal cavity and throat causing sneezing, eye, nose, and throat irritation; rash on hands and arms.	Mentioned airborne PM most bothersome. Some complaints about neck and leg aches and backaches.

			measured air contaminants using a 1:1 matched case control methodology.			
John, EM, Savitz, DA, & Shy, CM. (1994) *Spontaneous abortions among cosmetologists.* Epidemiology. March 1994. 5(2): 147-155.	U.S. (North Carolina)	Workers in cosmetology, hairdresser, stylists, beauticians 96 cosmetologists with spontaneous abortion and 547 who had a live birth, who had worked full time during 1st trimester	1228 mail questionnaire respondents from North Carolina cosmetology license registry.	MEASUREMENT OF HEALTH EFFECTS: Compared spontaneous abortion with live birth regarding occupational exposures, including working in salons where nail sculpting and manicuring was performed by other employees.	Working in a salon where nail sculpturing was performed was independently associated with an increased risk of spontaneous abortion.	Adjusted OR ranging from 1.4-2.0 with associations between spontaneous abortion and number of hours worked per day, number of chemical services performed each week, use of formaldehyde-based disinfectants, and work in salons where nail sculpturing was performed by other employees.
Freeman, S, Lee, MS, Gudmundsen, K. (1995) *Adverse contact reactions to sculptured acrylic nails: 4 case reports and a literature review.*	Australia	4 cases with differing presentations of contact allergy to acrylates	Descriptive case reports.	Descriptive case reports of: Reactions including nail fold, fingertip and hand dermatitis.	Discussion of acrylic nails and a literature review published reactions to acrylates from acrylic nails.	

Contact Dermatitis, Dec. 1995, 33(6): 381-385.						
Spencer, AB, Estill, CF, McCammon, JB, Mickelsen, RL, & Johnston, OE. (1997) *Control of ethylmethacrylate exposures during the application of artificial fingernails.* American Industrial Hygiene Association Journal. March, 1997. 58(3): 214-218.	U.S.	Nail salon technicians; 6 cases of occupational asthma occurred in 1990 cosmetologists working with artificial fingernails	Study done when Colorado Dept of Health requested NIOSH to evaluate and control nail salon technician exposure after 6 cases of occupational asthma occurred in 1990 in cosmetologists working with artificial fingernails. Detailed description of nail application process. Air samples measurements of ethyl methacrylate with downdraft ventilation tables before and after modification.	MEASUREMENT OF EXPOSURE: Quantified nail salon technician exposure to ethyl and methyl methacrylate. Measured by air sampling.	Concentrations of ethyl methacrylate exposure for personal breathing zone samples using unventilated conventional table: 8.7 ppm; and using modified table: 0.6 ppm.	Statistically significant, (p=0.0045) as a function of table configuration, a 10-fold difference. MMA was not detectable. Conclusion: vented tables are better than non-vented.
Maxfield, RF, & Howe, HL. (1997) *Illinois Department of Public Health*	U.S. (Illinois)	5 nail salons 10 nail salon technicians	Measured air samples to determine silica exposure during a full day of work for nail	MEASUREMENT OF EXPOSURE: 1) Exposure rates for silica. 2) Do downdraft	None exceeded the NIOSH REL or OSHA PEL. Down draft tables	Recommended that a study should address the lower back stress that

(unpublished report)		Measured air monitoring samples	salon technicians.	tables reduce exposure rates for silica? 3) Does filing technique affect silica exposure?	missing charcoal filters and hole covered with towel. Not used properly. Filing technique differed, unable to measure.	position may cause.
Linden, CH, Scudder, Dowsett, DW, Liebelt, EL, & Woolf, AD. (1998) *Corrosive injury from methacrylic acid in artificial nail primers: another hazard fingernail products.* Pediatrics. October, 1998. 102(4 Pt1): 979-984.	U.S.	3 case reports	3 case reports of corrosive injuries from methacrylics in artificial nail primers. Toxicological discussion of methacrylates.	MEASUREMENT OF HEALTH EFFECTS: Case reports of corrosion and death from ingestion of methacrylates.	Description of corrosive injuries to 3 individuals, a 21-month old baby (ingestion), a 2 ½ year old boy (dermal), and a 27 year old woman (ingestion).	Conclusion that methacrylic acid was responsible for corrosive injuries.
Aydin, O, Atilla, G, Dogan, A, Aydin, MV, Canacankatan, N, & Kanik, A. (2002) *The effects of methyl methacrylate on nasal cavity, lung, and antioxidant system (an experimental inhalation study).*	Turkey	33 rats randomly assigned to 3 groups	3 groups exposed: A=exposed with poor ventilation B=exposed with normal ventilation C=control-normal air.	MEASUREMENT OF HEALTH EFFECTS: 1000 ppm of MMA: 6h/day, 5/days/week for 4 weeks.	Significant differences: degeneration of olfactory epithelium, inflammation of olfactory epithelium, presence of alveolar macrophages, hemorrhage, emphysema, peribronchial lymphoid	

Toxicological Pathology. May-June, 2002, 30(3): 350-356.					hyperplasia.	
LoSasso, GL, Rappport, LJ, & Axelrod, BN. (2001) *Neurological Symptoms Associated with low-level exposure to solvents and (meth)acrylates among nail technicians.* Neuropsychiatry, Neuropsychology, and Behavioral Neurology. July-Sept., 2001, 14(3): 183-189.	U.S. (Mich.)	150 women nail technicians, and 148 controls	Used neuropsychological impairment scale, self-reported measure of neuropsychological and psychological symptoms.	MEASUREMENT OF HEALTH EFFECTS: Neurological complaints, cognitive impairment.	Small, but significant differences in overall level of symptoms and in neurological complaints, cognitive efficiency, memory, verbal learning, and academic skills.	$p < 0.001$.
LoSasso, GL, Rappport, LJ, Axelrod, BN, & Whitman, RD. (2002) *Neurocognitive Sequelae of Exposure to Organic Solvents and (Meth)Acrylates among Nail Technicians.* Neuropsychiatry, Neuropsychology, and Behavioral Neurology. March 15, 2002, (1): 44-55.	U.S. (Mich.)	33 women nail technicians, and 35 controls		MEASUREMENT OF HEALTH EFFECTS: Evaluated neuropsychiatric performance using 11 neuropsychological tests, 1 chromatic discrimination test and 1 olfactory functioning test.	Nail technicians performed poorly on tests of attention and processing speed, ($p=0.015$) and had decreased olfaction ($p<0.001$). No significant group differences in learning and memory, visuospatial ability, or fine motor coordination or depression or	Multivariate analysis. MANOVA. Statistically significant levels compared to controls. Level of occupational exposure by time worked in industry, adequacy of ventilation and

					anxiety.	workplace size predicted 29% of variance of performance on attentional tasks (p=0.04).
Solomon, FM, Linnan, LA, Wasilewski, Y Lee, AM, Katz, ML, & Yang, J (2004) *Observational Studies in Ten Beauty Salons: Results informing development of the North Carolina BEAUTY and Health Project.* Health Education & Behavior. Dec. 3, 2004, (6): 790-807.	U.S. (North Carolina)	10 Beauty Salons	Observational study to gain insight into conversations between cosmetologists and customers.	DESCRIPTIVE OBSERVATIONAL: Features of salons may be mobilized to improve health, due to nature of conversations.	Future may train cosmetologists to deliver health messages.	Suggestions that beauty salons and cosmetologists could be trained to deliver health education.
Gjolstad, M, Thorud, S, & Molander, P. (2006) *Occupational exposure to airborne solvents during nail sculpturing.* Journal of Environmental Monitoring. 8, 537-542.	Norway	22 salons 32 nail technicians, all women	Randomly chosen from yellow pages in phone book. Describes occupational exposure to acrylates and other solvents during nail sculpturing. Compared exposure	MEASUREMENT OF EXPOSURE LEVELS: 92 measurements performed, 70 solvent and 22 of ethyl 2-cyanoacrylate. Solvents present: acetone, ethyl acrylate, toluene, n-butyl acetate.	Overall solvent exposure was low. All measurements calculated as the additive effect, below 20% of the OEL. No statistical difference between sculpturing methods (p= 0.05).	No difference in exposure levels in salons with and without ventilated tables, with identical geometric means (0.05 ppm).

			measurements during 4 different sculpturing methods. Each salon visited once.		8 nail technicians had ventilated working tables or suction equipment installed close to tables.	
Kwapniewski, R, Kozaczka, S, Hauser, R, Silva, M, Calafat, A, Duty, S. (2008) *Occupational exposure to dibutyl phthalate among manicurists.* Journal of Environmental Medicine. (JOEM) 50 (6), June 2008, p. 705-711	U.S. (Boston, Mass.)	n=40 recruited (47% white, 42% Asian, 11% other)	First study of phthalate exposure among manicurists. DBP is a reproductive and developmental toxicant in rats. Used in nail polish to hold color and prevent chipping.	Measured MBP, the urinary metabolite of DBP. Pre and post-shift urine samples collected from 40 manicurists. Used single urine samples.	Manicurists were occupationally exposed to DBP. Statistically significant cross-shift increase of MBP in urine. Glove use associated with a significant cross-shift reduction in urinary MBP concentrations.	Challenges with recruitment. Glove use may minimize exposure.
Quach, T, Nguyen, KD, Doan-Billings, PA, Okahara, L, Fan, C, Reynolds, P (2008) *A preliminary survey of Vietnamese nail salon workers in Alameda County, California.* Journal of Community Health, 33(5): 336-43	U.S. (Calif.)	74 salons 201 Vietnamese nail salon workers Northern California Cancer Center	Face to face interviews with nail salon workers in 74 salons. Survey development. A 10 minute Vietnamese language questionnaire.	MEASUREMENT: Baseline characteristics about workers, work related health concerns. Observations about nail salons.	Majority reported concerns about their health from exposure to workplace chemicals. Sizeable proportion experienced some health problems after they began working in the industry.	
Roelofs, C, Azaroff, LS, Holcroft, C, Nguyen, H,	U.S. (Mass.)	71 nail technicians	A community-academic	MEASUREMENT: Health effects	Musculoskeletal disorders, skin	Chemical and musculoskeletal

& Doan, T. (2008) *Results from a community-based occupational health survey of Vietnamese-American nail salon workers.* Journal of Immigrant Health. August. 10, 2008, (4): 353-361.		(69 from other workers)	collaborative partnership. Interviewer assisted survey. Worked with VIET-Aid. Used 10 bilingual interviewers. All conducted in Vietnamese.	Respiratory – European Community Respiratory Health Survey. (General health – SF-36 Skin – Nordic Occupational Skin Questionnaire) Work environment characteristics: dust, air quality, etc. Exposure response relationships.	problems, respiratory irritation and headaches reported as work related, and poor air quality, dusts, and offensive odors. Respiratory symptom significantly associated with reporting of exposure factors such as poorer air quality. Absence of skin disorders associated with glove use. MSDs associated with years of work.	hazards should be reduced through product and equipment redesign.
Reutman, SR, Rohs, AM, Clark, JC, Johnson, BC, Sammons, DL, Toennis, CA, Robertson, SA, MacKenzie, BA, & Lockey, JE. (2009) *A pilot respiratory health assessment of nail technicians: symptoms, lung function, and airway inflammation.*	U.S. (Ohio)	Nail technicians	Examined lung function of 62 nail technicians. As a marker of airway inflammation in subset of nail technicians and control participants. Exclusion of nail technicians who were not fluent in English.	MEASUREMENT: Respiratory and exposure history. Lung function (PFT) and airway inflammation (ENO analysis).	Bivariate analysis of technicians demonstrated that job latency was inversely correlated with lung functions. – positive respiratory tests.	Warrants additional future investigation. NOTE: mailed 6,997 invitation letters. Important information about recruitment and participation.

American Journal of Industrial Medicine. November, 2009, 52(11): 868-875.						
Quach, T, Doan-Billing, P, Layefsky, M, Nelson, D, Nguyen, K, Okahara, L, Tran, A, Von Behren, J, Reynolds, P. (2010) *Cancer incidence in female cosmetologists and manicurists in California, 1988-2005.* American Journal of Epidemiology, August 6, 2010, 172(6): 691-699.	U.S. (Calif.)	Cancer cases in a cohort of 325,228 licensees, cosmetologists (65.6%) and manicurists (34.4%)	Matching California's statewide cosmetology licensee and cancer surveillance files to identify newly diagnosed invasive cancers among female workforce (1988-2005).	Compared cancer rates with female general population in CA. Used Poisson regression models used to compare differences in cancer incidence general female population and workforce members.	Identified 9,044 cancer cases in the cohort of licensees. Rate ratios for all sites combined suggested lower incidence among both cosmetologists and manicurist. Findings did not show excess cancer. Proportional incidence ratios were modestly elevated for thyroid cancer for all licensees and for lunch cancer among manicurists. Limitations : Unable to determine other risk factors for cancer. Also no data on reproductive history.	Previous studies of cancer rates have focused on hair dressers. Young age of cohort and industry composition changes suggested need for further studies and follow up studies.
Harris-Roberts, J, Bowen, J, Sumner, J, Stocks-Greaves, M, Bradshaw, L, Fishwick, D, & Barber, CM. (2011)	U.K. (London)	39 out of 588 nail salons participated, (7%); n=71 nail	Interviewer administered questionnaire; self-reported. Data compared with	Majority of nail technicians had received training that had included aspects of health	Higher prevalence of msd and respiratory problems compared to office based controls.	Need an ergonomic and exposure assessment of work practices to

Work-related symptoms in nail salon technicians. Occupational Medicine (London). August, 2011, 61(5): 335-340.		technicians (Centre for Workplace Health, Health and Safety Laboratory, Harpur Hill, Buxton, Derbyshire)	64 control subjects.	and safety. Most were aware of the Control of Substances Hazardous to Health regulations. Compared to the control group, the nail technicians had increased levels of work related shoulder, wrist/hand, and lower back problems.		identify working practices associated with these symptoms. And to develop appropriate practical work-based training.
Quach, T, Gunier, R, Tran, A, Von BEhren, J, Doan-Billings, PA, Nguyen, KD, Okahara, L, Lui, B, Nguyen, M, Huynh, J, & Reynolds, P. (2011) *Characterizing workplace exposures in Vietnamese women working in California nail salons.* American Journal of Public Health. May 9, 2011.	U.S. (Calif.)	80 nail salon workers in 20 nail salons	Measured work-shift concentrations of toluene, ethyl acetate, and isopropyl acetate. And collected area samples. CBPR approach engaged community members and successful recruitment. Convenience sampling. Response rate for salons was 50%.	MEASUREMENT OF LEVELS OF: Toluene, ethyl acetate, isopropyl acetate. Measured among 80 workers in 20 salons. Each worker had 2-3 measurements; total of 167 measurements. Also collected area samples from 3 nail salons.	Levels were higher than recommended guidelines. Personal measurements were high. Area measurements were lower in comparison. Levels of MMS detected. Predictors of solvent levels – different forms of ventilation, and location of salon in enclosed building. One-third reported acute health symptoms since	Important to identify appropriate recruitment and monitoring strategies. Recommend policy changes to update occupational exposure limits that take into account chronic health conditions. Use CBPR approach led to successful recruitment of salon workers.

					working in nail salon industry. Symptoms for ¼ were irritations of eyes, nose, throat, and skin.	Need more attention to preventive public health strategies for this workforce.
Roelofs, C. & Do, T. Exposure Assessment in Nail Salons: An Indoor Air Approach. International Scholarly Research Network. ISRN Public Health. Volume 2012, Article ID 962014, 7 pages.	U.S. (Mass.)	22 nail salons	Short audit as indoor air approach. Non random samples of salons.	MEASUREMENT: Carbon dioxide.	27% had Carbon dioxide measurements exceeding 1000ppm, level determined by NIOSH and EPA to indicate inadequate ventilation. 73%had spot carbon dioxide measurements >700 ppm.	First study to evaluate indoor air quality in nail salons.

Musculoskeletal disorders in nail salon workers

Another important health concern for nail salon workers has been raised. Musculoskeletal disorders (MSDs) represent a serious public health problem often due to the potential threats of disability, absenteeism, and economic impact (Cheng & Chan, 2009). No research to date has focused on evaluating ergonomic risks with Vietnamese nail salon workers, despite studies reporting musculoskeletal issues as their major concern (Harris-Roberts et al., 2011; Roelofs et al., 2008). Possible threats include awkward postures, pressure, poor work station design, equipment, chairs, improper use of tools, repetitive motion, force, and any combination of these factors over extended time periods. Given the seriousness of MSDs, determining the prevalence of ergonomic practices by nail salon workers would add to the baseline assessment of this population and facilitate measures which could address this significant concern.

Preliminary needs assessment with the local Vietnamese community

Throughout the research study and design, we have worked collaboratively with the Vietnamese community. In our preliminary work with Vietnamese nail salon workers in Maryland, we were informed by leadership of a community-based organization that musculoskeletal pain was their predominant complaint—specifically neck, hands, and back pain. Workers were unable to describe the cause of their discomfort, despite our observations of chairs and tables that did not accommodate all nail salon workers' sizes and body types (Agnew & Edwards, 2006). In 2010, with a focus on musculoskeletal concerns, we conducted a training program with 26 nail salon workers in Silver Spring, Maryland, to provide their requested education related to ergonomic risk factors. This training was well received. Initially, we had been encouraged to limit discussions about chemical issues, in order to avoid contributing to workers' fears and mistrust; however, after we provided this training program and built up a certain amount of trust, the nail

salon workers and owners began to request additional information about health protection—specifically regarding chemicals and how to protect themselves from them. They expressed concerns about their risks, revealed limited knowledge about recommended health and safety practices, and described barriers to following those health and safety practices. This observation led us to undertake the current study.

Community based participatory research design

In working with the Vietnamese American nail salon population, we have taken a community-based participatory research (CBPR) approach— a strategy that is typically used to conduct research in partnership with communities. In CBPR, community members, academic researchers and practitioners share equally in all phases of the research process (Israel et al., 2010).

CBPR is often used with marginalized, disadvantaged or underserved communities, such as Vietnamese Americans, in order to gain access to the community's expertise and to build bridges between researchers and community members. For example, Quandt, Chen, Grzywacz, Vallejos, Galvan, & Arcury (2010) conducted CBPR with Latino farmworkers who, because of language barriers and economic pressures, did not expect to have a safe workplace. The research team included migrant farmworkers who helped determine effective strategies to reduce pesticide exposure among hard-to-reach workers (Quandt, Arcury, Austin, & Cabrera, 2001). In another example, CBPR was used to increase cervical cancer screening rates among Vietnamese American women (Nguyen et al., 2006). It has also been used to work with linguistically isolated immigrants on issues of disaster preparedness, including Vietnamese communities in Houston, Texas (Nepal, Banerjee, Slentz, Perry, & Scott, 2010).

CBPR is potentially useful when exploring health disparities (Oakes & Kaufman, 2006). The National Healthcare Disparities Report summarized that Asian Americans had significantly worse healthcare access compared to whites (Agency for Healthcare Research and Quality [AHRQ], 2007). Ly (2003) has also pointed out that Vietnamese immigrants are among those who are particularly distrustful of researchers and academic institutions—due, in part, to their immigration history. This concern among many was considered in planning this study, in the research design, implementation, and analysis, including Vietnamese nail salon representatives throughout (Quach et al., 2011; Roelofs et al., 2008).

Over the last five years, we have worked in collaboration with community members, leaders, and nail salon workers of the Vietnamese community. We have developed a strong partnership and received their support in this work. The CBPR approach has enabled us to identify best methods for accessing nail salon workers and to qualitatively describe the community's concerns about health risks for nail salon workers. The inclusion of key community members has been imperative. Furthermore, any interventions that evolve from our findings will necessitate continued involvement of community networks and organizations to understand and work within cultural dimensions (Ly, 2003).

Summary

Although several government agencies, researchers, and advocacy organizations have promoted policies, developed guides, and provided educational programs to protect the health of nail salon workers, the challenge of reaching this worker population continues. Although best practices checklists are available for use, it is questionable whether workers are aware of this information or whether they have access to it. Although these types of materials are available in Vietnamese, many workers report that they are

unaware of where to find health and safety information, let alone how to best protect themselves from risks or to promote their health.

In our study, therefore, we used the recommended best practices to guide our investigation in order to determine whether nail salon workers are following these practices, and to identify what would promote the following of these guidelines (see Tables 2-2, 2-3, 2-4). While it is important to determine the extent to which guidelines are followed by nail salons and workers, determining the predictors of adherence could lead to improved health and safety among this group. In this study, we explored possible predictors—such as knowledge, training, attitudes, beliefs, self-efficacy, perceived risks, and environmental factors—that could lead to worker health promotion behaviors.

Working in partnership with the Vietnamese community has been essential. We have continuously followed the principles of community-based participatory research. The community involvement has facilitated our ability to explore the cultural values of this community and to identify important strategies for accessing and advocating for this Vietnamese workforce. This type of study is necessary because of the real and ongoing threats to this working population, despite the existence of recommended practices.

CHAPTER 3: RESEARCH DESIGN AND METHODS

Overview

This cross sectional study investigated the health and safety practices of a population of Vietnamese American nail salon workers. Participants were nail salon technicians and managers who were surveyed using a multi-method approach. The conceptual framework was based on the integrative model of behavioral prediction (IMBP), which is a synthesis of the theory of reasoned action (TRA), the theory of planned behavior (TPB), the social cognitive theory, and the health belief model (Fishbein, 2008). (See Figure 3-1) This study was approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board, Number 00003403.

A community based participatory research approach was used throughout this study, which was informed by earlier qualitative work with similar populations. We used a multimode survey approach based on guidance from our community partners, who cite this as the best method for contacting this difficult to reach immigrant working population. Our Vietnamese partners reviewed the survey and provided direction regarding the design, questions, and recruiting strategies to access nail salon workers.

Participants

Participants in this study were Vietnamese Americans currently working in nail salons. All participants were volunteers who met the following inclusion criteria:

1) Self identification as Vietnamese American;
2) At least 18 years of age or older;
3) Currently employed as a nail salon worker or owner of a nail salon;
4) Able to understand verbal or written Vietnamese or English.

Screening to determine eligibility was done by the initial four questions on the survey (See Appendix A.3.1).

After completing the survey, participants could elect to enter an optional drawing for an electronic device, an iPad. To protect the anonymity of participants' data, a separate phone line was used for participants who wanted to enter their names into the contest. Messages with contact information were checked and recorded by a research assistant, and were not linked to respondents' surveys.

Recruitment

To increase response rates and representativeness, we used a random sampling approach, and convenience sampling and snow ball sampling strategies. When sampling hidden populations, a variety of recruitment strategies are generally used, including snow ball sampling, or chain referrals, and a newer strategy called respondent driven sampling (Ompad et al., 2008). In previous studies with Vietnamese nail salon workers, convenience sampling was necessary. Quach et al. (2008) had stated that this largely immigrant population may be less responsive to research; and, therefore, the design of the survey needed to be varied to best access this population.

Study participants were recruited by three means: 1) from a publicly accessible list of Vietnamese nail salon workers who were licensed by the Maryland Board of Cosmetology; 2) through directly calling on nail salon workers from referrals; or 3) nail salon workers who self-referred after receiving information that had been distributed in community locations. As described below, participants chose to complete either a telephone survey, a self-administered questionnaire survey, or an interviewer-administered survey:

1) A packet of information and study materials, both in English and in Vietnamese, was sent to a random sample of Vietnamese nail salon workers, using the publicly available listing of currently licensed nail salon workers published by the Maryland Board of Cosmetology (Maryland Department of Labor, Licensing and Regulation, Division of Occupational and Professional Licensing) (2011). From this list, we selected individuals with the 12 most common Vietnamese surnames (n=5,257), from which we initially randomly selected every fourth name (n=1,300). Only names, addresses, and zip codes were available on this site. From this list of licensed workers, we randomly selected 103 persons and to mail the recruitment packet and survey. The packet also included a letter that offered the option to complete a self-administered written survey or a telephone survey along with a support letter from our community partnering agency, the Maryland Vietnamese Mutual Association (MVMA).

2) The second approach used both convenience sampling and network or snowball sampling strategies. Nail salon workers known by our partner community organization, MVMA, were telephoned to request their willingness to complete a telephone or mailed survey. A research assistant contacted these individuals who, if interested, completed a telephone survey. (See Appendix A.3-6 for the script used when calling nail salon workers.) When the research assistant received the names and contact information of other potential participants from nail salon workers, she contacted them following the same network sampling process as above. (See Appendix A.3-7)

3) Third, we distributed informational flyers in several community locations. Flyers advertised a phone number for participants to call if interested in completing the telephone survey. When a research assistant encountered a nail salon worker, in a

community location, who expressed an interest in completing a written survey, she gave the worker the phone number, or a written survey. Community locations included community centers, churches, nail salons, and local eateries frequented by the Vietnamese community.

Data Collection Methods

The following three means of survey completion were made available to all interested participants:

1) ***Self-administered survey:*** Individuals who voiced an interest in completing a self-administered paper survey, as well as those contacted initially by mail, were mailed a packet that included: an invitation letter from the MVMA; the paper survey; two copies of the study description and consent form; as well as instructions for completing the survey and returning it along with one of the copies of the consent form with their signature or a mark indicating that they have read the consent. The packet included a stamped, addressed envelope. Materials were provided in English and in Vietnamese.

   If a participant was interested in enrolling in a drawing for an iPad, written instructions directed them to call a separate phone number and leave their contact information. No names or contact information were linked to the surveys.

2) ***Telephone survey***: For those who were initially contacted by telephone or who expressed an interest in completing the survey by phone, the research assistant first confirmed the worker's interest and eligibility to take part in the study. She then read a description of the study and the consent information,

and offered the option to complete the survey in either Vietnamese or in English.

The research assistant concluded the interview by asking the participant whether s/he knew of any other nail salon workers who might be interested in completing a telephone survey, and, if so, whether they would be willing to provide contact information for those individuals. If the respondent did not wish to identify any other potential participants, s/he was thanked, given the number to register for the drawing, and asked to share our contact information with anyone else who might be interested.

3) ***Interviewer-assisted survey***: Key informants in the Vietnamese community had suggested that many nail salon workers preferred to be interviewed in person, sometimes due to literacy issues. If a nail salon worker expressed an interest in this approach, a research assistant conducted an in-person interviewer-assisted survey in English or in Vietnamese.

Survey completion in all forms was no longer than 30 minutes, and generally required about 20 minutes. Participants were able to complete the survey at a time most convenient to them. Copies of scripts and written materials for each form of survey administration and mode of contact are included in the appendices.

From the Vietnamese networks, we were able to recruit five Vietnamese women who assisted in recruitment and survey distribution. All of these women were either in college graduates, had masters degrees, or had nearly completed their baccalaureate education in a health-related field. Each of them were, or had family members who were, closely affiliated with the nail salon industry and, because of this, willingly volunteered to recruit participants.

Survey Design

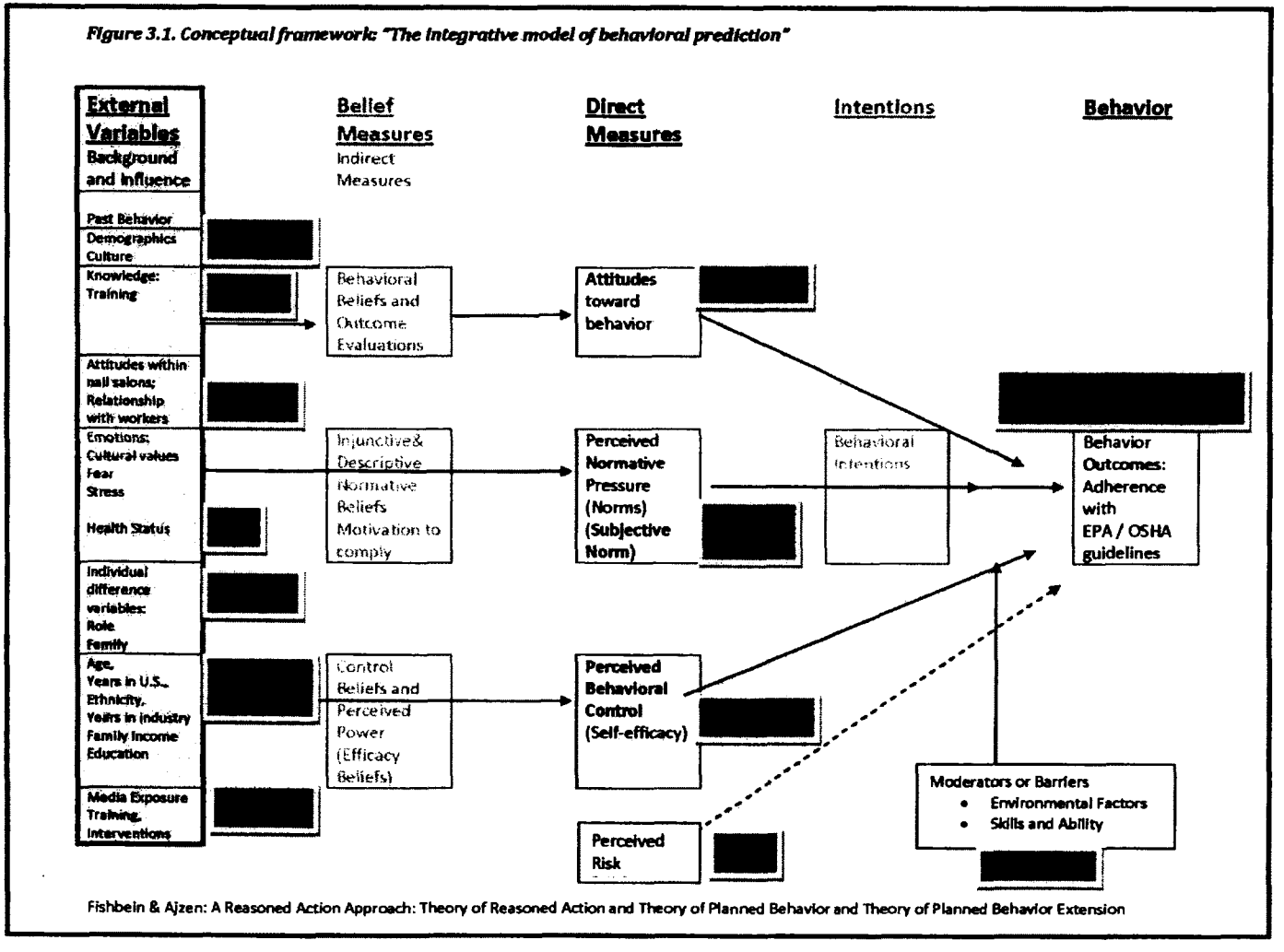
To ensure that questions were appropriate for this population, a research assistant, who was Vietnamese American and bilingual, reviewed all materials to assure that the recruitment process emphasized voluntary participation. Materials were reviewed to ensure that they were clear and appropriate. Two language options for the survey were available, in English and in Vietnamese. All forms, consent forms, and recruiting materials were translated into Vietnamese.

The English version of the survey was translated into Vietnamese by two translators, then back-translated to English by a third individual. Minor revisions were made to reconcile differences. This resultant version was next sent to an official translator, along with the English version for verification of the translation.

An important consideration has been the lack of standardized instruments for a Vietnamese nail salon worker population. Although the IMBP incorporates intentions that drive behavior change, we instead focused on the current health and safety practices of nail salon workers, and the predictors of their use or adoption, acknowledging that intention is related to this behavior. In testing the model, Fishbein considered it to be relevant to all cultures (Fishbein, 2008; Fishbein, 2000). We, therefore, felt it would be relevant to this Vietnamese community.

For the purposes of this study, we used this model as a framework in order to gain an understanding of the behavioral factors that may influence nail salon workers' actions to protect their health; identifying those drivers are necessary before interventions are developed or policy changes are recommended. (See Figure 3-1)

Figure 3-1. Conceptual framework: "The integrative model of behavioral prediction"



The IMBP conceptual framework as shown in Figure 3.1, includes external factors or influences, distal determinants or indirect measures, proximal determinants or direct measures, and intentions. Our modified approach to the use of this model included external and direct measures as determinants of the health protective behaviors by nail salon workers. See Appendix Figure 3.1 for a more detailed description of the conceptual model with respective sections of the survey indicated.

Examples of questions from the survey appear below in brackets: [ ].

Outcomes

The behavioral outcome of interest was nail salon workers' adherence to the health and safety practices that have been recommended by federal agencies or industry advocacy organizations, including the Environmental Protection Agency (EPA) and the Oregon Collaborative for Healthy Nail Salons and the Professional Beauty Association (EPA, 2007; Oregon Collaborative for Healthy Nail Salons, 2008; Professional Beauty Association, 2010).

These behaviors were related to four general areas: 1) use of personal protective equipment (PPE); 2) following recommend safety policies and practices; 3) use of equipment that protects other workers; and 4) use of equipment or tools protective against musculoskeletal disorders.

Specific items focused on health and safety practices related to chemical exposures, ergonomic risk factors, and work practices.

Independent Variables

External variables

Antecedents to the indirect and direct measures are external background variables. Although these variables shape beliefs, they are considered to be a part of the

behavioral predictor pathway, but not causal (Yzer, in Ho, 2012, p. 25). In this study, external variables included age, educational background, income, year of immigration, health insurance status, and exposure to training (survey sections B, L).

Health status

In designing the survey, we reviewed the health symptoms reported in studies of nail salon workers (Harris-Roberts et al., 2011 Quach et al., 2008; Quach et al., 2011; Roelofs et al., 2008) and inquired about their presence. We also asked whether medical care was obtained for the specific health problem and, if so, whether the health problem was thought to be related to the respondent's work. In the work reported here, we considered responses to the question about "tiredness" and its possible association with workload. We also examined the "health status" item from the standardized health status survey, the SF-12v2® Health Survey ©, 1994, 2002 Medical Outcomes Trust and Quality Metric Incorporated. This instrument was obtained in English and in Vietnamese. (survey Section M)

Direct measures

The direct measures or proximal determinants were attitudes (towards the behavior), perceived normative pressure (subjective norms), and perceived behavioral control (self-efficacy). Perceived risk was also included in the model due to its potential to directly influence behavior (Yzer, in Ho, 2012).

Attitudes

Attitudes are described as accessible beliefs about the behavior, or an evaluation of the behavior in terms of how favorable or unfavorable its outcome will be (Yzer, in Ho, 2012).

Examples:

- [Which of these items do you believe will protect your health?] (section D)
- [Which types of safety communication will protect the health of nail salon workers?] (section E)
- [Do you believe that this practice will protect the health of nail workers?] (section F)

Perceived normative pressure

Perceived normative pressure is described as the expected social pressure associated with performing a particular behavior (Yzer in Ho, 2012). In our study, we investigated the subjective norms, or perceived normative pressure in questions that inquired about the presence of policies (i.e., rules of behavior) to which a worker is expected to conform. Additionally, in questions that explored barriers to use, we asked whether salon owners or other nail salon workers might be negative influences.

Examples:

- [Does your nail salon have policies on the following...] (section F)
- [Which of the following might be a reason why nail salon workers may not use masks? (Responses include: "Salon owner does not encourage;" and "other nail salon workers don't use.")] (section H)

Perceived behavioral control

Perceived behavioral control is based on self-efficacy and is focused on the perception of one's ability to perform a behavior (Fishbein, 2008).

Example:

- [Do you believe it is possible to protect yourself against harm caused by ...?] (section G)

Perceived risk

Perceived risk refers to the belief that a threat is of significant magnitude that it could harm one's health.

Example:

- [Which of these do you believe could harm a nail worker's health?] (section G)

Environmental Factors

Environmental factors may modify the relationship between direct measures and outcomes, thus serving as potential barriers to compliance with protective behaviors.

Example:

- [Which of the following may be a reason that nail salon workers may not use (masks)? (Responses include: "costs too much"; and "takes too much time.")]

Data Analysis

Data management

Data were entered using STATA 12 (StataCorp, 2011) and checked for accuracy by re-entering a subsample, identifying sections with disparities, and checking each entry in those sections.

Preliminary assessment

We first assessed response rates for the respective recruiting methods and survey completion formats. We compared and assessed the relative success of each strategy to inform the design of future studies of similar populations.

The decisions for handling missing data are explained fully in Chapter 4. These were based on a consistent approach to each section of the survey and, for some outcomes, resulted in a reduced number of subjects eligible for inclusion in models.

Identification of practice outcomes

After examining the variables for univariate properties, such as measures of central tendency and frequency distribution, the work practices that addressed the use of protective supplies and equipments were selected according to the following criteria: No more than 30% of the outcome data were missing, and sufficient variability existed such that each group (used equipment vs. did not use) represented at least 10% of respondents for that specific outcome. This resulted in six outcome variables that were further pursued in models to determine the association between their use and independent variables. These were the use of: tables with ventilation; comfortable hand tools; covered trash cans; swivel chairs; adjustable chairs; and chairs with backs. Each was analyzed separately.

Identification of independent variables

For each outcome, potential predictors of each practice were specified according to their r and representation of theoretical domains, and, within those domains, their statistical association with the outcomes. Domains of interest were: demographic characteristics, training experiences, barriers to use, and beliefs. Additionally, variables were retained only if not greater than 30% were missing. Because most of these were bivariate or categorical, their associations were tested using Fisher's Exact tests and pairwise correlation coefficients. Continuous variables were evaluated by t-tests.

Final models

For each protective behavior, logistic regression was used to identify the crude odds ratios for all of its respective variables, which differed according to behavior of interest.

Those that were associated with the outcome at a significance level of p=0.20 or less, as well as age and gender, were then entered into logistic regression models to determine adjusted odds ratios. Potential interaction and mediation relationships for selected "training" and "belief" variables were also considered. Inferences with regard to the use of protective equipment were based on the magnitude and confidence intervals of odds ratios in the final adjusted models.

CHAPTER 4: RESULTS

Response rate

During the recruitment period, nearly 1,500 surveys were distributed either by mail, directly to nail salons, at community events, or through social networking contacts. A total of 188 (12.5%) were returned. The majority of respondents completed the survey when it was distributed in their nail salon or by means of social networks. Although several options were made available for survey completion (phone interview, interview-assisted, or self-completion), the majority of respondents (98.3%) completed the survey themselves.

The greatest number of surveys were returned after distribution to more than 100 nail salons in the Baltimore-Washington and Northern Virginia regions and through network contacts in Massachusetts, Iowa, Virginia, and California. Of the completed surveys, more than 60% were recovered directly from nail salons. A small number of completed surveys were received after distribution at several community events, but these events included many from people who did not work in nail salons. Distribution at events resulted in a greater rate of response per survey distributed (approximately 30%), but, for this study, the actual yield was very small (9).

Participants were provided options to complete a survey in either English or Vietnamese. The majority completed the Vietnamese version (78.4%). (See Appendix Table 4-1.)

Only 20 survey respondents entered their name into the contest for an iPad, which was the incentive gift offered to interested participants. This, combined with the low response rate, suggests some reluctance to participate, despite the assurance that identities could not be matched to responses.

Inclusion and exclusion criteria

Of the 188 surveys returned, all of the respondents completed four initial screening questions to determine their eligibility for the survey. Screening questions included age eligibility, whether they currently work in a nail salon, whether they consider themselves Vietnamese or Vietnamese American, and whether they had previously completed the survey. Three respondents were excluded from the analysis because they did not meet the eligibility criteria: two were not Vietnamese or Vietnamese American, and one reported having completed the survey previously.

Nine respondents were excluded from the analysis due to incomplete surveys. The number of respondents included in the final analysis was 176.

Missing data

Items or certain sections without responses were considered to be missing data. Several questions were written as "check all that apply." When coding these responses, the following decision rules were used:

1. If any potential selections were answered positively (i.e., checked to indicate "yes" in accordance with "as all that apply"), this was considered a positive response for that item, and other, unchecked, selections were coded [0] (i.e., as true no's). For our rationale in these cases, we assumed that the respondent had considered all response options for that particular question, and that any unchecked items were intentionally answered as negatives.
2. For questions of similar format, if no items were checked, the assumption was that it was likely that the respondent did not consider that set of questions. All selections for these questions were, therefore, considered to be missing.

Table 4-1. Characteristics of study population[a]

	All Nail Salon Workers (n = 176[b])		Owners or Managers (n = 36)		Nail Technicians (n = 139)	
	N	(%)	n	(%)	n	(%)
Gender						
Males	35	(20.0)	12	(33.3)	23	(16.7)
Females	140	(80.0)	24	(66.7)	115	(83.3)
Age (mean age = 37; SD = 10.0)						
18-29	42	(24.9)	3	(7.1)	39	(29.1)
30-39	58	(34.3)	10	(28.6)	48	(35.8)
40-49	51	(30.2)	18	(51.4)	33	(24.6)
Over 50	18	(10.7)	4	(11.4)	14	(10.5)
Education						
Less than high school	59	(33.5)	9	(25.0)	50	(35.7)
Completed high school, GED, or technical school	61	(34.7)	10	(27.8)	51	(36.4)
Some college, college degree, or more	54	(30.7)	17	(47.2)	37	(26.4)
Family caregiving responsibilities[c] (n = 171)	96	(56.1)	22	(61.1)	74	(54.8)
Health Insurance (n = 170)						
Yes	96	(54.6)	19	(54.3)	77	(57.0)
No	65	(36.9)	14	(40.0)	51	(37.8)
Don't know	9	(5.1)	2	(5.7)	7	(5.2)

[a]n may vary due to missing data.

[b]One respondent did not state role.

[c]Family caregiving includes responsibilities for caring for children or a dependent adult.

Description of study population

Demographics

Table 4-1 presents the demographic characteristics of the study population.

There were 176 Vietnamese nail salon workers included in the final data analysis. Most were female (80%). Of the 36 owners and managers, one-third were male; however, males comprised only 17% of the nail technician group. Note: In reporting results, those who were not owners or managers are referred to as "nail technicians."

Respondents ranged in age from 18 to 61 years of age, with a mean age of 37 years (s.d.10.0 years). A greater proportion of owners and managers (62.8%) were 40 years of age or older, compared to nail technicians (35.1%).

Almost all survey respondents were born in Vietnam (97.2%). The spoken language, both at home and at work, was distributed as follows: 1) At home, respondents predominantly spoke only Vietnamese (58.5%), while others spoke both English and Vietnamese (39.3%); 2) At work, the majority of respondents spoke both Vietnamese and English (72.6%), while others spoke English only (21.1%), and a small proportion spoke Vietnamese only (6.3%).

The number of years since immigration to the United States was remarkable. (See Figure 4-1.) The earliest year of reported immigration was 1975. There appear to be two waves of dates for immigration, centering on 8 years and 20 years prior to this study. A large proportion of respondents (51.0%) immigrated to the United States since 2000. This is consistent with the observation that nail salon work is often one of the earliest jobs held by Vietnamese immigrants after coming to the United States.

The educational status of all respondents was evenly spread across three levels: less than high school; high school, or technical school; and greater than high school, or at least some college. Of owners and managers, nearly 50% were educated beyond

Figure 4-1. Population by years since immigration

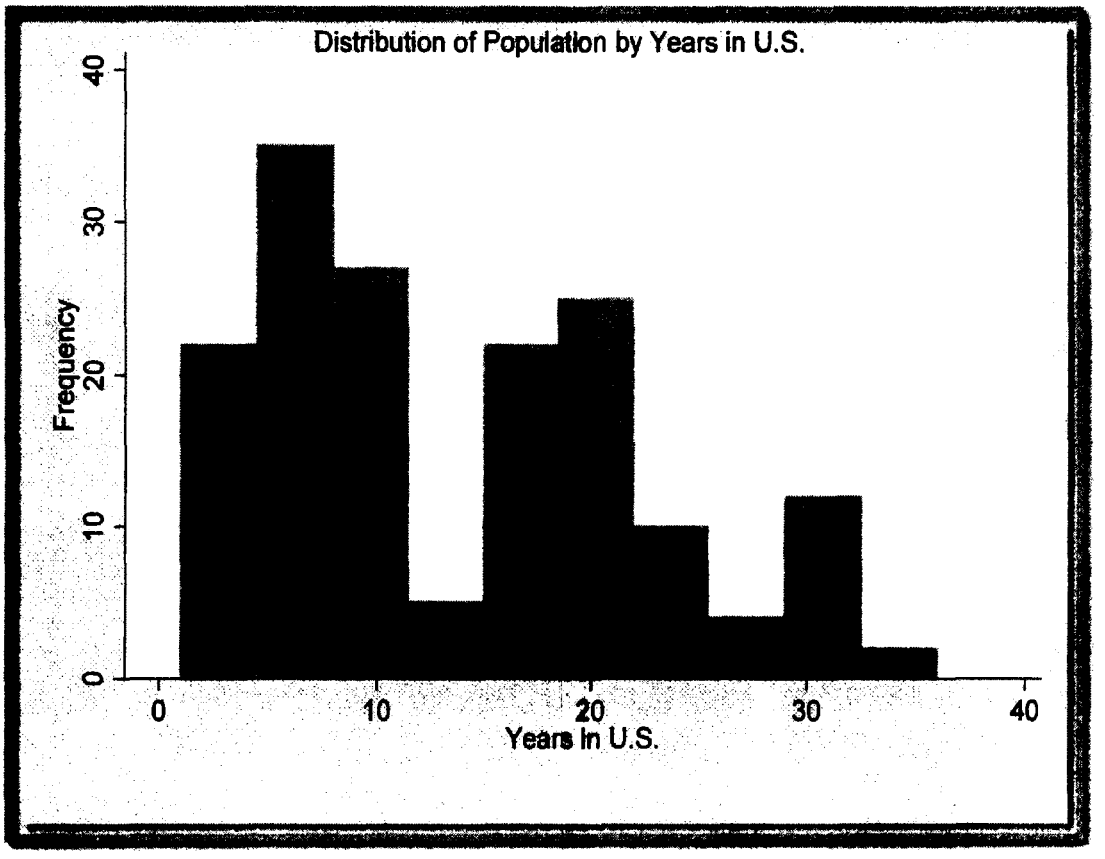
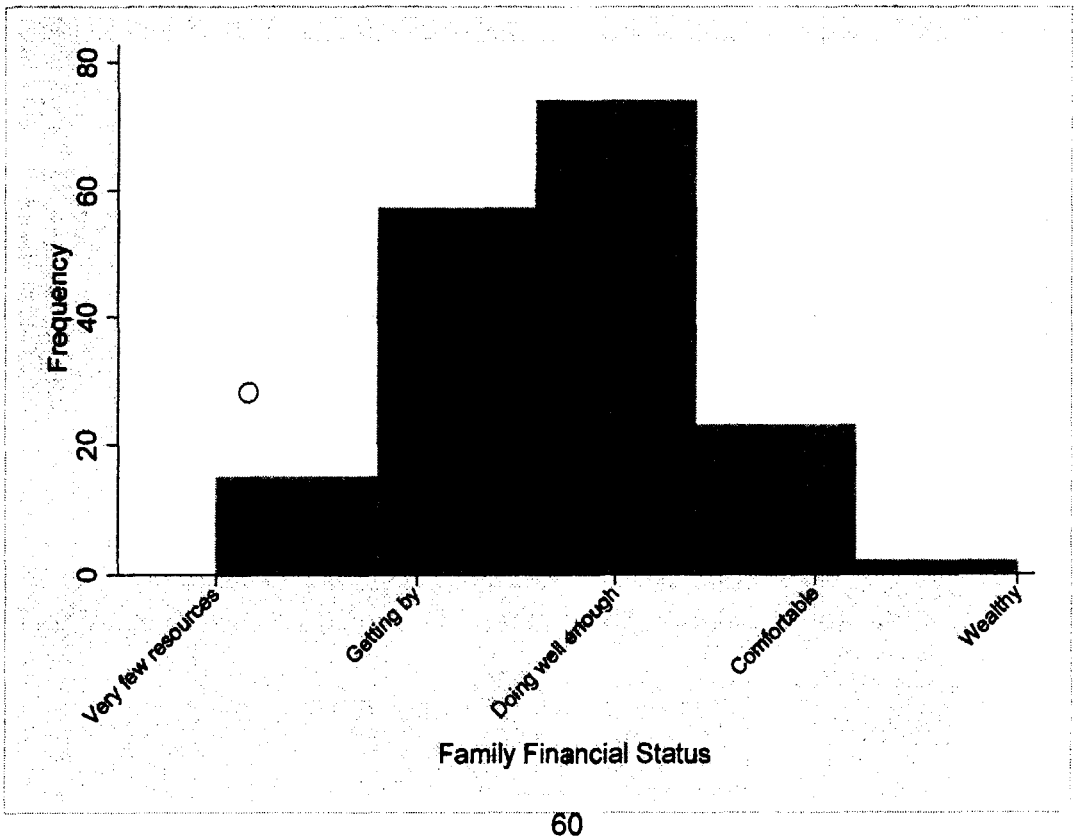


Figure 4-2. Family financial status



high school. In contrast, the majority of nail technicians (72%) had been educated no further than high school or technical school.

Income status was self-reported as a scale that indicated the respondent's perception of their family's financial status (see Figure 4-2.) Only 14.6% reported family financial status as wealthy or comfortable. In the middle of the scale, 43.3% stated that they are "doing well enough." However, 42% said that they were "just getting by" or have very few resources.

Family responsibilities were also remarkable. More than half (56.1%) of the respondents said that they provided care for a child or a dependent adult (or both), indicating that many of the respondents had major responsibilities in addition to those associated with their work roles.

Participants rated their overall health status using the SF-12 instrument. According to the single question on the SF-12 that rates overall health status, nearly 70% said that their health status was good or fair. Only 1% rated health status as excellent. As another health indicator, the majority (90.1%) were non-smokers.

A large proportion of the population—more than 40%--either did not have health insurance or were uncertain about whether they had health insurance.

The majority of the respondents had worked in the nail salon industry for more than one year (89.8%), and almost all respondents worked solely in the nail salon industry, without a second job. Overall, respondents had been working from <1 year up to 25 years, and the median years of employment in their current job was 6 years.

Workers reported working a median of 50 hours per week, ranging from 4 to 90 hours. The majority (64.7%) worked more than 40 hours per week. They reported a median of two breaks per day, ranging from 0 to 10 minutes.

Workplace characteristics

The number of workers per salon ranged from 2 to 50, with a median of 6 workers in each salon. The majority of salons (75.6%) had fewer than 10 workers.

Potential predictors of use of equipment

Worker training and sources of health and safety information

We were interested in the means by which nail salon workers received information or training on occupational health and safety (see Table 4-2). The majority of respondents said that they had received training while still in cosmetology school. Very few had received training from community programs or government-sponsored programs, which is perhaps a reflection of the rare number of opportunities for updating or reinforcing their knowledge beyond their time in school. Besides school, the most frequently cited sources of information were coworkers and family, media sources (such as newspapers or magazines), and the internet. Least often reported were material safety data sheets (MSDS).

Availability, use, training, and beliefs about supplies or equipment

Table 4-3 shows the data that were crucial to the identification of the groups studied to address specific aims three and four. We first inquired about the availability of the supplies and equipment that were included in the recommendations for best practices in the nail industry (see Table 2-3). Workers were most likely to report the presence of gloves, face masks, and chairs with positive ergonomic features in their salon. Of those workers with safety equipment available, we determined the proportion who reported using it, recognizing that a worker could not comply with the recommendation to use protective equipment if the equipment is not available.

Table 4-2. Sources of training and health and safety information[a]

	n	(%)
Received Training about health and safety: (n=169)	122	(72.2)
If trained, source of training (n = 126):		
Cosmetology school	86	(68.3)
From owner	38	(30.2)
From other nail salon workers	37	(29.4)
From government sponsored agency	6	(4.8)
In community center	5	(3.9)
From Internet	36	(28.6)
Written media		
Sources of health and safety information (n=170):		
Industry workers, owners, coworkers,	80	(47.1)
Nail salon suppliers	22	(12.9)
Friends or family	58	(34.1)
Beauty school or boards of cosmetology	70	(41.2)
Written media (newspapers, magazines)	91	(53.5)
Media (TV, radio)	38	(22.4)
Internet	62	(36.5)
Material data safety sheets (MSDS)	16	(9.4)
Community programs	12	(7.1)

[a]n varies, based on responses.

Of those workers with gloves available to them, almost 97% reported their use. Although this high level of compliance is important, the lack of variability in rate of use led us to omit further consideration of differences between users and non-users of gloves. We also chose to eliminate masks from the analysis because we had insufficient information about workers using the appropriate and recommended N-95 masks.

Table 4-3. Proportion of workers who have and use equipment (n = 170)

Supply or equipment	Have equipment (n=175)[a]		Have and use equipment (n=170)[b]	
	N	(%)	n	%
Gloves	167	(95.4)	158	(96.9)
Masks	159	(90.9)	139	(90.3)
Goggles	46	(26.3)	38	(84.4)
Tables with ventilation	97	(55.4)	86	(89.6)
Height adjustable chairs	163	(93.1)	142	(89.9)
Swivel chairs	147	(84.0)	120	(84.5)
Back support chairs	165	(94.3)	138	(86.3)
Comfortable Hand tools	102	(58.3)	81	(80.2)
Wrist supports	43	(24.6)	39	(90.7)
Trash cans with lids	131	(74.9)	107	(84.9)
Eye wash station	78	(44.6)	65	(86.7)

[a] % of all workers

[b] % who use equipment when available; n differs due to missing data

Eye wash stations, wrist supports, and goggles were much less likely to be present in nail salons and were excluded from the supplies and equipment of interest because of the resulting small sample size. Chairs that are adjustable, swivel, or have back support; as well as tables with ventilation; comfortable hand tools; and trash cans with proper lids satisfied the criteria for inclusion because they satisfied the criteria for sufficient sample size and variability of use. We included the three chair features independently, because the populations using each were not the same. We ultimately examined the following types of equipment for differences between those who used and did not use them: tables with ventilation; trash cans with self-closing lids; hand tools that are comfortable to use; height-adjustable chairs; chairs that swivel; and chairs with back support.

The list of protective supplies and equipment according to the best practices recommendations is again shown in Table 4-4, with the proportions of workers who were trained on each and the proportion who believed it would protect their health. Note that 13.6% of the population appeared to skip this first question, possibly because they received no training at all. The denominator of 152 is therefore conservative. Of these workers who received any training at all, gloves and face masks stand out as being the most frequent subjects of training (89% and 84%, respectively). These were also the supplies most commonly felt to protect workers' health. This is interesting in light of our subjective observations that the most common type of mask used in nail salons is a dust mask, which may add to comfort but is relatively ineffective in preventing adverse health effects. (This will be further discussed in Chapter 5.) Referring to Table 4.3, a greater proportion of individuals had equipment available than were trained about its use. Additionally, there was less confidence that equipment associated with the prevention of musculoskeletal injuries (i.e., chair characteristics, comfortable hand tools, and wrist supports) would protect health.

The items addressed in Table 4-5 are means by which information about hazards can be communicated to workers. With the exception of the presence of a workplace safety committee, this list is based on the OSHA Standard 29 CFR 1910.1200(a)(2) for Hazard Communication (OSHA, 2012), also known as the "Right-to-Know" standard. The presence of these methods and workers' beliefs regarding their ability to protect health are shown for the total population and for owners and managers separately. Differences in proportions with positive answers for owners and managers versus nail technicians were tested and found to be significant only with regard to materials written in English. Compared to nail technicians, owners and managers were more likely to report the presence of written information in English, and they believed more firmly that English materials would protect health. Both groups indicated that health and safety

materials in Vietnamese were relatively unavailable. There were very low proportions of respondents reporting the presence of workplace safety committees. However, this safety approach, while recommended, is not part of the OSHA standard.

Table 4-4. Training status and beliefs about health protection

	Trained on equipment[a] (n = 152)		Believed equipment would protect their health[a] (n = 170)	
Supplies or Equipment	**n**	**(%)**	**n**	**(%)**
Gloves	135	(88.8)	160	(94.1)
Face masks	128	(84.2)	162	(95.3)
Goggles	55	(36.2)	91	(53.5)
Tables with built in ventilation	87	(57.2)	122	(71.8)
Chairs adjustable for height	115	(75.7)	110	(64.7)
Chairs that swivel from side to side	106	(69.7)	93	(54.7)
Chairs with back support	110	(72.4)	105	(61.8)
Hand tools comfortable to use	83	(54.6)	87	(51.2)
Wrist supports for nail technicians	42	(27.6)	65	(35.2)
Trash cans with self-closing lids	105	(69.1)	128	(75.3)
Eye wash station	68	(44.7)	76	(44.7)

[a]n varies due to missing data.

Table 4-5. Hazard communication in nail salons[a]

	Safety communication present (n = 164)					Believes method will protect health (n = 168)				
	All Workers		Owners and Managers		p-value[b]	All Workers		Owners and Managers		p-value
	n	(%)	n	(%)		n	(%)	n	(%)	
Written materials about chemicals, in English	88	(53.7)	27	(75.0)	0.004	102	(60.7)	27	(77.1)	0.030
Written materials about chemicals, in Vietnamese	45	(27.4)	7	(19.4)	0.292	127	(75.6)	25	(71.4)	0.510
Labels on containers that hold chemicals	140	(85.4)	32	(88.9)	0.602	130	(77.4)	30	(85.7)	0.260
A list of products that contain hazardous substances	72	(43.9)	15	(41.7)	0.850	127	(75.6)	26	(74.3)	0.830
Training on the effects of chemicals in nail products	50	(30.5)	13	(36.1)	0.420	107	(63.7)	19	(54.3)	0.240
A workplace safety committee	22	(13.4)	3	(8.3)	0.410	63	(37.5)	14	(40.0)	0.850

[a]n varies due to missing data.

[b]Fisher's exact: owners and managers compared to nail technicians

The final comparisons of owners/managers to nail technicians were with regard to health and safety policies recommended as best practices (see Table 4-6). Overall, the rates at which all workers reported the existence, adherence to, and belief in the protective value of most of the policies were very high, and there were no significant differences between owner/managers and nail technicians. Exceptions to these levels were found for the reporting and record keeping of injuries, but this probably reflects the fact that such actions are not required for businesses with 10 or fewer employees. Policies for rest breaks were also less frequently present (52.4% for all salons), but a greater proportion reported that they do take rest breaks (58.1%), and an even greater proportion feel that breaks are protective of health (70.9%). This seems to be another example of the time demands and industrious work ethic in this industry.

Comparison of those who used equipment to those who did not

Table 4-7 describes the demographic characteristics of those who reported using each type of protective equipment and those who did not. There were no significant differences in these characteristics between the two groups. Some trends were present but were not strikingly different when types of equipment were compared. Users of equipment were slightly older. With regard to the number of years workers had been in the United States, those who did not use safety equipment were more likely to have immigrated more recently. Non-users also tended to have lower levels of education.

In the subsequent analyses, we were interested in identifying the factors associated with the behaviors of using or not using preventive safety supplies or equipment. As described above, the protective behaviors of interest were the use of: tables with ventilation; trash cans with self-closing lids; comfortable hand tools; height-adjustable chairs; chairs that swivel; and chairs with back support. In accordance with the IMBP model, potential predictors comprised measures of demographics, beliefs

about the efficacy of the equipment, general and specific training, and potential barriers to the implementation of the protective behavior (i.e., use). These were the initial variables of interest in building logistic regression models for each type of supply or equipment. The selection of specific variables for each type of equipment was based on the following criteria: 1) pertinent or plausible with regard to the behavior; 2) no more than 30% of respondents missing data; 3) associated with the outcome behavior at least at a level of $p < 0.20$. The p value of <0.20 was used because it allowed for more variables to be reviewed for inclusion in the crude odds ratio models.

After identifying independent variables that satisfied the first and second criteria, we evaluated their independence from one another to avoid issues related to colinearity. Pair-wise Pearson's coefficients were calculated for each set of independent variables that satisfied the first two criteria above (data not shown). Separate sets of independent variables were evaluated for each type of equipment because the populations differed due to missing data. While between one and four significant correlations between two variables existed for each type of equipment, no single variable correlated with more than one other variable in the same population. The most consistent correlations across types of equipment were: measures of belief that the equipment would protect health; and having been trained about the equipment. This relationship is further addressed below, but no independent variables were excluded from subsequent analyses based on colinearity.

Table 4-6. Proportion of nail salon workers who follow recommended health and safety practices.

Policy or Practice	Those who have policy in salon					Those who adhere to policy					Those who believe policy will protect their health				
	Workers (n = 168)		Owners / managers (n = 35)		p-value[a]	Workers (n = 172)		Owners / managers (n = 34)		p-value[a]	Workers (n = 172)		Owners / managers (n = 34)		p-value[a]
	n	%	n	%		n	(%)	n	(%)		n	(%)	n	(%)	
Washing hands after handling chemicals	156	92.9	34	97.1	0.463	161	93.6	32	94.1	1.000	164	95.4	32	94.1	0.658
Washing hands after each client	157	93.5	34	97.1	0.462	167	97.1	34	100.0	0.584	164	95.4	33	97.1	1.000
No smoking in work areas	145	86.3	34	97.1	0.049	153	89.0	33	97.1	0.130	152	88.4	32	94.1	0.372
No eating or drinking in work areas	143	85.1	30	85.7	1.000	142	82.6	30	88.2	0.450	139	80.8	31	91.2	0.095
Keeping records of injuries or health problems	46	27.4	10	28.6	0.835	47	27.3	11	32.4	0.520	78	45.4	19	55.9	0.183
Taking rest breaks	88	52.4	17	48.6	0.705	100	58.1	22	64.7	0.440	122	70.9	28	82.4	0.139

Precautions when transferring chemicals from large containers	132	78.6	32	91.4	0.039	153	90.0	32	94.1	0.370	157	91.3	31	91.2	1.000
Keeping containers closed when not in use	141	83.9	31	88.6	0.605	154	89.5	33	97.1	0.130	155	90.1	32	94.1	0.530
Keeping room ventilation system on	118	70.2	29	82.9	0.095	119	69.2	30	88.2	0.007	150	87.2	31	91.2	0.573
Reporting injuries	100	59.5	23	65.7	0.444	97	56.4	25	73.5	0.030	107	62.2	26	76.5	0.075

[a]p value is owners and managers versus nail technicians

Table 4-7. Demographic characteristics of users of supplies or equipment

Equipment	Variable (p value)	Level of Variable	Does not Use Equipment	Uses Equipment	Overall
Height-adjustable chairs	Age (0.1931)		*Mean (SD)* *33.2 (10.7)*	*Mean (SD)* *37.1 (10.1)*	*Mean (SD)* *36.6 (10.2)*
			N (%)	**N (%)**	**N (%)**
	Years in U.S. (0.120)	1-19 years	15 (93.8%)	96 (73.4%)	111 (75.5%)
		20-40 years	1 (6.2%)	35 (26.6%)	36 (24.5%)
	Level of education (0.2030)	Less than high school	6 (37.5%)	44 (31.4%)	50 (32.1%)
		High School complete	8 (50.0%)	49 (35.0%)	57 (36.5%)
		College +	2 (12.5%)	47 (33.6%)	49 (31.4%)
	Gender (0.526)	Female	14 (11.3%)	110 (88.7%)	124 (79.0%)
		Male	2 (6.1%)	31 (93.9%)	33 (21.0%)

Equipment Comfortable hand tools	Variable (p value)	Level of Variable	Does not Use Equipment	Uses Equipment	Overall
			Mean (SD)	*Mean (SD)*	*Mean (SD)*
	Age (0.9142)		*36.1 (7.5)*	*35.9 (11.2)*	*36.0 (10.5)*
			N (%)	**N (%)**	**N (%)**
	Years in U.S. (0.382)	1-19 years	17 (85.0%)	53 (73.6%)	70 (76.1%)
		20-40 years	3 (15.0%)	19 (26.4%)	22 (23.9%)
	Level of Education (0.2434)	Less than High School	4 (20.0%)	22 (27.5%)	26 (26.0%)
		High School complete	11 (55.0%)	26 (32.5%)	37 (37.0%)
		College +	5 (25.0%)	32 (40.0%)	37 (37.0%)
	Gender (0.512)	Female	17 (20.7%)	65 (80.2%)	82 (82.0%)
		Male	2 (11.1%)	16 (88.9%)	18 (18.0%)

Equipment Chairs with Back Support	Variable (p value)	Level of Variable	Does not Use Equipment	Uses Equipment	Overall
			Mean (SD)	*Mean (SD)*	*Mean (SD)*
	Age (0.3666)		*35.4 (8.2)*	*37.2 (10.4)*	*36.9 (10.1)*
			N (%)	**N (%)**	**N (%)**
	Years in U.S. (0.1040)	1-19 years	20 (90.9%)	93 (82.3%)	113 (75.8%)
		20-40 years	2 (9.1%)	34 (26.7%)	36 (24.2%)
	Level of Education (0.1995)	Less than High School	11 (50.0%)	42 (30.9%)	53 (33.5%)
		High School/GED/Technical School	7 (31.8%)	49 (36.0%)	56 (35.4%)
		College +	4 (18.2%)	45 (33.1%)	49 (31.0%)
	Gender (0.5715)	Female	19 (15.1%)	107 (84.9%)	126 (79.2%)
		Male	3 (9.1%)	30 (90.9%)	33 (20.8%)

Equipment Swivel chairs	Variable (p value)	Level of Variable	Does not Use Equipment	Uses Equipment	Overall
			Mean (SD)	*Mean (SD)*	*Mean (SD)*
	Age (0.5292)		*35.8 (8.5)*	*37.1 (10.5)*	*36.9 (10.2)*
			N (%)	**N (%)**	**N (%)**
	Years in U.S. (0.591)	1-19 years	18 (81.8%)	83 (74.1%)	101 (75.4%)
		20-40 years	4 (18.2%)	29 (25.9%)	33 (24.6%)
	Level of Education (0.1469)	Less than High School	8 (36.4%)	39 (33.1%)	47 (33.6%)
		High School complete	11 (50.0%)	40 (33.9%)	51 (36.4%)
		More than High School	3 (13.6%)	39 (33.1%)	42 (30.0%)
	Gender (0.7679)	Female	17 (14.9%)	97 (85.1%)	114 (80.9%)
		Male	5 (18.5%)	22 (81.5%)	27 (19.1%)

Equipment Tables with ventilation	Variable (p value)	Level of Variable	Does not Use Equipment	Uses Equipment	Overall
			Mean (SD)	***Mean (SD)***	***Mean (SD)***
	Age (0.8351)		*35.8 (12.5)*	*36.7 (10.7)*	*36.6 (10.9)*
			N (%)	**N (%)**	**N (%)**
	Years in U.S. (1.000)	1-19 years	8 (50.0%)	61 (78.2%)	69 (78.4%)
		20-40 years	2 (20.0%)	17 (21.8%)	19 (21.6%)
	Level of Education (0.9143)	Less than High School	4 (40.0%)	27 (32.1%)	31 (33.0%)
		High School complete	3 (30.0%)	33 (39.3%)	36 (38.3%)
		College +	3 (30.0%)	24 (28.6%)	27 (28.7%)
	Gender (0.4093)	Female	7 (9.1%)	70 (90.9%)	77 (80.2%)
		Male	3 (15.8%)	16 (84.2%)	19 (19.8%)

Equipment Trashcans with self-closing lids	Variable (p value)	Level of Variable	Does not Use Equipment	Uses Equipment	Overall
			Mean (SD)	*Mean (SD)*	*Mean (SD)*
	Age (0.0259)		*31.8 (11.1)*	*38.2 (9.4)*	*37.2 (9.9)*
			N (%)	**N (%)**	**N (%)**
	Years in U.S. (0.358)	1-19 years	15 (88.2%)	76 (76.8%)	91 (78.5%)
		20-40 years	2 (11.8%)	23 (23.2%)	25 (21.5%)
	Level of Education (0.2241)	Less than High School	7 (38.9%)	39 (36.8%)	46 (37.1%)
		High School complete	8 (44.4%)	30 (28.3%)	38 (30.6%)
		College +	3 (16.7%)	37 (34.9%)	40 (32.3%)
	Gender (0.7630)	Female	15 (15.2%)	84 (84.8%)	99 (79.2%)
		Male	3 (11.5%)	23 (88.5%)	26 (20.8%)

We looked at each of the same variables to describe their association with the outcome behaviors. In the Appendix, Tables 4-2 through 4-7 show the distribution of these data in 2x2 tables, along with the results of Fisher's exact tests of their association. Based on the above criteria, the perception that one barrier to using the equipment was its relevance to "only certain clients" was in the unexpected direction, although it was retained for the three outcomes related to chair features. Belief that the equipment would protect health as well as having been trained about the equipment stayed in all models.

Tables 4-8 through 4-13 list the crude odds ratios and 95% confidence intervals for each of the independent variables and their respective outcomes. For the chair feature outcomes, the perceived barriers varied in their association with use, but only a few of these relationships achieved statistical significance. In particular, one barrier—the need to use chairs only with certain clients—unexpectedly and positively predicted the use of adjustable chairs and those with back supports according to the significance level of odds ratios, but their confidence intervals included unity. Age, gender, and owner/manager status were evaluated because of their potential relevance, but only age was associated with one outcome, the use of proper trash cans. For all outcomes, it was clear that being trained about their use was important; all lower limits of their 95% confidence levels were greater than one. The second important predictor appeared to be the belief that the specific equipment would protect health; although, for chair features, the evidence was weaker when the magnitude of the odds ratios and confidence intervals were considered. Variables with odds ratios p-values < 0.20, plus age and gender, were selected for retention in the final adjusted logistic regression model for each protective behavior.

Table 4-8. Crude odds ratios for use of tables with ventilation (odds ratio and 95% confidence interval)

Variable	n	Odds Ratio	95% C.I.
Age (years)	91	1.01	[0.95-1.07]
Gender: Male vs. Female	96	1.88	[0.43-8.05]
Received Training about protecting health	92	0.90	[0.17-4.69]
Trained on use of tables with ventilation ***	91	7.28	[1.46-36.41]
Believe tables with ventilation will protect health ***	95	6.42	[1.49-27.62]
Believe able to protect against hazardous chemicals	90	2.26	[0.53-9.68]
Owner vs. Worker	96	0.85	[0.16-4.39]

Fisher's exact: *p < 0.20; **p < 0.10; ***p < 0.05; ****p < 0.01.

Reference groups are: males; non-users of equipment

Table 4-9. Crude odds ratios for use of comfortable hand tools (odds ratio and 95% confidence interval)

Variable	n	Odds Ratio	95% C.I.
Age (years)	95	1.00	[0.95-1.05]
Gender: Male vs. female	100	0.48	[0.10-2.28]
Received Training about protecting health	98	0.84	[0.25-2.85]
Trained on hand tools that are comfortable *****	90	7.75	[2.47-24.35]
Believe hand tools that are comfortable will protect health *****	99	7.38	[2.38-22.92]
Believe putting pressure on arms, wrists, hands could harm	99	0.94	[0.30-2.92]
Believe possible to protect against harm from putting pressure on arms, wrists, hands *	91	1.98	[0.68-5.78]
Owner vs. worker	101	1.31	[0.39-4.38]

Fisher's exact: *p < 0.20; **p < 0.10; ***p < 0.05; ****p < 0.01; *****p < 0.001.

Reference groups are: males; non-users of equipment

Table 4-10. Crude odds ratios for use of trashcans with self-closing lids (odds ratio and 95% confidence interval)

Variable	n	Odds Ratio	95% C.I.
Age (years) ****	121	1.08	[1.02-1.14]
Gender: Male vs. female	125	0.73	[0.20-2.74]
Received training about protecting health	123	1.52	[0.52-4.45]
Trained on trash cans with self-closing lids *****	113	8.53	[2.37-30.73]
Believe trashcans with self-closing lids will protect health *****	124	7.76	[2.49-24.22]
Believe harmful hazardous chemicals in nail products	124	0.57	[0.12-2.70]
Believe able to protect against hazardous chemicals	113	1.38	[0.50-3.77]
Owner vs. worker	126	2.59	[0.56-11.99]

Fisher's exact: *p < 0.20; **p < 0.10; ***p < 0.05; ****p < 0.01; *****p < 0.001.

Reference groups are: males; non-users of equipment

Table 4-11. Crude odds ratios for use of adjustable chairs (odds ratio and 95% confidence interval)

Variable	n	Odds Ratio	95% C.I.
Age (years)	151	1.04	[0.98-1.10]
Gender: Male vs. female	157	0.51	[0.11-2.35]
Received training about protecting health	151	1.48	[0.50-4.34]
Trained on adjustable chairs ****	138	5.17	[1.59-16.85]
Believe adjustable chairs will protect health	155	1.14	[0.39-3.32]
Chairs Barrier: Not comfortable	110	0.32	[0.10-1.10]
Chairs Barrier: Not useful	110	0.90	[0.18-4.54]
Chairs Barrier: Costs too much	110	0.59	[0.14-2.40]
Chairs Barrier: Takes too much time	110	0.63	[0.12-3.27]
Chairs Barrier: Only necessary on certain clients *	110	3.03	[0.63-14.61]
Chairs Barrier: Not available	110	1.27	[0.36-4.50]
Chairs Barrier: Not possible	110	1.71	[0.35-8.35]
Chairs Barrier: Salon owner does not encourage	110	2.65	[0.32-21.77]
Owner vs. worker	158	1.87	[0.40-8.71]

Fisher's exact: *p < 0.20; **p < 0.10; ***p < 0.05; ****p < 0.01.

Table 4-12. Crude odds ratios for use of swivel chairs (odds ratio and 95% confidence interval)

Variable	n	Odds Ratio	95% C.I.
Age (years)	136	1.01	[0.97-1.06]
Gender: Male vs. Female	141	1.30	[0.43-3.89]
Received Training about protecting health ***	135	2.82	[1.09-7.28]
Trained on swivel chairs *****	124	15.33	[4.96-47.38]
Believe swivel chairs will protect health **	139	2.24	[0.87-5.75]
Chairs Barrier: Not comfortable	98	1.15	[0.37-3.56]
Chairs Barrier: Not useful	98	1.14	[0.29-4.48]
Chairs Barrier: Costs too much *	98	0.45	[0.14-1.51]
Chairs Barrier: Takes too much time *	98	0.42	[0.11-1.59]
Chairs Barrier: Only necessary on certain clients	98	1.55	[0.54-4.51]
Chairs Barrier: Not available	98	0.71	[0.26-1.98]
Chairs Barrier: Not possible	98	1.36	[0.40-4.56]
Chairs Barrier: Salon owner does not encourage	94	2.49	[0.49-11.09]
Owner vs. Worker	142	0.76	[0.25-2.29]

Fisher's exact: * p < .20; ** p < .10; *** p < .05; **** p < .01; ***** p < .001

Reference groups are: males; non-users of equipment

Table 4-13. Crude odds ratios for use of back-supported chairs (odds ratio and 95% confidence interval)

Variable	n	Odds Ratio	95% C.I.
Age (years)	153	1.02	[0.97-1.07]
Gender: Male vs. female	159	0.56	[0.16-2.03]
Received training about protecting health ***	153	2.80	[1.07-7.30]
Trained on chairs with back support *****	140	7.32	[2.41-22.18]
Believe back supported chairs will protect health **	157	2.52	[0.99-6.42]
Chairs Barrier: Not comfortable	110	0.54	[0.17-1.66]
Chairs Barrier: Not useful	110	0.69	[0.17-2.77]
Chairs Barrier: Costs too much	110	1.32	[0.27-6.41]
Chairs Barrier: Takes too much time	110	0.47	[0.11-1.96]
Chairs Barrier: Only necessary on certain clients *	110	2.55	[0.67-9.65]
Chairs Barrier: Not available	110	0.64	[0.21-1.91]
Chairs Barrier: Not possible	110	2.19	[0.46-10.45]
Chairs Barrier: Salon owner does not encourage	110	1.51	[0.31-7.34]
Owner vs. worker	160	1.76	[0.49-6.35]

Fisher's exact: *p < 0.20; **p < 0.10; ***p < 0.05; ****p < 0.01; *****p < 0.001.

Observing that training and beliefs were correlated with one another and with the outcome variables, we tested for mediation, postulating that the effects of training on protective behaviors may be mediated, at least in part, by changes in beliefs instilled by previous training on the usefulness of specific equipment. Using the three-part strategy to check for mediation suggested by Baron and Kenny (1986), we regressed training and beliefs on the outcomes. (See Appendix Table 4-8.) While both training and beliefs were associated with the use of each type of protective equipment, the strength of association between training and behavior did not diminish when the variables representing beliefs were added into the equation. With the caveat that limited power may have been at play, suspicions of mediation were not confirmed.

The results of the final analyses for each protective behavior are shown in Tables 4-14 through 4-19. With regard to barriers to the use of chairs with specific features, none of the relationships that had been observed for crude odds ratios persisted. However, for adjustable chairs, comfort became a significant predictor of use. Those who cited comfort as a barrier to using such chairs were five times less likely to use them. No variables were significantly associated with the use of chairs with back supports, and no trends were suggested. Training about equipment and the belief that the specific equipment would protect health continued to stand out as the most important predictors of use. For training, the only odds ratio for which the 95% confidence interval did not include unity was for trash cans with proper lids. Other odds ratios indicated that individuals were 3.5 to 9 times more likely to use the protective equipment if they had been trained about it, compared to those who had not. Those who believed that trash cans with lids, tables with ventilation, and comfortable hand tools would protect health were 6.2, 7.2, and 13.6 times more likely to use that type of equipment. Confidence intervals for these rates are wide, however, reflecting the limited sample sizes. Belief in the efficacy of chair features was not a predictor of use.

The pseudo R^2 statistics, indicating the proportions of variance in the outcome measures accounted for by the set of independent variables, ranged from 0.12 (back rests) to 0.263 (comfortable hand tools), a relatively impressive result.

Table 4-14. Adjusted odds ratios for use of tables with ventilation (odds ratio and 95% confidence interval) (n = 85)

Variable	Odds Ratio	95% C.I.
Age (years)	1.00	[0.92 - 1.10]
Gender: Male vs. female	0.68	[0.08 - 5.53]
Trained on use of tables with ventilation	7.44	[1.25 - 44.24]
Believe tables with ventilation will protect health	7.20	[1.09 - 47.31]
		Pseudo $R^2 = 0.193$

Reference groups are: males; non-users of equipment

Table 4-15. Adjusted odds ratios for use of hand tools (odds ratio and 95% confidence interval) (n = 73)

Variable	Odds Ratio	95% C.I.
Age (years)	1.00	[0.94 -1.07]
Gender: Male vs. female	0.58	[0.08 - 4.46]
Trained on hand tools that are comfortable	3.47	[0.83 - 14.58]
Believe hand tools that are comfortable will protect health	13.58	[2.20 - 83.85]
Believe possible to protect against harm from putting pressure on arms, wrists, hands	0.78	[0.16 - 3.79]
		Pseudo $R^2 = 0.263$

Reference groups are: males; non-users of equipment

Table 4-16. Adjusted odds ratios for use of trashcans with self-closing lids (odds ratio and 95% confidence interval) (n=107)

Variable	Odds Ratio	95% C.I.
Age (years)	1.08	[0.99 -1.18]
Gender: Male vs. female	0.33	[0.03 - 3.24]
Trained on trash cans with self-closing lids	4.50	[0.94 - 21.54]
Believe trashcans with self-closing lids will protect health	6.17	[1.42 - 26.83]
		Pseudo $R^2 = 0.290$

Reference groups are: males; non-users of equipment

Table 4-17. Adjusted odds ratios for use of adjustable chairs (odds ratio and 95% confidence interval) (n = 94)

Variable	Odds Ratio	95% C.I.
Age (years)	1.00	[0.93 - 1.07]
Gender: Male vs. female	0.30	[0.03 - 2.99]
Trained on adjustable chairs	5.59	[1.80 - 26.61]
Chairs Barrier: Not comfortable	0.20	[0.05 - 0.87]
Chairs Barrier: Only necessary on certain clients	1.63	[0.29 - 9.30]
		Pseudo $R^2 = 0.170$

Reference groups are: males; non-users of equipment

Table 4-18. Adjusted odds ratios for use of swivel chairs (odds ratio and 95% confidence interval) (n = 78)

Variable	Odds Ratio	95% C.I.
Age (years)	0.98	[0.92 - 1.05]
Gender: Male vs. female	0.76	[0.14 - 4.16]
Received training about protecting health	1.32	[0.29 - 6.05]
Trained on swivel chairs	9.00	[1.89 - 42.86]
Believe swivel chairs will protect health	0.78	[0.20 - 3.10]
Chairs Barrier: Costs too much	0.91	[0.14 - 5.85]
Chairs Barrier: Takes too much time	0.46	[0.08 - 2.70]
		Pseudo $R^2 = 0.186$

Reference groups are: males; non-users of equipment

Table 4-19. Adjusted odds ratios for use of back-supported chairs (odds ratio and 95% confidence interval) (n = 88)

Variable	Odds Ratio	95% C.I.
Age (years)	0.98	[0.92 - 1.05]
Gender: Male vs. female	0.34	[0.04 - 3.15]
Received training about protecting health	4.13	[0.92 - 18.56]
Trained on chairs with back support	1.49	[0.29 - 7.57]
Believe back supported chairs will protect health	0.96	[0.22 - 4.21]
Chairs Barrier: Only necessary on certain clients	2.79	[0.48 - 16.37]
		Pseudo $R^2 = 0.120$

Reference groups are: males; non-users of equipment

CHAPTER 5: DISCUSSION

Background

This study, which addressed the health and safety practices of Vietnamese nail salon workers, is the first of its kind to be conducted in the mid-Atlantic region with nail salon workers. As others have done in their respective regions, we worked in partnership and collaboration with community organizations, thus enhancing our ability to access this difficult to reach population (Quach et al., 2008; Quach et al., 2011; Roelofs et al., 2008).

The focus of the study was on the presence and predictors of workplace health and safety practices that have been recommended by leading government and worker advocacy organizations. These "best practices" pertain to equipment, policies, and communication methods to protect the health of nail salon workers. While these guidelines are promoted, little is known about their dissemination to individuals working in the nail industry, their implementation in salons, or their adoption by this workforce. This is the first study to investigate these issues, particularly those related to the practice of preventive behaviors and use of protective supplies and equipment by nail salon workers.

Conceptual model

The Integrative Model of Behavioral Prediction (IMBP) was the conceptual model that guided the design of our study and, based on its components, helped define variables that are associated with the use of protective equipment (Fishbein, 2008). These were: attitudes (beliefs); perceived behavioral control (training); and one external variable (previous training). Based on logistic regression analyses, training as well as beliefs about the efficacy of specific equipment were found to be predictive of adherence to

recommended use. More general previous training about health and safety was also associated with use. The difficulty in identifying motivators for behavioral change, particularly those related to personal protective equipment use, has long been recognized as a challenge for occupational health. The current study supports a connection between motivation and training, but also suggests that interventions must go beyond training. For example, a study conducted with Latino construction workers concluded that training was essential, but that policies were also important, leading to the determination that OSHA should increase its oversight of employers to comply with standards and prevention measures to better protect workers (Menzel & Shrestha, 2012).

Accessing this working population

Several strategies contributed to our successful recruitment of participants. In other studies with Vietnamese nail salon workers, researchers worked directly with community contacts (Quach et al., 2008; Quach et al., 2011; Roelofs et al., 2008). We employed social networking and community involvement and found, similar to Roelofs et al. (2008), that accessing participants at their own workplace, repeating visits, and an awareness of workers' schedules yielded the highest responses. An attempted strategy to invite participants by sending a mailed survey to licensed Vietnamese cosmetologists resulted in very little return. Using the community-based participatory research approach, we found that working directly with the community and leading agencies or community-based organizations was instrumental and a necessity. Similarly to other studies, the survey was in Vietnamese, adding to the strength of its design (Quach et al., 2008; Quach et al., 2011; Roelofs et al., 2008). Additionally, saturating the community with multiple recruitment messages helped increase visibility and return rates. Snowball sampling, in which respondents provide names of other potential respondents, was not

used. However, on several occasions, workers did express an interest in helping and distributed additional surveys to their social networks. We also found it helpful to collaborate with Vietnamese research assistants who were able to conduct recruitment in Vietnamese; this strongly influenced the willingness of individuals to complete surveys and is an approach that has been used with other underserved communities (Spears, Nolan, O'Neill, Arcury, Grzywacz, & Feldman, 2011).

Demographics

Our population was predominantly female, with more males in the roles of owners or managers.

Unlike other recent studies with this workforce, we included both males and females in our study (Quach et al., 2011). The distribution by gender of nail salon owners and managers and technicians is not known for the general Vietnamese nail salon worker population but is likely to be similar to this population.

According to industry statistics, 19% of nail salon workers are over 50 years of age (NAILS Magazine, 2012). Our study included 10.7% who were in this age category, thus limiting the ability to generalize findings to the oldest age group. Although age was not significantly associated with any of the outcomes in this study, we included this in the multivariable analyses because of its potential to act as a confounder.

We included owners and managers as well as nail technicians in the study population, but owners and managers comprised only 20%. The preventive practices that were considered included a large number of policy and communication methods, and we recognized that owners and managers would be the ones responsible for their adoption in salons. We therefore reported on those practices separately for owners and managers. No other studies have looked at the differences between owners and managers and other workers. Despite the smaller number of owners and managers, we

were able to identify slight differences in their approaches to health and safety communication policies, but these did not reach levels of statistical significance. Due to this limited power and our findings of trends in differences, we recommend that the practices of owners and managers be further pursued. A larger scale study of this group would also allow an evaluation of the predictors of implementation of policies and communication strategies in salons. We confined the current study to the use of supplies or equipment and combined workers of all roles with the understanding that most owners and managers also perform nail work.

A few important demographic characteristics of our population may be relevant to their use of equipment. Those who used the equipment were slightly older, perhaps related to concerns about protecting their health as they age. Additionally, workers who did not use the equipment were more likely to have lower levels of education and had immigrated more recently. These characteristics may be important to consider with regard to targeting training, particularly for more recent immigrants who may also be less familiar with health and safety guidelines for the industry.

Our data support that this is a hard-working population, performing a median work week of 50 hours. According to industry market researchers, 7.2% of nail salon workers are working more than 50 hours per week (NAILS Magazine, 2012). A large proportion of our workers also had responsibilities for caring for family members. According to *NAILS Magazine* (2012), 51.5% of nail salon workers have children under their care. It is therefore reasonable that tiredness was the most frequently reported health symptom. Combining these factors of hours worked per week, fatigue, and caregiving, we see a population of workers who have little time for personal care needs. We found this to be consistent with our qualitative discussions and interactions with workers in our community contact groups. Working long hours is of concern when OSHA standards for chemical exposures are based on a 40-hour work week, as these

standards may be inadequate to characterize hazard exposure risks for chemical exposures.

The Morbidity and Mortality Weekly Report published a recent article stating that Asian workers (33.2%) were significantly more likely to have less sleep duration compared to non-Hispanic white or Hispanic workers (Luckhaupt, 2012). This finding bids importance for this workforce that reports fatigue as a main health concern.

Health Problems

More than two-thirds (70%) of our workers reported their health status as only fair or good. This finding was higher than that in other nail salon worker studies, in which 65% of workers reported their health as good or better (Roelofs et al., 2008). This issue and a lack of health insurance are health disparity concerns relevant to our population. Quach et al. (2008) characterized their nail salon workforce as having only 18% without health insurance. In our population, we found nearly 37% who did not have health insurance. Whereas industry statistics report that 21% of nail salon workers are uninsured, more than one third of those in our study reported a lack of health care coverage. These workers are generally self-employed, which also limits their access to employer covered health insurance (NAILS Magazine, 2012).

Roelofs et al. (2008) found that 21% had visited a health provider for work-related health concerns. However, in our study, we only had 13% report seeking medical care for work-related health problems. Among these workers, very few reported a comfortable or wealthy financial status, which could limit their ability to purchase health insurance, let alone pay for medical care themselves.

Our findings indicated that work-related health symptoms were similar in frequency to those reported in previous studies with nail salon workers (Harris-Roberts et al., 2011; Quach et al., 2008; Quach et al., 2011; Roelofs et al., 2008). (See Appendix

Table 5-3.) In our study, we explored musculoskeletal symptoms in greater detail because musculoskeletal disorders (MSDs) were the primary complaints for nail salon workers in other studies (Harris-Roberts et al., 2011; Roelofs et al., 2008). Among our findings, back pain, eye strain, and tiredness were the top three health concerns, with more than 50% reporting back pain and 43% reporting headaches, both higher than has been found in other recent studies (Quach et al., 2011). Other frequently reported musculoskeletal issues were joint pain, hand pain, shoulder pain, and neck pain. Less common were elbow pain and carpal tunnel syndrome. This constellation of symptoms is consistent with our perspective that ergonomic risk factors are important. While chemicals have received substantial attention with regard to the health risks they pose for workers, less interest has been directed to what we believe to be an equally important issue: musculoskeletal concerns (Harris-Roberts et al., 2011; Roelofs et al., 2008).

Although several health problems were reported with less frequency (< 20%), these findings are similar to other studies with Vietnamese nail salon workers (Harris-Roberts et al., 2011; Quach et al., 2008; Quach et al., 2011 Roelofs et al., 2008). While these health reports are not known to be work-related, there may be an interaction with long work hours, poorer health status, and limited access to health care. Regardless of the cause, nail salon workers must come to work, despite poor health due to economic pressures (Quach et al., 2010).

Hazard control

As mentioned above and in Chapter 2, most studies and advocates for controlling hazards in nail salons have focused on chemical exposures. They promote control measures like substitution or improved engineering design, such as adequate ventilation to minimize workers' exposures. Although these are preferred approaches to hazard

control, we surveyed the practices that workers can more likely control themselves, which thus depend more on adherent behavior. Personal protective equipment (PPE), admittedly lower in the hierarchy of controls, falls into this category.

The EPA, the Oregon Collaborative for Healthy Nail Salons, and the Professional Beauty Association included substitution, engineering changes, and the use of various forms of PPE in their recommendations for protecting the health of nail salon workers. It should be noted that, while not all of the strategies promoted by these guidelines have been specifically proven to be effective control methods in nail salons, they are strongly recommended as the best practices for protecting these vulnerable workers. Given that evidence-based practice is important to injury prevention, further work must be done to verify the effectiveness of the recommendations in nail salons, particularly those practices that are most frequently being adopted (Gielen, Frattoroli, Yonas, Sattin, & Levi, 2011). The recommendations that are being disseminated, however, have been informed by the existence of OSHA standards for some of the chemicals used commonly in nail salons and by some of the required work practices related to their control. While there are no OSHA standards for ergonomics, the recommended best practices do suggest measures for controlling these hazards, and we included these in our study as well (PBA, 2010).

Findings of adjusted models

Our outcomes of interest were focused on the use of equipment in two areas: protection against chemicals and ergonomic risks (see Table 4-3, Chapter 4). We could only explore this equipment if a worker used it when it was provided or available in the salon where they worked. We raised the important question about what drives workers to use this equipment. Using the IMBP provided us with a framework by which we could explore this question. In order to determine predictors for using recommended equipment, we

compared users and non-users. We explored the predictors of beliefs and training, and also barriers that could modify the relationship of predictors. We later narrowed the focus on selected equipment based on our analysis criteria. The demographics of the users and non users were not significant. In our final models, however, we did include age and gender as important demographics to control for in the statistical analysis.

In our final adjusted odds ratios for all equipment, gender and age were not associated with the use of the equipment. However, for each of the five out of the six regression models, training was a significant predictor of workers' use of selected equipment. (See Tables 4-14 through 4-19 in Chapter 4.) For equipment that minimized chemical exposures (trashcans and ventilated tables), we found that workers were 4.5 to 7.4 times more likely to use these, respectively, if they were trained about them. If they believed it would protect their health, they were 6.2 to 7.2 times more likely to use the equipment. For ergonomic practices, workers were 13.5 times more likely to use hand tools if they believed they protected their health, and were 3.5 times more likely to use this equipment if trained regarding it. With regard to chairs, we explored the three aspects of chairs independently, given that there were differences in users and non-users for each. For chairs that swivel and chairs that are height adjustable, training about chairs was a significant predictor of users compared to non users. Only for back-supported chairs were there no significant predictors.

The likelihood of equipment use based on both training and beliefs about protection are important findings from this analysis, although the wide confidence intervals for these statistics indicate that the odds ratios are not very stable estimates of likelihood. There was not a consistent pattern of odds ratios across all types of equipment, suggesting that both training and belief in efficacy are important. While these two domains are correlated, they both remain significant in both models, suggesting that they are independently influential. Their influence does not seem to be based on a

mediating effect. The Pseudo R^2, when compared across the regression models, was similarly indicative of the strength of these models.

In these findings, the confidence intervals were wide, most likely due to the small sample sizes. Although the final logistic regression models had small sample sizes, the consistency of the findings and the magnitude of the odds ratios were similar for several of the outcomes of interest. Training and beliefs were strongly associated according to the confidence intervals, with five out of the six outcomes of protective equipment. While not directly able to predict use, we can see that workers who were trained were more likely to use comfortable hand tools, trash cans, tables with ventilation, chairs with back support, and chairs that swivel. Although trashcans with self-closing lids did have associations with beliefs, training was not a strong predictor. This may be due in part to perceptions that training is not necessary about this equipment. Our research assistant reported that owners buy this type of trashcan prior to inspections and then return them post-inspection. There may be confusing information about the necessity of this equipment, demonstrated by our study, in which beliefs and training were ultimately not strongly associated with this outcome.

Beliefs, training, and availability

It was clear from the data that rates of training, availability, use, and beliefs about ability to protect health varied for types of protective equipment—and, as shown by the decrease in sample size when looking at differences in rates of use, the mere availability of this equipment was a concern. Recognizing that workers were exposed to information in training and from other sources about the ways in which they can protect themselves (e.g., Table 4-2), we were interested in the extent to which equipment was available to the workers who believed it would protect their health. We found a gap for some types of equipment (see Table 5-1), and some of the rates were concerning. For example, out of

those workers who thought comfortable hand tools would protect their health, more than one-fourth did not have such tools available. This held for other equipment as well. Notably, about one-third of those who believed tables with ventilation or eye wash stations protect health were found to be without them. Similar estimates for only owner and managers could not be calculated due to low numbers, but owners and managers are likely to be the ones who drive the purchase and presence of this equipment. Workers in other studies and reports have indicated a desire for protective equipment, but indicate a lack of availability (Quach et al., 2010; Roelofs et al., 2008). Our data suggest that this gap could be narrowed if workers are better empowered to influence the provision of equipment that they recognize as important to their health. This is a point worthy of addressing in training and by means of advocacy for workers' health and safety information.

Table 5-1. Lack of availability of equipment and supplies to those who believe they protect health

Supplies or Equipment	Believe this will protect health and % who lack it	
	N	(%)
Gloves	160	(3.1)
Face masks	162	(6.2)
Goggles	91	(56.0)
Tables with built in ventilation	122	(32.0)
Chairs adjustable for height	110	(5.4)
Chairs that swivel	93	(8.6)
Chairs with back support	105	(3.8)
Hand tools comfortable to use	87	(26.4)
Wrist supports for nail techs	65	(53.8)
Trash cans with self-closing lids	128	(14.1)
Eye wash station	76	(29.9)

Practices and policies

We also explored levels of workers' compliance with recommended policies and salon practices (see Tables 4-5 through 4-6 in Chapter 4). The recommended safety communication standards have been developed using the OSHA hazard communication policies, or the "Right to Know" approach. We explored these for all workers, but recognized that policies in salons are primarily under the control of owners and managers.

We found a low proportion of salons with workplace safety committees (13%). Although this is expected because this type of committee is not included in hazard communication, and because these workplaces generally have few workers, 37% of workers believed this could protect their health. Additionally, owners and managers reported having higher proportions of hazard communication methods in place, more than likely because of they are responsible for salon licensure compliance. Previous studies with nail salon workers have recommended policies, but have not explicitly explored the prevalence of health and safety policies, despite the call by industry advocacy groups for managers to use checklists as a way to facilitate their compliance with regulations (Oregon Collaborative for Healthy Nail Salons, 2008). Although self-reported, we believe this information is a beginning measure to determine compliance and underlying beliefs of workers and owners or managers about safety policies. Brosseau, Fredrickson, & Casey (2007) described the limitations of health and safety information and highlighted the fact that they are often written for employees rather than owners, and, even more importantly, that they are not designed for small business owners (Brosseau et al., 2007). This is the first study to describe the compliance of these recommended hazard communication policies for nail salons, yet attention should be paid to disseminating this information to owners and managers and to providing strategies for owners and managers to use these checklists.

Strengths

This study of a vulnerable, yet relatively inaccessible, population is one of the first to address the means by which Vietnamese nail salon workers can protect their own health and safety in their workplaces. The best practices that have been developed are available as guidelines—but, before this study, there has been no follow-up to evaluate the extent to which they are disseminated or adhered. This study begins the process of identifying, improving, and encouraging the use of protective measures for workers in nail salons. This study also addresses ergonomic issues, which are a logical concern based on the musculoskeletal stressors associated with the work, but which have not been foremost among the health risks recognized by the population. Until now, the presence of chemicals has attracted the most attention as a health concern.

The study has also contributed knowledge that may be helpful to future researchers who face the same dilemma of reaching and recruiting participants. At the least, we demonstrated that mailed surveys, despite support from community advocates and options to complete the survey in either Vietnamese or English, represent a poor use of time and resources. In contrast, we were able to demonstrate several strategies that added to our recruiting success. The investigator worked closely with several community partners and community liaisons. Vietnamese research assistants encouraged participation and elicited eager cooperation. This, combined with recruitment materials and surveys that were presented in Vietnamese, helped maximize the sample size by dealing with language barriers. Our end result was that only nine surveys were incomplete. Community networking support also facilitated recruiting and allowed us to reach workers in distant locations. Many participants expressed that they were happy to help their community. These insights regarding methods and messages may be useful to those who are planning to work with this population in the future.

Consistent with our community-based participatory research approach, throughout all of the work with this community, dating from before this study, community collaboration was an important dimension. This approach comprised a major strength, as it has with others working with similar groups of workers (Quach et al., 2008; Quach et al., 2011; Roelofs et al., 2008). Our collaboration with community partners and organizations influenced and enhanced our ability to recruit personnel, research assistants, and translators. Important strategies were suggested every step of the way, such as the best days of the week to visit nail salons, or the best church services to attend. We were able to focus on issues that had been identified as true concerns, and the interventions will likely be more sustainable because of worker and community input.

Limitations

Some of the study limitations were those that often plague cross-sectional studies of populations that are difficult to reach. For example, issues with temporality and ability to generalize are common. Participants were self-selected as a convenience sample, and, unfortunately, there are no data that would allow us to assess the representativeness of the study population with regard to demographics or workplace characteristics (e.g., size and services of salons). We do feel that we were successful in our efforts to include those individuals who otherwise might be lost due to language barriers. We also reached workers with a broad range of ages and years in the United States. Additionally, although some might suspect that responses may have been guarded and biased toward meeting expectations, we believe that participants were quite open in revealing information about their personal situation. For example, health status and economic status were provided by most and did show a realistic range. Also, because most chose to complete the survey without assistance, there was no opportunity to review or clarify answers; at the same time, this did affect the level of missing data, and we were forced

to make difficult, conservative decisions that restricted the sample size for some analyses.

The other common limitation that applies to most occupational health studies is the "healthy worker effect": the bias that results from the fact that the workers who are suffering the most extreme health effects due to work exposures may not be available because they are not working, either temporarily or permanently. This may have been a lesser issue because the outcome of interest was not a health condition. Furthermore, it is apparent that nail salon workers stay on the job while enduring substantial levels of pain and disability.

The targeted sample size of 180 participants was nearly achieved, but conferred only limited power to examine multiple associations. Given the major recruiting efforts we engaged in, it is probable that approaching other geographic areas would have been the only way to increase participation. The major drawback that resulted from the constrained sample size was the further reduction that occurred when comparing those who used equipment to those who did not. The reduction was due to the need to restrict analyses to those who (first) had the equipment available, who were (thus) the only ones able to make a personal choice to use or not use it. Although small numbers reduced the power of the logistic regression analyses, we made our best attempt at reducing the number of independent variables that were tested. However, the fact that differences between the groups were identified, despite low sample sizes, allows greater confidence in the inferences. Our sample size was similar to other studies with this workforce (Quach et al., 2008; Quach et al., 2011; Roelofs et al., 2008).

We may have missed additional predictors of behaviors or barriers, possibly because they are not represented in the conceptual model or because there have been few previous studies to guide our inquiries. Our survey was designed to obtain the most salient aspects of the work experience, and specifically linked concepts to the integrative

model for behavioral prediction. However, the pseudo-R^2 results for the final equations were acceptable.

Implications and recommendations for public health practice

Using a policy framework developed by Gong, Baron, Ayala, Stock, McDevitt, & Heaney (2009), we recommend that changes be made in two areas to improve the health and safety for nail salon workers: organizational level changes, and changes in governmental agencies and laws (Gong, Baron, Ayala, Stock, McDevitt, & Heaney, 2009). At the organizational level, interventions should target owners and managers to ensure that policies in salons are in place and that they provide necessary supplies and equipment, along with ensuring that workers receive appropriate training.

Training should be consistent with cultural, community, and worker preferences. Materials for training—as well as materials that communicate health and safety information, such as MSDS—must be provided in Vietnamese. This point needs particular emphasis because, compared to nail technicians, owners and managers indicated that they did not strongly believe in the protective nature of Vietnamese materials; they felt that materials in English were just as effective. This work also suggests that recent immigrants have the greatest need for training and that they may not be aware of the options for protecting themselves or of the use of protective equipment. Workers, in contrast to owners and managers, believe that cosmetology schools, while already a major source of health and safety training, should also be considered as an organizational approach to reach new employees, and that cosmetology schools might consider acting as sites for ongoing, follow-up training. Schools might also conduct training for others who might become trainers themselves, as a network of available resources.

At the governmental policy level, administrative laws are in need of modification. With some regions recently legislating new policies for nail salons, other areas should consider similar actions. It is important that legislation address the health and safety of nail salon workers—in contrast to the current emphasis, which is on the protection of clients.

Given the finding from our study that training is a predictor of protective equipment use, several practice and policy suggestions are offered. While intuitive, an important consideration for any training is to be inclusive of workers' attitudes and beliefs about the protective nature of equipment. Our findings suggest that workers' beliefs are also predictors of their use. Currently, there are a growing number of training programs being developed for nail salon workers across the United States. OSHA has provided small training grants for community organizations to train nail salon workers about health and safety, including the hazard communication standard. In order to assure that these training programs are reaching workers effectively, the relationship between training and behavioral change should be carefully explored. Training will help workers comply with safety practices, but attention should also be paid to the incentives and motivators for workers to use safety equipment and to comply with policies. In the hazard communication standard, for example, MSDS are often unread or misunderstood by many workers, specifically by Vietnamese nail salon workers (Quach et al., 2011). Nicol, Hurrell, Wahyuni, McDowall, & Chu (2008) conducted an extensive review of the literature to evaluate the comprehensibility of MSDS in a variety of workplaces (Nicol, Hurrell, Wahyuni, McDowall, & Chu, 2008). While MSDS are important and valuable, they found that MSDS are often incomplete and inaccurate with regard to hazardous substances. They also concluded that MSDS are often the key focus for worker protection, but that they are inadequate as a prevention tool (Nicol et al., 2008). Only 9% of workers in our study reported MSDS as their source of information. Nicol et al. (2008)

concluded that additional research should be conducted about health and safety training for workers and that relying on MSDS alone is an insufficient means of protecting workers or assuring health and safety protection.

In a study of small business owners and their opinions about written health and safety information, Brosseau et al. (2007) emphasized that small business owners need more effective tools that will increase their willingness to address health and safety education for their employees (Brosseau et al., 2007). They concluded that health and safety communication should use very targeted messages to facilitate owners' commitment to worker health and safety. We would recommend that trainings focus on owners in the nail salon industry, but we recognize the challenges that owners face with running their small businesses. Therefore, training needs to be succinct, focused, sensitive to business constraints, and directed at supporting business.

In our study, we explored the sources from which workers received training, including any sources of ongoing health and safety information (see Table 4-2). Although there were previous trainings in the region offered by EPA, very few workers reported learning about health and safety information in community settings or from government agencies. We also queried workers about their ideas regarding continuing education. Only 22.2% reported that they would choose educational sessions in the community, and only 24.4% said that they were interested in training in their salon (see Table 5-2). However, 60% of our workers preferred Internet sources, and 58.5% would recommend industry magazines as a source for continuing education. Industry market researchers have reported that more than 73% of nail salon worker are using smartphones, including 64% of workers who are over 45 years of age (NAILS Magazine, 2012). Additionally, more than 40% of workers reported using smartphones for researching companies (NAILS Magazine, 2012). Based on our workers' perspectives, we recommend the exploration of modern, high-tech training tools that could capture the attention of

workers, both younger and older, as well as the attention of owners and managers. Using technology to deliver targeted health and safety information may be the best method of reaching busy workers. Taking into account the fact that workers recommended the Internet as a means of delivering continuing education, it may be timely to introduce this and other forms of advanced technology for trainings on health and safety. It is timely and necessary for health and safety information and hazard communication to be technologically advanced in its messaging, its delivery, and its effectiveness at reaching Vietnamese workers.

With OSHA now offering grants for community-based organizations to train workers, opportunities for technical assistance (which is currently offered in some states for nail salons) should be more widely marketed. Small business owners may be unaware of these existing resources. While financial resources are limited, providing in-salon assistance may help reach more owners, managers, and workers. Public and private partnerships may be considered for funding these types of technical assistance trainings. Although workers in this industry are reticent to collaborate with government agencies, there may be opportunities for community organizations and OSHA to partner in providing technical assistance, to minimize fear of fines and threats of businesses closures (Quach et al., 2011).

On a policy level, completion of continuing education as a requirement for license renewal has been proposed and should be considered as a strategy to provide workers with current health and safety information. This may be one of the most effective ways to reach all workers, as it is for other licensed professionals. More than 20 years ago, the National Interstate Council of State Boards of Cosmetology recommended that state licensing boards require continuing education for teachers in cosmetology schools at the time of license renewal (National-Interstate Council of State Boards of Cosmetology [NIC], 1990). In our study, we asked workers for their viewpoint about continuing

education for nail salon workers (see Table 5-2). Contrary to our expectations, more than 65% of workers believed that continuing education would protect the health of workers, and nearly 45% believed that continuing education should be required for license renewal.

In Massachusetts, the Boston Public Health Commission passed legislation in late 2011 requiring that that the recommended health and safety practices for nail salons be instituted in all salons. The Health Commission is now enforcing laws that require actions such as ensuring lidded trashcans are located at every manicure station, and at least one separate eye wash station or two personal eyewash bottles are readily available (Regulations of the Boston Public Health Commission, 2011). The advocacy work of Vietnamese community organizations led to this policy change and legislative action. Monitoring compliance regarding these matters will be important in determining whether these policies are met or effective. If so, they should be considered for mandating in other states.

The United States Department of Labor is exploring the possibility that nail salon workers are misclassified as "booth renters", and is considering whether or not they should be considered as employees or as independent contractors. The policy under consideration could potentially advocate for workers rights, improve fair labor practices, address over time policies, and provide access to employee-sponsored health insurance. Given the current health care reform legislation aiming to protect the uninsured, and the fact that these nail salon workers are largely uninsured, there may be policy opportunities that will help promote health care access for this underserved working population.

Although several policies are geared toward protection against chemical exposures, our study highlights implications related to ergonomics and potential policies to minimize musculoskeletal disorders. There are no legal expectations for ergonomic

risk factors, and the industry has been less concerned about this issue. Policies aimed at the prevention of musculoskeletal disorders should be considered in the realm of redesigning equipment or creating devices that would minimize strain, pressure, force, repetitive motion, and poor postures. For example, there may be more effective devices that could prevent carpal tunnel syndrome. While wrist supports for workers were not commonly used by our population, this may also be considered. Additionally, policies at the organizational level could evaluate work practices. For example, should there be a reduction in work hours to decrease the risk for musculoskeletal disorders? Future research about musculoskeletal disorders with this workforce is highly recommended.

Conclusion

In summary, Vietnamese nail salon workers face several challenges. Health and safety practices which protect this workforce could be more widely adopted with effective and innovative training and educational initiatives. Community based partnerships can play a vital role with accessing this workforce in order to provide updated health and safety training. Policies that could protect these workers require serious attention and need to be evaluated. This is the first study to address the predictors of recommended best practices and additional research is needed to advance health and safety protection for all nail salon workers.

Table 5-2. Beliefs about continuing education

	All Workers (n = 176)		Owners and Managers (n = 34)		Nail Technicians (n = 130)	
Continuing education should be required when licenses renewed:	**n**	**%**	**n**	**%**	**n**	**%**
Agree	77	(43.8)	14	(41.2)	63	(48.5)
Disagree	43	(24.4)	10	(29.4)	33	(25.4)
Don't know	44	(25.0)	10	(29.4)	34	(26.2)
No response	12	(6.8)				
Continuing education would protect health:						
Agree	115	(65.3)	19	(55.9)	96	(72.2)
Disagree	24	(13.6)	7	(20.6)	17	(12.8)
Don't know	28	(15.9)	8	(23.5)	20	(15.0)
No response	9	(5.1)			6	
Recommended sources for continuing education and health information (n = 167):						
Internet	100	(60.0)				
Beauty school	87	(49.4)				
Industry magazines	103	(58.5)				
Other workers	55	(31.3)				
Owners	81	(46.0)				
Suppliers	54	(30.7)				
Education sessions in salon	43	(24.4)				
Education sessions in community	39	(22.2)				
Written materials	88	(50.0)				

REFERENCES

Agency for Healthcare Research and Quality [AHRQ]. (2006). *Welcome to the web-enabled 2005 national healthcare disparities report (NHDR) the 2005 national healthcare disparities report.* Retrieved

Agnew, J., & Edwards, L. (2006). *Summary report of key informant interviews and focus groups.* Unpublished manuscript.

Aydin, O., Attila, G., Dogan, A., Aydin, M. V., Canacankatan, N., & Kanik, A. (2002). The effects of methyl methacrylate on nasal cavity, lung, and antioxidant system (an experimental inhalation study). *Toxicologic Pathology, 30*(0192-6233; 3), 350-356.

Barbeau, E., Roelofs, C., Youngstrom, R., Sorensen, G., Stoddard, A., & LaMontagne, A. D. (2004). Assessment of occupational safety and health programs in small businesses. *American Journal of Industrial Medicine, 45*(4), 371-379. doi:10.1002/ajim.10336

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-1182.

Brosseau, L. M., Fredrickson, A. L., & Casey, M. A. (2007). Small business owners' opinions about written health and safety information. *Industrial Health, 45*(2), 209-216.

Bureau of Labor Statistics. (2006). *Barbers, cosmetologists, and other personal appearance workers.* Retrieved

Bureau of Labor Statistics. (2012). Retrieved April 20, 2012, from http://www.bls.gov/oco/ocos332.htm

California Healthy Nail Salon Collaborative. (2011). *Toxic beauty no more! health and safetey of vietnamese nail salon workers in southern california.* (Summary Report). California: California Healthy Nail Salon Collaborative. . (Healthy Nail Salon Collaborative)

Campe, J., Hoare, L., Hagopian, A., & Keifer, M. (2011). Using community-based methods and a social ecological framework to explore workplace health and safety of bloqueros on the olympic peninsula. *American Journal of Industrial Medicine, 54*(6), 438-449. doi:10.1002/ajim.20933; 10.1002/ajim.20933

Cheng, A. S., & Chan, E. P. (2009). The effect of individual job coaching and use of health threat in a job-specific occupational health education program on prevention of work-related musculoskeletal back injury. *Journal of Occupational and Environmental Medicine / American College of Occupational and Environmental Medicine, 51*(12), 1413-1421. doi:10.1097/JOM.0b013e3181bfb2a8

Cohen, A., Gjessing, C., Fine, L., Bernard, B., & McGlothilin, J. (1997). *Elements of ergonomic programs: A primer based on workplace evaluations of musculoskeletal disorders*

Department of Labor Standards.*Nail salon ventilation. bulletin 418. the commonwealth of massachusetts. executive office of labor and workforce development. department of labor standards. workplace safety and health program.* Retrieved April 1, 2012, from www.mass.gov/dols/hib418

Eakin, J. M. (1992). Leaving it up to the workers: Sociological perspective on the management of health and safety in small workplaces. *International Journal of Health Services : Planning, Administration, Evaluation, 22*(4), 689-704.

Fishbein, M. (2000). The role of theory in HIV prevention. *AIDS Care, 12*(3), 273-278. doi:10.1080/09540120050042918

Fishbein, M. (2008). A reasoned action approach to health promotion. *Medical Decision Making : An International Journal of the Society for Medical Decision Making, 28*(6), 834-844. doi:10.1177/0272989X08326092

Freeman, S., Lee, M. S., & Gudmundsen, K. (1995). Adverse contact reactions to sculptured acrylic nails: 4 case reports and a literature review. *Contact Dermatitis, 33*(6), 381-385.

Gielen, A. C., Frattaroli, S., Yonas, M. A., Sattin, R. W., & Levi, J. (2011). The new emphasis on implementing evidence-based interventions: The end of research or a new beginning for partnerships? *Injury Prevention : Journal of the International Society for Child and Adolescent Injury Prevention, 17*(6), 431. doi:10.1136/injuryprev-2011-040219

Gjolstad, M., Thorud, S., & Molander, P. (2006). Occupational exposure to airborne solvents during nail sculpturing. *Journal of Environmental Monitoring : JEM, 8*(5), 537-542. doi:10.1039/b601917j

Gong, F., Baron, S., Ayala, L., Stock, L., McDevitt, S., & Heaney, C. (2009). The role for community-based participatory research in formulating policy initiatives: Promoting

safety and health for in-home care workers and their consumers. *American Journal of Public Health, 99 Suppl 3*, S531-8. doi:10.2105/AJPH.2008.152405

Gorman, A. a. O., Phillip. (2007). *Glossed over: Health hazards associated with toxic exposure in nail salons.* (). Missoula, MT: Women's Voices for the Earth. doi:www.womenandenvironmenta.org

Guo, D. F., Batareseh, P., Wong, J., & Raphael, D. (2012). *Summary of data and findings from testing of a limited number of nail products. april 2012.* (Department of Toxic Substances Control).California Environmental Protection Agency Department of Toxic Substances Control. doi:http://dtsc.ca.gov/PollutionPrevention/upload/NailSalon_Final.pdf

Harris-Roberts, J., Bowen, J., Sumner, J., Stocks-Greaves, M., Bradshaw, L., Fishwick, D., & Barber, C. M. (2011). Work-related symptoms in nail salon technicians. *Occupational Medicine (Oxford, England), 61*(5), 335-340. doi:10.1093/occmed/kqr096

Hiipakka, D., & Samimi, B. (1987). Exposure of acrylic fingernail sculptors to organic vapors and methacrylate dusts. *American Industrial Hygiene Association Journal, 48*(3), 230-237.

Hu, K., Harley, C. S., & Yeung, M. W. (2012). *Removing the topcoat: Understanding federal oversight of nail salons.* (). Brooklyn, NY; Washington, DC: National Healthy Nail Salon Alliance, the Asian Pacific American Women's Forum, Women's Voices for the Earth, and the Californial Healthy Nail Salon Collaborative.

Israel, B. A., Coombe, C. M., Cheezum, R. R., Schulz, A. J., McGranaghan, R. J., Lichtenstein, R., . . . Burris, A. (2010). Community-based participatory research: A capacity-building approach for policy advocacy aimed at eliminating health disparities. *American Journal of Public Health, 100*(11), 2094-2102. doi:10.2105/AJPH.2009.170506

John, E. M., Savitz, D. A., & Shy, C. M. (1994). Spontaneous abortions among cosmetologists. *Epidemiology (Cambridge, Mass.), 5*(2), 147-155.

Kurtzweil, P. (2006). *Fingernails: Looking good while playing safe.* Retrieved

Kwapniewski, R., Kozaczka, S., Hauser, R., Silva, M. J., Calafat, A. M., & Duty, S. M. (2008). Occupational exposure to dibutyl phthalate among manicurists. *Journal of Occupational and Environmental Medicine / American College of Occupational and Environmental Medicine, 50*(6), 705-711. doi:10.1097/JOM.0b013e3181651571

License requirements - state board of cosmetologists. Retrieved 11/6/2009, 2009, from http://www.dllr.state.md.us/license/cosmet/cosreq.htm#nail

Linden, C. H., Scudder, D. W., Dowsett, R. P., Liebelt, E. L., & Woolf, A. D. (1998). Corrosive injury from methacrylic acid in artificial nail primers: Another hazard fingernail products. *Pediatrics, 102*(0031-4005; 4), 979-984.

Liou, J. (2008). Workforce demographics and context setting. *Research Convening of the California Healthy Nail Salon Collaborative,* Oakland, CA.

LoSasso, G. L., Rapport, L. J., & Axelrod, B. N. (2001). Neuropsychological symptoms associated with low-level exposure to solvents and (meth)acrylates among nail

technicians. *Neuropsychiatry, Neuropsychology, and Behavioral Neurology, 14*(3), 183-189.

LoSasso, G. L., Rapport, L. J., Axelrod, B. N., & Whitman, R. D. (2002). Neurocognitive sequelae of exposure to organic solvents and (meth)acrylates among nail-studio technicians. *Neuropsychiatry, Neuropsychology, and Behavioral Neurology, 15*(1), 44-55.

Luckhaupt, S. E. (2012). *Short sleep duration among wokrers - united states, 2010.* (MMWR). Atlanta, GA: Centers for Disease Control, National Institute for Occupational Safety and Health, Hazard Evluations and Field Studies.

Ly, M. (2003). *Assessing and communicating occupational risks to vietnamese nail salon workers.* (Unpublished Tufts University, Boston, MA.

Maryland Board of Cosmetology. (2011). *Division of occupational and professional licensing maryland state board of cosmetologists - license requirements.* Retrieved

Maxfield, R., & Howe, H. (1997). In Publication of the Illinois Department of Public Health, Division of Epidemiologic Studies and Springfield I. 6. (Eds.), *Silica exposure in artificial nail application salons*

Menzel, N. N., & Shrestha, P. P. (2012). Social marketing to plan a fall prevention program for latino construction workers. *American Journal of Industrial Medicine,* doi:10.1002/ajim.22038; 10.1002/ajim.22038

Migration Information. (2012). *Migration information source. vietnamese immigrants in the unitied states.* Retrieved May 1, 2012, from http://www.migrationinformation.org/USfocus/display.cfm?id=799#top

Minkler, M., Lee, P. T., Tom, A., Chang, C., Morales, A., Liu, S. S., . . . Krause, N. (2010). Using community-based participatory research to design and initiate a study on immigrant worker health and safety in san francisco's chinatown restaurants. *American Journal of Industrial Medicine, 53*(4), 361-371. doi:10.1002/ajim.20791

Mirmohammadi, S. J., Mehrparvar, A. H., Olia, M. B., & Mirmohammadi, M. (2012). Effects of training intervention on non-ergonomic positions among video display terminals (VDT) users. *Work (Reading, Mass.), 42*(3), 1-12. doi:10.3233/WOR-2012-1400

NAILS Magazine. (2007). *NAILS magazine, NAILS magazine industry statistics report (2006-2007 the big book)*. Retrieved April 1, 2012, from http://files.nailsmag.com/Market-Research/NAILSstats11-12.pdf

NAILS Magazine. (2010). *NAILS magazine industry statistics report (2009-2010 the big book)* Retrieved 11/17/2009, 2010, from http://www.nailsmag.com/resources/industrystats.aspx?Interstitial+1

NAILS Magazine. (2012). *NAILS magazine industry statistics report (2011-2012 the big book)*. Retrieved April 1, 2012, from http://files.nailsmag.com/Market-Research/NAILSstats11-12.pdf

National-Interstate Council of State Boards of Cosmetology [NIC]. (August 21, 1990). *NIC position*. Retrieved, April 25, 2012, from http://www.nictesting.org/papers.htm

Nepal, V., Banerjee, D., Slentz, M., Perry, M., & Scott, D. (2010). Community-based participatory research in disaster preparedness among linguistically isolated populations: A public health perspective. *Journal of Empirical Research on Human Research Ethics : JERHRE, 5*(4), 53-63. doi:10.1525/jer.2010.5.4.53

Nguyen, A. B., Belgrave, F. Z., & Sholley, B. K. (2011). Development of a breast and cervical cancer screening intervention for vietnamese american women: A community-based participatory approach. *Health Promotion Practice, 12*(6), 876-886. doi:10.1177/1524839909355518

Nguyen, T. T., McPhee, S. J., Gildengorin, G., Nguyen, T., Wong, C., Lai, K. Q., . . . Ha-Iaconis, T. (2006). Papanicolaou testing among vietnamese americans: Results of a multifaceted intervention. *American Journal of Preventive Medicine, 31*(1), 1-9. doi:10.1016/j.amepre.2006.03.005

Nicol, A. M., Hurrell, A. C., Wahyuni, D., McDowall, W., & Chu, W. (2008). Accuracy, comprehensibility, and use of material safety data sheets: A review. *American Journal of Industrial Medicine, 51*(11), 861-876. doi:10.1002/ajim.20613

Oakes, J. M., & Kaufman, J. S. (2006). *Methods in social epidemiology* (1st ed.). San Francisco, CA: Jossey-Bass.

Office of Minority Health [OMH]. (2007). *Protecting the safety and health of immigrant workers.* Retrieved May 1, 2012, from http://www.cdc.gov/omhd/Populations/HL/HHP/IWorkers.htm

Ompad, D. C., Galea, S., Marshall, G., Fuller, C. M., Weiss, L., Beard, J. R., . . . Vlahov, D. (2008). Sampling and recruitment in multilevel studies among marginalized urban

populations: The IMPACT studies. *Journal of Urban Health : Bulletin of the New York Academy of Medicine, 85*(2), 268-280. doi:10.1007/s11524-008-9256-0

Oregon Collaborative for Healthy Nail Salons. (2008). *Best practices checklist for nail salons 7/1/2008.* Unpublished manuscript. Retrieved 1/15/10, from http://www.oregonhealthynailsalons.org/images/Best_Practices_Checklist.pdf; http://www.oregonhealthynailsalons.org/projects.html;

Phan, T., Steel, Z., & Silove, D. (2004). An ethnographically derived measure of anxiety, depression and somatization: The phan vietnamese psychiatric scale. *Transcultural Psychiatry, 41*(2), 200-232.

Porter, C. A., & etc. (2009). *Overexposed and underinformed: Dismantling barriers to health and safety in california nail salons.* ().California Healthy Nail Salon Collaborative.

Professional Beauty Association [PBA]. (2010). *Ergonomic basics for nail salon professionals.* Retrieved, 2010, from http://probeauty.org/docs/nmc/Ergonomic_Basics_Rev_8_1_22_10.pdf

Quach,T., Mendiratta, A., Fu, L., Silbergerger, J., Liou, J., Chung, N., Allen, A., m Reynolds, P.,Scranton, A.,. (2010). *Framing a proactive research agenda to advance wokrer health and safety in the nail salon and cosmetology communities: Convening report.* ().California Helathy Nail Salon Collaborative. doi:www.cahealthynailsalon.org

Quach, T., Gunier, R., Tran, A., Von Behren, J., Doan-Billings, P. A., Nguyen, K. D., . . . Reynolds, P. (2011). Characterizing workplace exposures in vietnamese women

working in california nail salons. *American Journal of Public Health,* doi:10.2105/AJPH.2010.300099

Quach, T., Nguyen, K. D., Doan-Billings, P. A., Okahara, L., Fan, C., & Reynolds, P. (2008). A preliminary survey of vietnamese nail salon workers in alameda county, california. *Journal of Community Health, 33*(5), 336-343. doi:10.1007/s10900-008-9107-7

Quandt, S. A., Arcury, T. A., Austin, C. K., & Cabrera, L. F. (2001). Preventing occupational exposure to pesticides: Using participatory research with latino farmworkers to develop an intervention. *Journal of Immigrant Health, 3*(2), 85-96. doi:10.1023/A:1009513916713

Quandt, S. A., Chen, H., Grzywacz, J. G., Vallejos, Q. M., Galvan, L., & Arcury, T. A. (2010). Cholinesterase depression and its association with pesticide exposure across the agricultural season among latino farmworkers in north carolina. *Environmental Health Perspectives, 118*(5), 635-639. doi:10.1289/ehp.0901492

Regulations of the boston public health commission Retrieved 5/17/2012, 2012, from http://www.bphc.org/boardofhealth/regulations/pages/home.aspx

Reutman, S. R., Rohs, A. M., Clark, J. C., Johnson, B. C., Sammons, D. L., Toennis, C. A., . . . Lockey, J. E. (2009). A pilot respiratory health assessment of nail technicians: Symptoms, lung function, and airway inflammation. *American Journal of Industrial Medicine, 52*(11), 868-875. doi:10.1002/ajim.20751

Roelofs, C., Azaroff, L. S., Holcroft, C., Nguyen, H., & Doan, T. (2008). Results from a community-based occupational health survey of vietnamese-american nail salon

workers. *Journal of Immigrant and Minority Health / Center for Minority Public Health, 10*(4), 353-361. doi:10.1007/s10903-007-9084-4

Roelofs, C., & Do, T. (2012). Exposure assessment in nail salons: An indoor air approach. [Cora Roelofs and Tuan Do, "Exposure Assessment in Nail Salons: An Indoor Air Approach," ISRN Public Health, vol. 2012, Article ID 962014, 7 pages, 2012. doi:10.5402/2012/962014.] *ISRN Public Health, 2012* doi:doi:10.5402/2012/962014

Schulmeister, L., & Lifsey, D. S. (1999). Cervical cancer screening knowledge, behaviors, and beliefs of vietnamese women. *Oncology Nursing Forum, 26*(0190-535; 5), 879-887.

Solomon, F. M., Linnan, L. A., Wasilewski, Y., Lee, A. M., Katz, M. L., & Yang, J. (2004). Observational study in ten beauty salons: Results informing development of the north carolina BEAUTY and health project. *Health Education & Behavior : The Official Publication of the Society for Public Health Education, 31*(6), 790-807. doi:10.1177/1090198104264176

Spears, C. R., Nolan, B. V., O'Neill, J. L., Arcury, T. A., Grzywacz, J. G., & Feldman, S. R. (2011). Recruiting underserved populations to dermatologic research: A systematic review. *International Journal of Dermatology, 50*(4), 385-395. doi:10.1111/j.1365-4632.2010.04813.x; 10.1111/j.1365-4632.2010.04813.x

Spencer, A. B., Estill, C. F., McCammon, J. B., Mickelsen, R. L., & Johnston, O. E. (1997). Control of ethyl methacrylate exposures during the application of artificial fingernails. *American Industrial Hygiene Association Journal, 58*(3), 214-218.

StataCorp LP. (2011). *Stata 12 data analysis and statistical software* [Stata 12.1 Statistics/Data Analysis Special Edition] (12.1 SE (Special Edition) ed.). College Station, Texas:

Stock L, C. J. (1997). *Barbering and cosmetology. in: ILO encyclopedia of occupational health and safety.* Retrieved

U.S. Census Bureau. (2007). *Census bureau facts for features.* Retrieved

U.S. Environmental Protection Agency [EPA]. (2007). *Protecting the health of nail salon workers* (EPA 744-F-07-001 ed.). Houston, TX: EPA Office of Pollution and Toxics and Office of Administration and Resource Management.

U.S. Food and Drug Administration [FDA]. (2000). *Nail care products.* Retrieved May 2012, 2012, from http://www.fda.gov/Cosmetics/ProductandIngredientSafety/ProductInformation/ucm127068.htm

U.S. National Institute for Occupational Safety and Health [NIOSH]. (1999). *Hazard controls: Controlling chemical hazards during the application of artificial fingernails: Cincinatti: National institute for occupational safety and health. DHHS publication number 99-112. January 1999.* Retrieved April 1, 2012, from http://www.cdc.gov/niosh/docs/99-112/

U.S. National Institute for Occupational Safety and Health [NIOSH]. (2007). *Work-related musculoskeletal disorders fact sheet.* Retrieved

U.S. Occupational Safety and Health Administration [OSHA]. (2012). *Enforcement exemptions and limitations under the appropriations act. OSHA directive number:*

CPL 02-00-051. Retrieved April 2012, 2012, from http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=DIRECTIVES&p_id=151

Van Eerd, D., Hogg-Johnson, S., Cole, D. C., Wells, R., & Mazumder, A. (2012). Comparison of occupational exposure methods relevant to musculoskeletal disorders: Worker-workstation interaction in an office environment. *Journal of Electromyography and Kinesiology : Official Journal of the International Society of Electrophysiological Kinesiology, 22*(2), 176-185. doi:10.1016/j.jelekin.2011.12.001

Ward, L. S. (2007). Preliminary tests of an ecological model of hispanic farmworker health. *Public Health Nursing (Boston, Mass.), 24*(6), 554-564. doi:10.1111/j.1525-1446.2007.00668.x

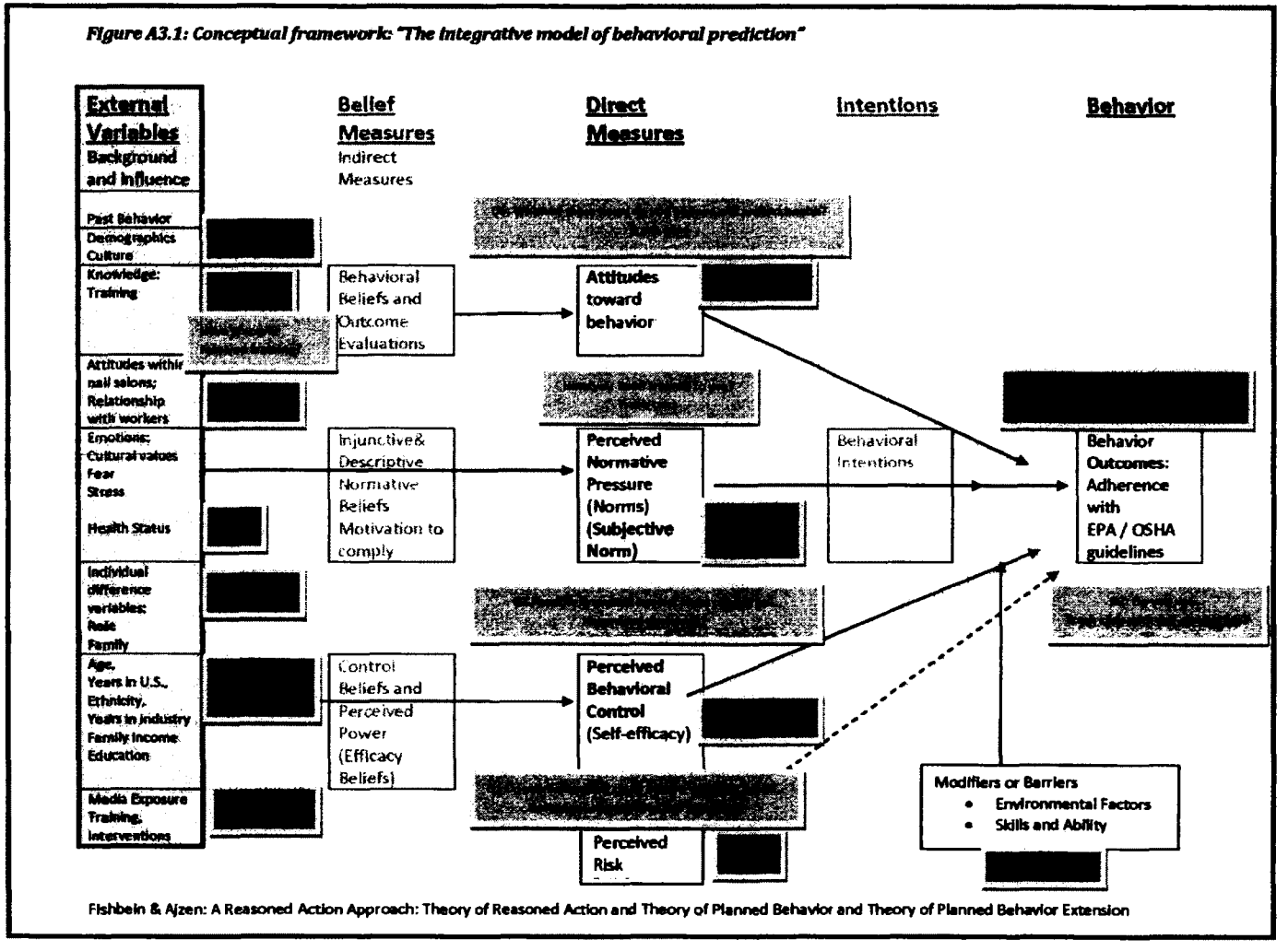
Williamson, E. P. (2012, May 1, 2012). Gratitude given and received. *Nurse.Com,* (May 1), 8.

Yeung, S. S., Genaidy, A. M., Karwowski, W., & Leung, P. C. (2002). Reliability and validity of self-reported assessment of exposure and outcome variables for manual lifting tasks: A preliminary investigation. *Applied Ergonomics, 33*(5), 463-469.

Yzer, M. (2012). Chapter 2: The integrative model of behavioral prediction as a tool for designing health messages. In H. Ho (Ed.), *Health communication message design: Theory and practice* (pp. 21-40). Thousand Oaks, CA: Sage Publications.

APPENDICES

Appendix Figure 3-1. Conceptual framework: "The integrative model of behavioral prediction"



Appendix Table 4-1. Survey recruitment and response (n = 176)

Responders from eleven municipalities or counties:	**n**	**(%)**
Baltimore City, Maryland	16	(9.1)
Baltimore County, Maryland	35	(19.9)
Charles County, Maryland	18	(10.2)
Howard County, Maryland	26	(14.8)
Montgomery County, Maryland	27	(15.3)
Maryland (unknown location)	10	(5.7)
Washington, D.C.	1	(0.6)
Los Angeles, California	8	(4.6)
Iowa	4	(2.3)
Springfield, Massachusetts	10	(5.7)
Northern Virginia	21	(11.9)
Methods for survey completion:		
Phone interview	1	(0.6)
Interview assisted	2	(1.1)
Self-administered	173	(98.3)
Methods of recruitment:		
Mass mailing and mailed returns	4	(2.3)
Phone interview	1	(0.6)
Door-to-door sampling to salons and surveys picked up	94	(53.4)
Door-to-door sampling and surveys returned by mail	35	(19.9)
Social networking recruitment and returned by mail	33	(18.6)
Recruitment events	9	(5.1)
Survey language:		
Vietnamese version	138	(78.4)
English version	38	(21.6)

Appendix Table 4-2. Tables with ventilation: Fisher's exact bivariate analysis

	Don't use tables with ventilation		Use tables with ventilation		Total	
	n	(%)	n	(%)	n	(%)
Gender						
Female	7	(9.1)	70	(90.9)	77	(80.2)
Male	3	(15.8)	16	(84.2)	19	(19.8)
Total (p= 0.409)					96	(100.0)
Received training about protecting health						
No	2	(9.1)	20	(90.9)	22	(23.9)
Yes	7	(10.0)	63	(90.0)	70	(76.1)
Total (p= 1.00)					92	(100.0)
Trained on tables with ventilation						
No	4	(23.5)	13	(76.5)	17	(18.7)
Yes	3	(4.1)	71	(95.9)	74	(81.3)
Total (p= 0.021)					91	(100.0)
Believe tables with ventilation will protect health						
No	4	(33.3)	8	(66.7)	12	(12.6)
Yes	6	(7.2)	77	(92.8)	83	(87.4)
Total (p= 0.021)					95	(100.0)
Believe harmful hazardous chemicals in nail products						
No	0	(0.0)	19	(100.0)	19	(20.2)
Yes	9	(12.0)	66	(88.0)	75	(79.8)
Total (p= 0.196)					94	(100.0)
Protection against hazardous chemicals						
No	6	(13.6)	38	(86.4)	44	(48.9)
Yes	3	(6.5)	43	(93.5)	46	(51.1)
Total (p= 0.310)					90	(100.0)

Barrier: Comfort						
No	8	(12.3)	57	(87.7)	60	(89.6)
Yes	0	(0.0)	7	(100.0)	7	(10.4)
Total (p= 1.0)					67	(100.0)
Barrier: Not useful						
No	7	(10.1)	62	(89.9)	69	(95.8)
Yes	1	(33.3)	2	(66.7)	3	(4.2)
Total (p= 0.301)					72	(100.0)
Barrier: Costs too much						
No	3	(6.1)	46	(93.9)	49	(68.1)
Yes	5	(21.7)	18	(78.3)	23	(31.9)
Total (p= 0.100)					72	(100.0)
Barrier: Takes too much time						
No	7	(10.9)	57	(89.1)	64	(88.9)
Yes	1	(12.5)	7	(87.5)	8	(11.1)
Total (p= 1.0)					72	(100.0)
Barrier: Only necessary for certain services						
No	7	(13.0)	47	(87.0)	54	(75.0)
Yes	1	(5.6)	17	(94.4)	18	(25.0)
Total (p= 0. 670)					72	(100.0)
Barrier: Not possible						
No	7	(11.7)	53	(88.3)	60	(83.3)
Yes	1	(8.3)	11	(91.7)	12	(16.7)
Total (p= 1.0)					72	(100.0)
Barrier: Salon owner does not encourage						
No	8	(14.0)	49	(86.0)	57	(79.2)
Yes	0	(0)	15	(100.0)	15	(20.8)
Total (p= 0.191)					72	(100.0)

Barrier: Other salon workers don't use						
No	8	(12.7)	55	(87.3)	63	(87.5)
Yes	0	(0.0)	9	(100.0)	9	(12.5)
Total (p= 0.584)					72	(100.0)
Barrier: Customers object						
No	8	(12.1)	58	(87.9)	66	(91.7)
Yes	0	(0.0)	6	(100.0)	6	(8.3)
Total (p= 1.0)					72	(100.0)
Owner /manager vs. nail technician						
Nail technician	8	(10.1)	71	(89.9)	79	(82.3)
Owner/Manager	2	(11.8)	15	(88.2)	17	(17.7)
Total (p= 1.0)					96	(100.0)

Appendix Table 4-3. Comfortable Hand Tools: Fisher's exact bivariate analysis

	Don't use comfortable hand tools		Use comfortable hand tools		Total	
	n	(%)	n	(%)	n	(%)
Gender						
Female	17	(20.7)	65	(79.3)	82	(82.0)
Male	2	(11.1)	16	(88.9)	18	(18.0)
Total (p= 0.512)					100	(100.0)
Received Training about protecting health						
No	4	(17.4)	19	(82.6)	23	(23.5)
Yes	15	(20.0)	60	(80.0)	71	(76.5)
Total (p= 1.00)					94	(100.0)
Trained on hand tools that are comfortable						
No	10	(50.0)	10	(50.0)	20	(22.2)
Yes	8	(11.4)	62	(88.6)	70	(77.8)
Total (p= 0.001)					90	(100.0)
Believe hand tools that are comfortable will protect health						
No	14	(38.9)	22	(61.1)	36	(36.4)
Yes	5	(7.9)	58	(92.1)	63	(63.6)
Total (p= 0.0003)					99	(100.0)
Owner / manager vs. nail technician						
Nail technician	16	(20.8)	61	(79.2)	77	(76.2)
Owner/manager	4	(16.7)	20	(83.3)	24	(23.8)
Total (p= 0.776)					99	(100.0)

Appendix Table 4-4. Trashcans with lids: Fisher's exact bivariate analysis

	Don't use trash cans with self-closing lids		Use trash cans with self-closing lids		Total	
	n	(%)	n	(%)	n	(%)
Gender						
Female	15	(15.1)	84	(84.9)	99	(79.2)
Male	3	(11.5)	23	(88.5)	26	(20.8)
Total (p = 0.763)					125	(100.0)
Received training about protecting health						
No	6	(18.7)	26	(81.3)	32	(26.0)
Yes	12	(13.2)	79	(86.8)	91	(74.0)
Total (p= 0.561)					123	(100.0)
Trained on trash cans with self-closing lids						
No	6	(42.9)	8	(57.1)	14	(12.4)
Yes	8	(8.1)	91	(91.9)	99	(87.6)
Total (p= 0.002)					113	(100.0)
Believe trash cans with self-closing lids will protect health						
No	8	(47.1)	9	(52.9)	17	(13.7)
Yes	11	(10.3)	96	(89.7)	107	(86.3)
Total (p= 0.001)					124	(100.0)
Believe harmful hazardous chemicals in nail products						
No	2	(9.5)	19	(90.5)	21	(16.9)
Yes	16	(15.5)	87	(84.5)	103	(83.1)
Total (p= 0.735)					124	(100.0)
Protection against hazardous chemicals						
No	9	(18.4)	40	(81.6)	49	(43.4)
Yes	9	(14.1)	55	(85.9)	64	(56.6)

Total (p= 0.608)					113	(100.0)
Owner / manager vs. nail technician						
Nail technician	17	(17.2)	82	(82.8)	99	(78.6)
Owner/manager	2	(7.4)	25	(92.6)	27	(21.4)
Total (p= 0.361)					126	(100.0)

Appendix Table 4-5. Height-adjustable chairs: Fisher's exact bivariate analysis

	Don't use height-adjustable chairs		Use height-adjustable chairs		Total	
	n	(%)	n	(%)	n	(%)
Gender						
Female	14	(11.3)	110	(88.7)	124	(79.0)
Male	2	(6.1)	31	(93.9)	33	(21.0)
Total (p= 0.526)					157	(100.0)
Received training about protecting health						
No	6	(13.3)	39	(86.7)	45	(29.8)
Yes	10	(9.4)	96	(90.6)	101	(66.9)
Total (p= 0.564)					151	(100.0)
Trained on height adjustable chairs						
No	7	(23.3)	23	(76.7)	30	(21.7)
Yes	6	(5.6)	102	(94.4)	108	(78.3)
Total (p= 0.008)					138	(100.0)
Believe height adjustable chairs will protect health						
No	6	(11.1)	48	(88.9)	54	(34.8)
Yes	10	(9.9)	91	(90.1)	101	(65.2)
Total (p= 0.789)					155	(100.0)
Barrier: Not comfortable						
No	6	(7.5)	74	(92.5)	80	(72.7)
Yes	6	(20.0)	24	(80.0)	30	(27.3)
Total (p= 0.085)					110	(100.0)
Barrier: Not useful						
No	10	(10.7)	83	(89.3)	93	(84.5)
Yes	2	(11.8)	15	(88.2)	17	(15.5)
Total (p= 1.00)					110	(100.0)
Barrier: Costs too much						
No	9	(9.9)	82	(90.1)	91	(82.7)
Yes	3	(15.8)	16	(84.2)	19	(17.3)

Total (p= 0.432)					110	(100.0)
Barrier: Takes too much time						
No	10	(10.3)	87	(89.7)	97	(88.2)
Yes	2	(15.4)	11	(84.6)	13	(11.8)
Total (p= 0.632)					110	(100.0)
Barrier: Only necessary on certain clients						
No	10	(14.1)	61	(85.9)	71	(64.5)
Yes	2	(5.1)	37	(94.9)	39	(35.5)
Total (p= 0.207)					110	(100.0)
Barrier: Not possible						
No	10	(12.1)	73	(87.9)	83	(75.5)
Yes	2	(7.4)	25	(92.6)	27	(24.5)
Total (p= 0.727)					110	(100.0)
Barrier: Salon owner does not encourage						
No	11	(12.2)	79	(87.8)	90	(81.8)
Yes	1	(5.0)	19	(95.0)	20	(18.2)
Total (p= 0. 691)					110	(100.0)
Barrier: Other salon workers don't use						
No	12	(11.5)	92	(88.5)	104	(94.5)
Yes	0	(0.0)	6	(100.0)	6	(5.5)
Total (p= 1.00)					110	(100.0)
Barrier: Customers object						
No	12	(11.3)	94	(88.7)	106	(96.4)
Yes	0	(0.0)	4	(100.0)	4	(3.6)
Total (p= 1.00)					110	(100.0)
Owner/manager vs. nail technician						
Nail technician	14	(11.1)	112	(88.9)	126	(79.7)
Owner/manager	2	(6.3)	30	(93.7)	32	(20.3)
Total (p= 0.529)					158	(100.0)

Appendix Table 4-6. Swivel chairs: Fisher's exact bivariate analysis

	Don't use swivel chairs		Use swivel chairs		Total	
	n	(%)	n	(%)	n	(%)
Gender						
Female	17	(14.9)	97	(85.1)	114	(80.9)
Male	5	(18.5)	22	(81.5)	27	(19.1)
Total (p= 0.768)	22	(100.0)	119	(100.0)	141	(100.0)
Received training about protecting health						
No	11	(25.6)	32	(74.4)	43	(31.8)
Yes	10	(10.9)	82	(89.1)	92	(68.2)
Total (p= 0.040)					135	(100.0)
Trained on swivel chairs						
No	13	(50.0)	13	(50.0)	26	(21.0)
Yes	6	(6.1)	92	(93.8)	98	(79.0)
Total (p= 0. 000)					124	(100.0)
Believe swivel chairs will protect health						
No	12	(21.4)	44	(78.6)	56	(40.3)
Yes	9	(10.8)	74	(89.2)	83	(59.7)
Total (p= 0.097)					139	(100.0)
Barrier: Not useful						
No	16	(19.7)	65	(80.3)	81	(82.6)
Yes	3	(17.6)	14	(82.4)	17	(17.4)
Total (p= 1.00)					98	(100.0)
Barrier: Not comfortable						
No	14	(20.0)	56	(80.0)	70	(71.4)
Yes	5	(17.9)	23	(82.1)	28	(28.6)
Total (p= 1.00)					98	(100.0)
Barrier: Costs too much						
No	14	(17.1)	68	(82.9)	82	(83.7)
Yes	5	(31.2)	11	(68.8)	16	(16.3)
Total (p= 0.296)					98	(100.0)

Barrier: Takes too much time						
No	15	(17.4)	71	(82.6)	86	(87.8)
Yes	4	(33.3)	8	(66.7)	12	(12.2)
Total (p= 0.240)					98	(100.0)
Barrier: Only necessary on certain clients						
No	13	(22.0)	46	(78.0)	59	(60.2)
Yes	6	(15.4)	33	(84.6)	39	(39.8)
Total (p= 0.449)					98	(100.0)
Barrier: Not possible						
No	15	(20.5)	58	(79.5)	73	(74.5)
Yes	4	(16.0)	21	(84.0)	25	(25.5)
Total (p= 0.773)					98	(100.0)
Barrier: Salon owner does not encourage						
No	17	(21.5)	62	(78.5)	79	(80.6)
Yes	2	(10.5)	17	(89.5)	19	(19.4)
Total (p= 0.350)					98	(100.0)
Barrier: Other salon workers don't use						
No	19	(20.2)	75	(79.8)	94	(95.9)
Yes	0	(0.0)	4	(100.0)	4	(4.1)
Total (p= 1.00)					98	(100.0)
Barrier: Customers object						
No	19	(19.6)	78	(80.4)	97	(99.0)
Yes	0	(0.0)	1	(100.0)	1	(1.0)
Total (p= 1.00)					98	(100.0)
Owner/manager vs. nail technician						
Nail technician	17	(14.8)	98	(85.2)	115	(81.0)
Owner/manager	5	(18.5)	22	(81.5)	27	(19.0)
Total (p= 0.569)					142	(100.0)

Appendix Table 4-7. Back-supported chairs: Fisher's exact bivariate analysis

	Don't use back-supported chairs		Use back-supported chairs		Total	
	n	(%)	n	(%)	n	(%)
Gender						
Female	19	(15.1)	107	(85.0)	126	(79.3)
Male	3	(9.1)	30	(90.9)	33	(20.7)
Total (p= 0.572)					159	(100.0)
Received training about protecting health						
No	10	(22.2)	35	(77.8)	45	(29.4)
Yes	10	(9.3)	98	(90.7)	108	(70.6)
Total (p= 0.038)					153	(100.0)
Trained on chairs with back support						
No	10	(30.3)	23	(69.7)	33	(23.6)
Yes	6	(5.6)	101	(94.4)	107	(76.4)
Total (p= 0.0004)					140	(100.0)
Believe chairs with back support will protect health						
No	12	(20.3)	47	(79.7)	59	(37.6)
Yes	9	(9.2)	89	(90.8)	98	(62.4)
Total (p= 0.056)					157	(100.0)
Barrier: Not comfortable						
No	9	(11.4)	70	(88.6)	79	(71.8)
Yes	6	(19.4)	25	(80.6)	31	(28.2)
Total (p= 0.354)					110	(100.0)
Barrier: Not useful						
No	12	(12.9)	81	(87.1)	93	(84.5)
Yes	3	(17.6)	14	(82.4)	17	(15.5)
Total (p= 0.705)					110	(100.0)

Barrier: Costs too much						
No	13	(14.1)	79	(88.9)	92	(83.6)
Yes	2	(11.1)	16	(88.9)	18	(16.4)
Total (p= 1.00)					110	(100.0)
Barrier: Takes too much time						
No	12	(12.4)	85	(87.6)	97	(88.2)
Yes	3	(23.1)	10	(76.9)	13	(11.8)
Total (p= 0.382)					110	(100.0)
Barrier: Only necessary for certain services						
No	12	(17.1)	58	(82.9)	70	(63.6)
Yes	3	(7.5)	37	(92.5)	40	(36.4)
Total (p= 0.248)					110	(100.0)
Barrier: Not possible						
No	13	(15.5)	71	(84.5)	84	(76.4)
Yes	2	(7.7)	24	(92.3)	26	(23.6)
Total (p= 0.514)					110	(100.0)
Barrier: Salon owner does not encourage						
No	13	(14.4)	77	(85.6)	90	(81.8)
Yes	2	(10.0)	18	(90.0)	20	(18.2)
Total (p= 1.00)					110	(100.0)
Barrier: Other salon workers don't use						
No	15	(14.3)	90	(85.7)	105	(95.5)
Yes	0	(0.0)	5	(100.0)	5	(4.5)
Total (p= 1.00)					110	(100.0)
Barrier: Customers object						
No	15	(14.2)	91	(85.8)	106	(96.4)
Yes	0	(0.0)	4	(100.0)	4	(3.6)
Total (p= 1.00)					110	(100.0)

Owner /manager vs. nail technician						
Nail technician	19	(15.0)	108	(85.0)	127	(79.4)
Owner/manager	3	(9.1)	30	(90.9)	33	(20.6)
Total (p= 0.571)					160	(100.0)

Appendix Table 4-8. Correlation of beliefs vs. training for each outcome

	Belief in Equipment	Trained on Equipment					
		No		Yes		Total	
		n	%	n	%	n	%
Equipment							
Height-Adjustable Chairs (0.0028)	No	21	(58.3)	34	(29.8)	55	(36.7)
	Yes	15	(41.7)	80	(0.7)	95	(63.3)
Comfortable Hand Tools (< 0.0001)	No	50	(73.5)	27	(32.9)	77	(51.3)
	Yes	18	(26.5)	55	(67.1)	73	(48.7)
Masks (< 0.0001)	No	7	(29.2)	0	(0.0)	7	(4.7)
	Yes	17	(70.8)	126	(100.0)	143	(95.3)
Back-Supported Chairs (0.0003)	No	26	(63.4)	32	(29.4)	58	(38.7)
	Yes	15	(36.6)	77	(70.6)	92	(61.3)
Swivel Chairs (< 0.0001)	No	32	(71.1)	35	(33.3)	67	(44.7)
	Yes	13	(28.9)	70	(66.7)	83	(55.3)
Tables with Ventilation (< 0.0001)	No	31	(48.4)	10	(11.6)	41	(27.3)
	Yes	33	51.6)	76	(88.4)	109	(72.7)
Trashcans with Self-closing lids (< 0.0001)	No	27	(58.7)	8	(7.7)	35	(23.3)
	Yes	19	(41.3)	96	(92.3)	115	(76.7)

Appendix Table 4-9. Proportion of reported health problems

Health Problem	All Workers (n = 176)		Owners and Managers (n = 36)		Nail Technicians (n = 140)	
	n	(%)	n	(%)	n	(%)
Tiredness	104	(59.1)	26	(72.2)	78	(55.7)
Stress	54	(30.7)	12	(33.3)	42	(30.0)
Eye irritation	53	(30.1)	5	(9.4)	48	(34.3)
Eye strain	80	(45.5)	13	(36.1)	67	(47.9)
Headaches	76	(43.2)	15	(41.7)	61	(43.6)
Difficulty concentrating	18	(10.2)	2	(5.6)	16	(11.4)
Muscle aches	49	(27.8)	12	(33.3)	37	(26.4)
Joint pain	56	(31.8)	13	(36.1)	43	(30.7)
Wrist pain	49	(27.8)	11	(30.6)	38	(27.1)
Hand pain	45	(25.6)	7	(19.4)	38	(27.1)
Back pain	89	(50.6)	16	(44.4)	73	(52.1
Elbow pain	15	(8.5)	2	(5.6)	13	(9.3)
Shoulder pain	59	(33.5)	13	(36.1)	46	(32.9)
Neck pain	63	(35.8)	10	(27.8)	53	(37.9)
Numbness or tingling in arms or hands	35	(19.9)	8	(22.2)	27	(19.3)
Numbness or tingling in legs or feet	13	(7.4)	2	(5.6)	11	(7.9)
Carpal tunnel syndrome	16	(9.1)	4	(11.1)	12	(8.6)
Difficulty breathing	13	(7.4)	1	(2.8)	12	(8.6)
Asthma	7	(4.0)	0	(0.0)	7	(4.0)
Nose or throat irritation	34	(19.3)	5	(20.5)	29	(20.7)
Skin problems	17	(9.7)	2	(5.6)	15	(10.7)
Injuries	6	(3.4)	2	(5.6)	4	(2.9)

Appendix A.3-1. Nail salon survey in English

Survey about Vietnamese American Nail Salons

Dear Nail Salon Worker,

Thank you very much for taking the time to complete this survey. We have worked closely with members of the Vietnamese community and with nail salon workers to develop these questions. We hope that this survey will help all nail salon workers to be healthy and safe at work. Your responses are very important to us. If you have any questions, call: 410-375-5599 or e-mail: johnshopkins.nailsurvey@gmail.com.
We appreciate your assistance.

Directions:

Complete one survey, either in English or Vietnamese. This survey should take only about 30 minutes. Please answer all the questions to the best of your ability. You may skip a question if it makes you uncomfortable in any way, or if you don't want to answer the question for any reason. Remember to answer questions on the front and back of the pages.

This is confidential. We will not be able to link your responses to you personally. At the end of this survey, you may enter a drawing for a contest to win an iPad (worth $500). Please complete and return this survey as soon as possible.

Please place a [√] check mark in the box [☐] for each question, according to the directions. If you would like to add any information to your responses, you may do so next to the question.

A. Please answer the following questions before you begin the survey:

A.1 **Do you currently work in a nail salon?**

☐ Yes*
☐ No**

***If "Yes," please continue.**

****If "No," thank you very much for your willingness to complete this survey. We are seeking information from individuals who are currently working in nail salons. It is not necessary for you to complete this survey.**

A.2 **Are you at least 18 years of age?**

☐ Yes*
☐ No**

***If "Yes," please continue.**

****If "No," thank you very much for your willingness to complete this survey. We are seeking information from adults who are currently working in nail salons. It is not necessary for you to complete this survey.**

A.3 **Are you Vietnamese or Vietnamese-American?**

☐ Yes*
☐ No**

***If "Yes," please continue.**

****If "No," thank you very much for your willingness to complete this survey. We are seeking information from workers who are Vietnamese or Vietnamese-American. It is not necessary for you to complete this survey.**

A.4 **Have you completed this survey previously?**

☐ Yes*
☐ No**

****If "No," please continue.**

***If "Yes," thank you. It is not necessary to complete it again. We only need one survey per person.**

Continue on other side. ⟶

B. The following questions are about you and your work.

B.1 **Are you male or female?**

- ☐ Male
- ☐ Female

B.2 **What is your age?**

___ years old

B.3 **What is your country of birth?**

- ☐ Vietnam
- ☐ U.S.
- ☐ Other: _____

B.4 **If you were <u>not</u> born in the U.S., in what year did you move to the U.S.?**

Year moved to the U.S.: _____

B.5 **What language(s) do you speak at home?**

- ☐ Vietnamese
- ☐ English
- ☐ Both Vietnamese and English

B.6 **What language(s) do you speak at work?**

- ☐ Vietnamese
- ☐ English
- ☐ Both Vietnamese and English

B.7 **What level of schooling have you completed?**

- ☐ 0-12 years
- ☐ High school diploma or GED
- ☐ Technical school
- ☐ Two-year college degree
- ☐ Undergraduate college degree
- ☐ Master's degree or higher
- ☐ Other: _____

B. 8 **What is your role in the nail salon?** ***(Choose the response that best describes your primary role.)***

- ☐ Nail salon owner
- ☐ Nail salon manager
- ☐ Nail technician
- ☐ Cosmetologist
- ☐ Esthetician
- ☐ Apprentice
- ☐ Other (please describe):

_____

B.9 **Have you worked in nail salons for more than one year?**

- ☐ Yes*
- ☐ No

***<u>If "Yes,"</u> how many years have you worked in nail salons?** ___ years

B.10 **How many nail salon workers work in your nail salon?** ___ workers

B.11 **How many manicure stations are in your nail salon?** ___ manicure stations

B.12 **How many pedicure stations are in your nail salon?** ___ pedicure stations

B.13 **What is the cost for a basic manicure in your nail salon?** $_____

B.14 **On average, how many <u>hours</u> do you work in a nail salon <u>each week</u>?** ___ hours per week

B.15 **On average, how many manicures and/or other services on hands do <u>you</u> perform on <u>a busy day</u>?**

___ manicures and/or other services on hands

B.16 **On average, how many pedicures do <u>you</u> perform on <u>a busy day</u>?** ___ pedicures

B.17 **On <u>a busy day</u>, how many <u>breaks</u> do you take, including meals?** ___ breaks

B.18 **What other services are provided in your nail salon?** ***(Please choose all that apply.)***

- ☐ Facials
- ☐ Spa services
- ☐ Waxing
- ☐ Hair
- ☐ None of the above
- ☐ Other: _____

B.19 **Do you work in another job?**

- ☐ Yes*
- ☐ No

***If "Yes," # hours worked in 2nd job?** ___ hours

***If "Yes," what is the job?** _____

C. The following questions are about training(s) you may have received.

C.1 **Have you received training about protecting your health while working in a nail salon?**

- ☐ Yes
- ☐ No*

*If "No," please skip to question C.4.

C.2 **Where have you received training about protecting your health while working?** ***(Please choose all that apply.)***

- ☐ In beauty or cosmetology school
- ☐ From a nail salon owner
- ☐ From other nail salon workers
- ☐ From a training sponsored by the U.S. Environmental Protection Agency (EPA) or government agency
- ☐ In a community center
- ☐ From internet web sites
- ☐ Other: _____

C.3 **When was the last time that you received any training about health and safety related to working in nail salons?**

- ☐ Within the last month
- ☐ Within the last six months
- ☐ Within the last year
- ☐ More than one year ago
- ☐ I have never had any training about health and safety at work

C.4 **What are your main sources of information about work-related health and safety?** ***(Please choose all that apply.)***

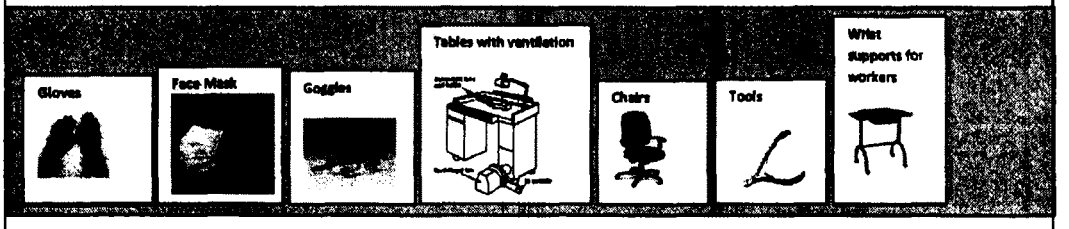
- ☐ A nail salon owner
- ☐ Other nail salon workers
- ☐ A nail supplier
- ☐ Friends and family
- ☐ Internet
- ☐ Beauty or cosmetology school
- ☐ Educational programs in the community
- ☐ Radio
- ☐ TV
- ☐ Newspapers
- ☐ Nail industry magazines
- ☐ Material Safety Data Sheets (MSDS)
- ☐ State Board of Cosmetology
- ☐ Other source(s):

_____

Continue on other side. ⟶

D. The following questions are about equipment that may be in nail salons.

For each question, please choose all answers that apply.



D.1 **Does your salon have ...**
(Please choose all that apply.)

- ☐ Gloves?
- ☐ Face masks?
- ☐ Goggles (for eyes)?
- ☐ Tables with built-in ventilation (fans)?
- ☐ Chairs that are adjustable for height (move up and down)?
- ☐ Chairs that swivel (side to side)?
- ☐ Chairs with back support?
- ☐ Hand tools that are comfortable to use?
- ☐ Wrist supports for workers?
- ☐ Trash cans with self-closing lids?
- ☐ An eye wash station?

D.2 **Do you use ...**
(Please choose all that apply.)

- ☐ Gloves?
- ☐ Face masks?
- ☐ Goggles (for eyes)?
- ☐ Tables with built-in ventilation (fans)?
- ☐ Chairs that are adjustable for height (move up and down)?
- ☐ Chairs that swivel (side to side)?
- ☐ Chairs with back support?
- ☐ Hand tools that are comfortable to use?
- ☐ Wrist supports for workers?
- ☐ Trash cans with self-closing lids?
- ☐ An eye wash station?

D.3 **Does the chair that you use have arms?**

- ☐ Yes
- ☐ No

D.4 **Does your nail salon have a trash can with a self-closing lid at every work station?**

- ☐ Yes
- ☐ No

D. 5 **Have you been trained to use ...**
(Please choose all that apply.)

- ☐ Gloves?
- ☐ Face masks?
- ☐ Goggles (for eyes)?
- ☐ Tables with built-in ventilation (fans)?
- ☐ Chairs that are adjustable for height (move up and down)?
- ☐ Chairs that swivel (side to side)?
- ☐ Chairs with back support?
- ☐ Hand tools that are comfortable to use?
- ☐ Wrist supports for workers?
- ☐ Trash cans with self-closing lids?
- ☐ An eye wash station?

D.6 **Which of these items do you believe will protect your health?** ***(Choose all that apply.)***

- ☐ Gloves
- ☐ Face masks
- ☐ Goggles (for eyes)
- ☐ Tables with built-in ventilation (fans)
- ☐ Chairs that are adjustable for height (move up and down)
- ☐ Chairs that swivel (side to side)
- ☐ Chairs with back support
- ☐ Hand tools that are comfortable to use
- ☐ Wrist supports for workers
- ☐ Trash cans with self-closing lids
- ☐ An eye wash station

D. 7. **Are you able to control the room ventilation (room fan) in your nail salon?**

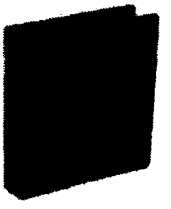
- ☐ Yes
- ☐ No

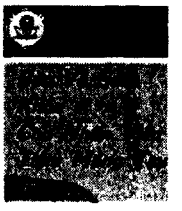
D. 8 **Are you able to control the temperature in your nail salon?**

- ☐ Yes
- ☐ No

E. The following questions are about safety communication.

For each question, please choose all answers that apply.





E.1 **Does your nail salon have ...**
(Please choose all that apply.)

- ☐ Written materials about chemicals in nail products, sometimes called Material Safety Data Sheets (MSDS), in English?
- ☐ Written materials about chemicals in nail products (MSDS) in Vietnamese?
- ☐ Labels on containers that hold chemicals?
- ☐ A list of products that contain hazardous substances?
- ☐ Training on the effects of chemicals in nail products?
- ☐ A workplace safety committee?

E.2 **Which of these types of safety communication will protect the health of nail salon workers?**
(Please choose all that apply.)

- ☐ Written materials about chemicals in nail products, sometimes called Material Safety Data Sheets (MSDS), in English
- ☐ Written materials about chemicals in nail products (MSDS) in Vietnamese
- ☐ Labels on containers that hold chemicals
- ☐ A list of products that contain hazardous substances
- ☐ Training on the effects of chemicals in nail products
- ☐ A nail salon workplace safety committee

Continue on other side. ⟶

F. The following questions are about policies that might be in nail salons.

For each question, please choose all answers that apply.

F.1 **Does your nail salon have general safety policies?**

- ☐ Yes
- ☐ No

F.2 **Does your nail salon have policies on the following?**
(Please choose all that apply.)

- ☐ Washing hands after handling chemicals
- ☐ Washing hands after each client
- ☐ No smoking at work
- ☐ No eating or drinking in work areas
- ☐ Keeping records of injuries or health problems
- ☐ Taking rest breaks
- ☐ Precautions when transferring chemicals from large container to smaller ones
- ☐ Keeping containers closed when not in use
- ☐ Keeping room ventilation (room fan) system on during working hours
- ☐ Reporting injuries

F.3 **Do you follow this practice?**
(Please choose all that apply.)

- ☐ Washing hands after handling chemicals
- ☐ Washing hands after each client
- ☐ No smoking in work areas
- ☐ No eating or drinking in work areas
- ☐ Keeping records of injuries or health problems
- ☐ Taking rest breaks
- ☐ Precautions when transferring chemicals from large container to smaller ones
- ☐ Keeping containers closed when not in use
- ☐ Keeping room ventilation (room fan) system on during working hours
- ☐ Reporting injuries

F.4 **Do you believe that this practice will protect the health of nail workers?**
(Please choose all that apply.)

- ☐ Washing hands after handling chemicals
- ☐ Washing hands after each client
- ☐ No smoking at work
- ☐ No eating or drinking in work areas
- ☐ Keeping records of injuries or health problems
- ☐ Taking rest breaks
- ☐ Precautions when transferring chemicals from large container to smaller ones
- ☐ Keeping containers closed when not in use
- ☐ Keeping room ventilation (room fan) system on during working hours
- ☐ Reporting injuries

G. The following questions are related to work behaviors.

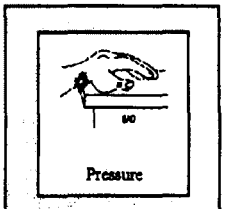
For each question, please choose all answers that apply.

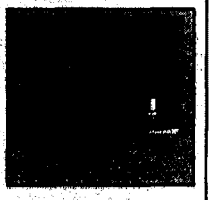
G.1 **Which of these do you believe could harm a nail salon worker's health?**
(Please choose all that apply.)

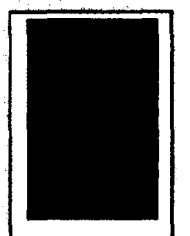
- ☐ Putting pressure on arms, wrists, or hands while working on nails
- ☐ Repeating motion, such as filing nails
- ☐ Leaning forward when working on nails
- ☐ Sitting up straight when working on nails
- ☐ Smoking cigarettes at work
- ☐ Working long hours
- ☐ Working in bad postures
- ☐ Hazardous chemicals in nail products

G.2 **Do you believe it is possible to protect yourself against harm caused by ...**
(Please choose all that apply.)

- ☐ Putting pressure on arms, wrists, or hands while working on nails?
- ☐ Repeating motion, such as filing nails?
- ☐ Leaning forward when working on nails?
- ☐ Sitting up straight when working on nails?
- ☐ Smoking cigarettes at work?
- ☐ Working long hours?
- ☐ Working in bad postures?
- ☐ Hazardous chemicals in nail products?


Pressure




Long hours


Bad Postures

Continue on other side. ⟹

H. The following questions are about reasons why a nail salon worker may not follow safety practices.

For each question, please choose all answers that apply.

H.1 **Gloves: Which of the following might be a reason why nail salon workers may not use gloves? *(Please choose all that apply.)***

- ☐ Not comfortable
- ☐ Not useful
- ☐ Costs too much
- ☐ Takes too much time
- ☐ Only necessary for certain services
- ☐ Not available
- ☐ Not possible
- ☐ Salon owner does not encourage
- ☐ Other nail salon workers don't use
- ☐ Customers object

H.2 **Masks: Which of the following might be a reason why nail salon workers may not use masks? *(Please choose all that apply.)***

- ☐ Not comfortable
- ☐ Not useful
- ☐ Costs too much
- ☐ Takes too much time
- ☐ Only necessary for certain services
- ☐ Not available
- ☐ Not possible
- ☐ Salon owner does not encourage
- ☐ Other nail salon workers don't use
- ☐ Customers object

H.3 **Room Ventilation: Which of the following might be a reason why nail salon workers may not use room ventilation (room fan) systems in the nail salon? *(Please choose all that apply.)***

- ☐ Not comfortable
- ☐ Not useful
- ☐ Costs too much
- ☐ Takes too much time
- ☐ Only necessary for certain services
- ☐ Only necessary when bad odors
- ☐ Not available
- ☐ Not possible
- ☐ Salon owner does not encourage
- ☐ Other nail salon workers don't use
- ☐ Customers object

H.4 **Breaks: Which of the following might be a reason why nail salon workers may not take breaks? *(Please choose all that apply.)***

- ☐ Not useful
- ☐ Costs too much
- ☐ Takes too much time
- ☐ Not possible
- ☐ Salon owner does not encourage
- ☐ Other nail salon workers don't take breaks
- ☐ Customers object

H.5 **Postures: Which of the following might be a reason why nail salon workers may not work in comfortable postures? *(Please choose all that apply.)***

- ☐ Not useful
- ☐ Takes too much time
- ☐ Only necessary for certain services
- ☐ Not possible
- ☐ Salon owner does not encourage
- ☐ Other nail salon workers don't work in comfortable postures
- ☐ Customers object

H.6 **Adjustable chairs: Which of the following might be a reason why nail salon workers may not use adjustable chairs? *(Please choose all that apply.)***

- ☐ Not comfortable
- ☐ Not useful
- ☐ Costs too much
- ☐ Takes too much time
- ☐ Only necessary on certain clients
- ☐ Not available
- ☐ Not possible
- ☐ Salon owner does not encourage
- ☐ Other nail salon workers don't use
- ☐ Customers object

I. The following questions are about health and injuries.

I.1 **Within the past four weeks (one month), have you had any of the following health problems?**

(Please choose a response of "Yes" or "No" for each of the following health problems.)	Yes	No	If "Yes," please check here if you sought medical or health care for this problem:	If "Yes," please check here if you think this health problem was related to your work in the nail salon:
Eye irritation	☐	☐	☐	☐
Difficulty concentrating	☐	☐	☐	☐
Joint pain	☐	☐	☐	☐
Hand pain	☐	☐	☐	☐
Elbow pain	☐	☐	☐	☐
Neck pain	☐	☐	☐	☐
Numbness or tingling in arms or hands	☐	☐	☐	☐
Carpal tunnel syndrome	☐	☐	☐	☐
Difficulty breathing	☐	☐	☐	☐
Asthma	☐	☐	☐	☐
Injuries	☐	☐	☐	☐

I.2 **Within the past four weeks (one month), have you had any other health problems caused by work?**

☐ Yes*
☐ No *(If "No," please skip to the question I.3.)*

***If "Yes," please describe:**

_____

***If "Yes," did you seek medical or health care?**

☐ Yes
☐ No

I.3 **Have you ever seen a doctor because of health problems or injuries related to your work?**

☐ Yes* → ***If "Yes," for which health problem(s)?**

_____

☐ No

I.4 **Have you ever missed work because of health problems or injuries related to your work?**

☐ Yes*
☐ No

***If "Yes," for which health problem(s)?**

_____

I.5 **When was the last time that you saw a doctor or health provider?**

☐ Within the past four weeks (one month)
☐ Within the past year
☐ More than one year ago

Continue on other side. →

J. The following questions are about your posture and the way you work.

Please answer "Yes," "No," or "Don't know" to the following questions:

J.1 **"When I work in the nail salon performing manicure or pedicure tasks ..."**

	Yes	No	Don't know
I use hand tools and instruments that are shaped comfortably for my hand.	☐	☐	☐
I use furniture that is adjustable to minimize strains on my body.	☐	☐	☐
I use tables that are adjustable.	☐	☐	☐
I hold clients' hands or feet with relaxed, minimal strain on my body.	☐	☐	☐
I sit straight with my back fully against the back support of the chair.	☐	☐	☐
I use chairs that are comfortable when I perform a manicure.	☐	☐	☐
I do my work tasks without holding my elbows out and away from my body.	☐	☐	☐
I keep my hands or wrists in a neutral position when I am working.	☐	☐	☐
I work without bending my neck forward.	☐	☐	☐
When I sit, my feet are flat on the floor with my thighs parallel to the floor.	☐	☐	☐
I position clients' hands and feet to prevent straining on my body.	☐	☐	☐
My tasks and tools are in front of me.	☐	☐	☐
I do not have to reach more than 12 inches for my tools or to perform tasks.	☐	☐	☐

K. The following questions are about your support network.

Please choose the best response for each question.

K.1 How much do each of these people go out of their way to do things to make your work life easier for you?

	Very much	Somewhat	A little	Not at all	Don't have such a person
Other people at work	☐	☐	☐	☐	☐

K.2 How easy is it to talk with each of the following people?

	Very much	Somewhat	A little	Not at all	Don't have such a person
Other people at work	☐	☐	☐	☐	☐

K.3 How much can each of these people be relied on when things get tough at work?

	Very much	Somewhat	A little	Not at all	Don't have such a person
Other people at work	☐	☐	☐	☐	☐

K.4 How much is each of the following willing to listen to your personal problems?

	Very much	Somewhat	A little	Not at all	Don't have such a person
Other people at work	☐	☐	☐	☐	☐

Continue on other side. ⟹

L. The following questions are about your family and your health.

L. 1 **How many people (including yourself) live in your home in each of the following age categories?**

	# People
Under 5 years of age:	_____
5-12 years of age:	_____
13-18 years of age:	_____
19-65 years of age:	_____
Over 65 years of age:	_____

L.2 **Do you have primary responsibility for childcare duties?**

- ☐ Yes
- ☐ No

L.3 **Are you responsible for the physical care of an elderly or disabled person on a regular basis in your home?**

- ☐ Yes
- ☐ No

L.4 **Financially, do you consider yourself and your immediate family to be:**

- ☐ **Wealthy**— We have all that we need and can afford many extra luxuries.
- ☐ **Comfortable**—We have all we need and can afford extras.
- ☐ **Doing well enough**—We can always buy our necessities.
- ☐ **Getting by**—We can only afford the most necessary items.
- ☐ **Very few resources**—We have great difficulty every month and sometimes cannot pay for necessities.

L.5 **Do you have health insurance?**

- ☐ Yes, I have a health insurance plan.
- ☐ No, I don't have health insurance.
- ☐ I don't know.

L.6 **Do you have Medicaid or Medical Assistance?**

- ☐ Yes, I have Medicaid or Medical Assistance.
- ☐ No, I don't have Medicaid or Medical Assistance.
- ☐ I don't know.

L.7 **Do you have Medicare?**

- ☐ Yes, I have Medicare.
- ☐ No, I don't have Medicare.
- ☐ I don't know.

L.8 **Do you smoke cigarettes?**

- ☐ Yes
- ☐ No

L.9 **How easy is it to take time off during your work to take care of personal or family matters?**

- ☐ Very easy
- ☐ Easy
- ☐ Somewhat difficult
- ☐ Difficult
- ☐ Very difficult

M. These questions are about your health and well-being.[1]

For each of the following questions, please place a [√] check mark in the one box [☐] that best describes your answer.

M.1 **In general, would you say your health is:**

Excellent	Very Good	Good	Fair	Poor
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

M.2 **The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?**

	Yes, limited a lot	Yes, limited a little	No, not limited at all
	▼	▼	▼
Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	☐	☐	☐
Climbing several flights of stairs	☐	☐	☐

M.3 **During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of your physical health?**

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
	▼	▼	▼	▼	▼
Accomplished less than you would like	☐	☐	☐	☐	☐
Were limited in the kind of work or other activities	☐	☐	☐	☐	☐

M.4 **During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?**

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
	▼	▼	▼	▼	▼
Accomplished less than you would like	☐	☐	☐	☐	☐
Did work or other activities less carefully than usual	☐	☐	☐	☐	☐

Continue on other side. ⟹

M.5 During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

Not at all	A little bit	Moderately	Quite a bit	Extremely
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

M.6 These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks ...

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
	▼	▼	▼	▼	▼
Have you felt calm and peaceful?	☐	☐	☐	☐	☐
Did you have a lot of energy?	☐	☐	☐	☐	☐
Have you felt downhearted and depressed?	☐	☐	☐	☐	☐

M.7 During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

N. These final questions are about future trainings that could promote health for nail salon workers.

Please answer whether you agree or do not agree with the following statements:

N.1. **"Continued education on health and safety should be required when licenses are renewed."**

- ☐ I agree with this statement.
- ☐ I do not agree with this statement.
- ☐ I don't know.

N.2. **"Required continued education on health and safety will help to protect the health of nail salon workers."**

- ☐ I agree with this statement.
- ☐ I do not agree with this statement.
- ☐ I don't know.

N.3. **Which of the following are the best ways for nail salon workers to learn about health and safety?**
(Please choose all that apply.)

- ☐ The Internet
- ☐ Beauty or Cosmetology School
- ☐ Nail industry magazines
- ☐ Written materials for workers to read
- ☐ Other nail salon workers
- ☐ Nail salon owners
- ☐ Nail salon suppliers
- ☐ Training sessions held in my nail salon
- ☐ Training sessions held in the community
- ☐ Other source(s): _____

N.4 **Do you have any comments that you would like to share with us?**

_____

_____

_____

_____

_____

We appreciate you and your taking time to answer these questions.

If you are interested in entering your name into the drawing for an IPad, please call (410) 614-1363 to leave your name and phone number.

We will contact you only if you are the winner.

Please return the questionnaire in the envelope provided.

Thank you!

Appendix A.3-2. Nail salon survey in English with variables defined

Survey about Vietnamese American Nail Salons

Dear Nail Salon Worker,

Thank you very much for taking the time to complete this survey. We have worked closely with members of the Vietnamese community and with nail salon workers to develop these questions. We hope that this survey will help all nail salon workers to be healthy and safe at work. Your responses are very important to us. If you have any questions, call: 410-375-5599 or e-mail: johnshopkins.nailsurvey@gmail.com.

We appreciate your assistance.

Directions:

Complete one survey, either in English or Vietnamese. This survey should take only about 30 minutes. Please answer all the questions to the best of your ability. You may skip a question if it makes you uncomfortable in any way, or if you don't want to answer the question for any reason. Remember to answer questions on the front and back of the pages.

This is confidential. We will not be able to link your responses to you personally. At the end of this survey, you may enter a drawing for a contest to win an iPad (worth $500). Please complete and return this survey as soon as possible.

Please place a [√] check mark in the box [☐] for each question, according to the directions. If you would like to add any information to your responses, you may do so next to the question.

A. Please answer the following questions before you begin the survey:

A.1 **Do you currently work in a nail salon?**

☐ Yes*
☐ No**

***If "Yes," please continue.**

****If "No," thank you very much for your willingness to complete this survey. We are seeking information from individuals who are currently working in nail salons. It is not necessary for you to complete this survey.**

A.2 **Are you at least 18 years of age?**

☐ Yes*
☐ No**

***If "Yes," please continue.**

****If "No," thank you very much for your willingness to complete this survey. We are seeking information from adults who are currently working in nail salons. It is not necessary for you to complete this survey.**

A.3 **Are you Vietnamese or Vietnamese-American?**

☐ Yes*
☐ No**

***If "Yes," please continue.**

****If "No," thank you very much for your willingness to complete this survey. We are seeking information from workers who are Vietnamese or Vietnamese-American. It is not necessary for you to complete this survey.**

A.4 **Have you completed this survey previously?**

☐ Yes*
☐ No**

****If "No," please continue.**

***If "Yes," thank you. It is not necessary to complete it again. We only need one survey per person.**

Continue on other side. ⟶

B. The following questions are about you and your work.

B.1 Are you male or female?

- [1] Male
- [2] Female

B.2 What is your age?

___ years old

B.3 What is your country of birth?

- [1] Vietnam
- [2] U.S.
- [3] Other: _____

B.4 If you were not born in the U.S., in what year did you move to the U.S.?

Year moved to the U.S.: ____

B.5 What language(s) do you speak at home?

- [1] Vietnamese
- [2] English
- [3] Both Vietnamese and English

B.6 What language(s) do you speak at work?

- [1] Vietnamese
- [2] English
- [3] Both Vietnamese and English

B.7 What level of schooling have you completed?

- [1] 0-12 years
- [2] High school diploma or GED
- [3] Technical school
- [4] Two-year college degree
- [5] Undergraduate college degree
- [6] Master's degree or higher
- [7] Other: _____

B.8 What is your role in the nail salon? ***(Choose the response that best describes your primary role.)***

- [1] Nail salon owner
- [2] Nail salon manager
- [3] Nail technician
- [4] Cosmetologist
- [5] Esthetician
- [6] Apprentice
- [7] Other (please describe): _____

B.9 Have you worked in nail salons for more than one year?

- [1] Yes*
- [2] No

***If "Yes," how many years have you worked in nail salons?** ___ years

B.10 How many nail salon workers work in your nail salon? ___ workers

B.11 How many manicure stations are in your nail salon? ___ manicure stations

B.12 How many pedicure stations are in your nail salon? ___ pedicure stations

B.13 What is the cost for a basic manicure in your nail salon? $___

B.14 On average, how many hours do you work in a nail salon each week? ___ hours per week

B.15 On average, how many manicures and/or other services on hands do you perform on a busy day?

___ manicures and/or other services on hands

B.16 On average, how many pedicures do you perform on a busy day? ___ pedicures

B.17 On a busy day, how many breaks do you take, including meals? ___ breaks

B.18 What other services are provided in your nail salon? ***(Please choose all that apply.)***

For All: Unchecked = No = 0; Checked = Yes = 1

- [1] Facials
- [2] Spa services
- [3] Waxing
- [4] Hair
- [5] None of the above
- [6] Other: _____

B.19 Do you work in another job?

- [1] Yes*
- [2] No

***If "Yes," # hours worked in 2nd job?** ___ hours

***If "Yes," what is the job?** _____

C. The following questions are about training(s) you may have received.

C.1 **Have you received training about protecting your health while working in a nail salon?**

C1_training

- ☐ Yes
- ☒ No*

Check if [YES] training and D5 - Have you been trained?

*If "No," please skip to question C2.5

C.2 **Where have you received training about protecting your health while working?** ***(Please choose all that apply.)***

TRAINING WHERE

For All: Unchecked = No = 0; Checked = Yes = 1

- C2a_school ☐ In beauty or cosmetology school
- C2b_owner ☐ From a nail salon owner
- C2c_workers ☐ From other nail salon workers
- C2d_gov ☐ From a training sponsored by the U.S. Environmental Protection Agency (EPA) or government agency
- C2e_comm ☐ In a community center
- C2f_internet ☐ From internet web sites
- C2g1_other ☐ Other: C2g2_other_training_descr: Write in:

C.3 **When was the last time that you received any training about health and safety related to working in nail salons?**

C3_training_when

- ☐ Within the last month
- ☐ Within the last six months
- ☐ Within the last year
- ☐ More than one year ago
- ☐ I have never had any training about health and safety at work

C.4 **What are your main sources of information about work-related health and safety?** ***(Please choose all that apply.)***

INFO

For All: Unchecked = No = 0; Checked = Yes = 1

- C4a_owner ☐ A nail salon owner
- C4b_workers ☐ Other nail salon workers
- C4c_supplier ☐ A nail supplier
- C4d_friend_fam ☐ Friends and family
- C4e_internet ☐ Internet
- C4f_school ☐ Beauty or cosmetology school
- C4g_comm ☐ Educational programs in the community
- C4h_radio ☐ Radio
- C4i_tv ☐ TV
- C4j_newspaper ☐ Newspapers
- C4k_mag ☐ Nail industry magazines
- C4l_msds ☐ Material Safety Data Sheets (MSDS)
- C4m_board_cosmet ☐ State Board of Cosmetology
- C4n_other ☐ Other source(s):

C4n2_other_info_descr: Write in: _____

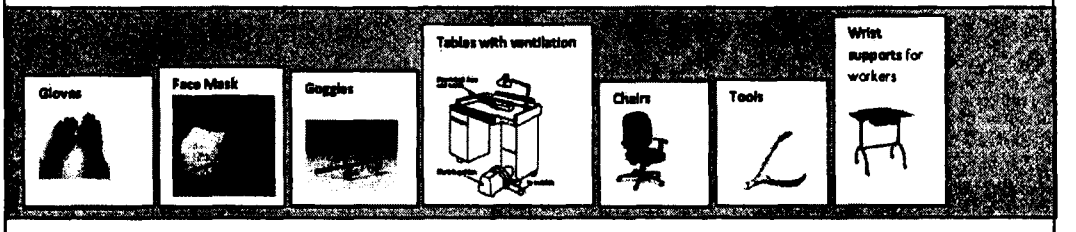
External Variables:
Exposures to Information

Normative Pressure:
Media exposure

Continue on other side. ⟹

D. The following questions are about equipment that may be in nail salons.

For each question, please choose all answers that apply.



D.1 **Does your salon <u>have</u> ...** *(Please choose all that apply.)*

(Silent) - Must be YES if USE in D2

- ☐ Gloves?
- ☐ Face masks?
- ☐ Goggles (for eyes)?
- ☐ Tables with built-in ventilation (fans)?
- ☐ Chairs that are <u>adjustable for height</u> (move up and down)?
- ☐ Chairs that <u>swivel</u> (side to side)?
- ☐ Chairs with <u>back support</u>?
- ☐ Hand tools that are <u>comfortable</u> to use?
- ☐ Wrist supports for workers?
- ☐ Trash cans with <u>self-closing lids</u>?
- ☐ An eye wash station?

D.2 **Do you <u>use</u> ...** *(Please choose all that apply.)*

Outcomes (All)

- ☐ Gloves?
- ☐ Face masks?
- ☐ Goggles (for eyes)?
- ☐ Tables with built-in ventilation (fans)?
- ☐ Chairs that are <u>adjustable for height</u> (move up and down)?
- ☐ Chairs that <u>swivel</u> (side to side)?
- ☐ Chairs with <u>back support</u>?
- ☐ Hand tools that are <u>comfortable</u> to use?
- ☐ Wrist supports for workers?
- ☐ Trash cans with <u>self-closing lids</u>?
- ☐ An eye wash station?

D.3 **Does the chair that you use have arms?**

- ☐ Yes
- ☒ No

Remove variable D3: External variables for chairs

D.4 **Does your nail salon have a trash can with a self-closing lid at <u>every work station</u>?**

- ☐ Yes
- ☒ No

Outcome (O/M)

D.5 **Have you <u>been trained</u> to use ...** *(Please choose all that apply.)*

Predictor for D2. External Variable: Knowledge

- ☐ Gloves?
- ☐ Face masks?
- ☐ Goggles (for eyes)?
- ☒ Tables with built-in ventilation (fans)?
- ☒ Chairs that are <u>adjustable for height</u> (move up and down)?
- ☐ Chairs that <u>swivel</u> (side to side)?
- ☐ Chairs with <u>back support</u>?
- ☐ Hand tools that are <u>comfortable</u> to use?
- ☐ Wrist supports for workers?
- ☐ Trash cans with <u>self-closing lids</u>?
- ☐ An eye wash station?

D.6 **Which of these items do you believe will protect your health?** ***(Choose all that apply.)***

Attitudes (All)

- ☐ Gloves
- ☐ Face masks
- ☐ Goggles (for eyes)
- ☐ Tables with built-in ventilation (fans)
- ☐ Chairs that are <u>adjustable for height</u> (move up and down)
- ☐ Chairs that <u>swivel</u> (side to side)
- ☐ Chairs with <u>back support</u>
- ☐ Hand tools that are <u>comfortable</u> to use
- ☐ Wrist supports for workers
- ☐ Trash cans with <u>self-closing lids</u>
- ☐ An eye wash station

D.7 **Are you able to control the room ventilation (room fan) in your nail salon?**

- ☐ Yes
- ☒ No

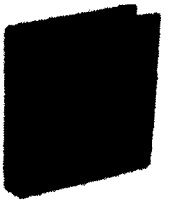
→ Perceived Control (All)

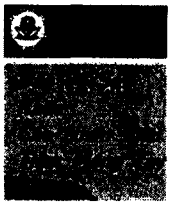
D.8 **Are you able to control the temperature in your nail salon?**

- ☐ Yes
- ☒ No

E. The following questions are about safety communication.

For each question, please choose all answers that apply.





E.1 **Does your nail salon have ...** ***(Please choose all that apply.)***

Outcome (O/M)

- ☐ Written materials about chemicals in nail products, sometimes called Material Safety Data Sheets (MSDS), in English?
- ☐ Written materials about chemicals in nail products (MSDS) in Vietnamese?
- ☐ Labels on containers that hold chemicals?
- ☐ A list of products that contain hazardous substances?
- ☐ Training on the effects of chemicals in nail products?
- ☐ A workplace safety committee?

E.2 **Which of these types of safety communication will protect the health of nail salon workers?** ***(Please choose all that apply.)***

Attitudes (Direct)

- ☐ Written materials about chemicals in nail products, sometimes called Material Safety Data Sheets (MSDS), in English
- ☐ Written materials about chemicals in nail products (MSDS) in Vietnamese
- ☐ Labels on containers that hold chemicals
- ☐ A list of products that contain hazardous substances
- ☐ Training on the effects of chemicals in nail products
- ☐ A nail salon workplace safety committee

Continue on other side. ⟶

F. The following questions are about policies that might be in nail salons.

For each question, please choose all answers that apply.

F.1 **Does your nail salon have general safety policies?**

Outcome (O/M)

- ☐ Yes
- ☒ No

F.2 **Does your nail salon have policies on the**

Outcome (O/M) | Environmental Factor (All)

(Please choose all that

- ☐ Washing hands after handling chemicals
- ☐ Washing hands after each client
- ☐ No smoking at work
- ☐ No eating or drinking in work areas
- ☐ Keeping records of injuries or health problems
- ☐ Taking rest breaks
- ☐ Precautions when transferring chemicals from large container to smaller ones
- ☐ Keeping containers closed when not in use
- ☐ Keeping room ventilation (room fan) system on during working hours
- ☐ Reporting injuries

F.3 **Do you follow this practice?** Adherence Outcome (All)

(Please choose all that apply.)

- ☐ Washing hands after handling chemicals
- ☐ Washing hands after each client
- ☐ No smoking in work areas
- ☐ No eating or drinking in work areas
- ☐ Keeping records of injuries or health problems
- ☐ Taking rest breaks
- ☐ Precautions when transferring chemicals from large container to smaller ones
- ☐ Keeping containers closed when not in use
- ☐ Keeping room ventilation (room fan) system on during working hours
- ☐ Reporting injuries

F.4 **Do you believe that this practice will protect the health of nail workers?** Attitudes, Direct (All)

(Please choose all that apply.)

- ☐ Washing hands after handling chemicals
- ☐ Washing hands after each client
- ☐ No smoking at work
- ☐ No eating or drinking in work areas
- ☐ Keeping records of injuries or health problems
- ☐ Taking rest breaks
- ☐ Precautions when transferring chemicals from large container to smaller ones
- ☐ Keeping containers closed when not in use
- ☐ Keeping room ventilation (room fan) system on during working hours
- ☐ Reporting injuries

G. The following questions are related to work behaviors.

For each question, please choose all answers that apply.

For All: Unchecked = No # Checked = Yes = 1

G.1 **Which of these do you believe could harm a nail salon worker's health?**
BELIEVE HARM **(Please choose all that apply.)**

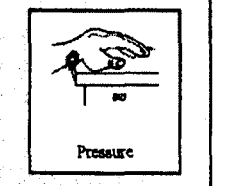
- ☐ Putting pressure on arms, wrists, or hands while working on nails
- ☐ Repeating motion, such as filing nails
- ☐ Leaning forward when working on nails
- ☐ Sitting up straight when working on nails
- ☐ Smoking cigarettes at work
- ☐ Working long hours
- ☐ Working in bad postures
- ☐ Hazardous chemicals in nail products

Perceived Risk (All)

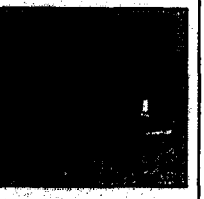
G.2 **Do you believe it is possible to protect yourself against harm caused by ...**
BELIEVE PROTECT **(Please choose all that apply.)**

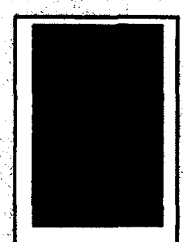
- ☐ Putting pressure on arms, wrists, or hands while working on nails?
- ☐ Repeating motion, such as filing nails?
- ☐ Leaning forward when working on nails?
- ☐ Sitting up straight when working on nails?
- ☐ Smoking cigarettes at work?
- ☐ Working long hours?
- ☐ Working in bad postures?
- ☐ Hazardous chemicals in nail products?

Perceived Behavioral Control (All)



Pressure





Long hours

Bad Postures

Continue on other side. ⟶

H. The following questions are about reasons why a nail salon worker may not follow safety practices.

Descriptive: Barriers

Environmental Factors as Predictors for Adherence Outcomes

...tion, please choose all answers that apply.

...ht be a ...reason why nail salon workers may not use gloves? *(Please choose all that apply.)*

- Not comfortable
- Not useful
- Costs too much
- Takes too much time
- Only necessary for certain services
- Not available
- Not possible
- Salon owner does not encourage
- Other nail salon workers don't use
- Customers object

H.2 MASKS **Masks: Which of the following might be a reason why nail salon workers may not use masks? *(Please choose all that apply.)***

- Not comfortable
- Not useful
- Costs too much
- Takes too much time
- Only necessary for certain services
- Not available
- Not possible
- Salon owner does not encourage
- Other nail salon workers don't use
- Customers object

H.3 VENT **Room Ventilation: Which of the following might be a reason why nail salon workers may not use room ventilation (room fan) systems in the nail salon? *(Please choose all that apply.)***

- Not comfortable
- Not useful
- Costs too much
- Takes too much time
- Only necessary for certain services
- Only necessary when bad odors
- Not available
- Not possible
- Salon owner does not encourage
- Other nail salon workers don't use
- Customers object

"Only necessary when BAD odors" is not on Vietnamese version

H.4 BREAKS **Breaks: Which of the following might be a reason why nail salon workers may not take breaks? *(Please choose all that apply.)***

- Not useful
- Costs too much
- Takes too much time
- Not possible
- Salon owner does not encourage
- Other nail salon workers don't take breaks
- Customers object

H.5 POSTURES **Postures: Which of the following might be a reason why nail salon workers may not work in comfortable postures? *(Please choose all that apply.)***

- Not useful
- Takes too much time
- Only necessary for certain services
- Not possible
- Salon owner does not encourage
- Other nail salon workers don't work in comfortable postures
- Customers object

H.6 CHAIRS **Adjustable chairs: Which of the following might be a reason why nail salon workers may not use adjustable chairs? *(Please choose all that apply.)***

- Not comfortable
- Not useful
- Costs too much
- Takes too much time
- Only necessary on certain clients
- Not available
- Not possible
- Salon owner does not encourage
- Other nail salon workers don't use
- Customers object

Descriptive: Health symptoms (Predictor for use in categories)

I. The following questions are about health and injuries.

I.1 In the past four weeks (one month), have you had any of the following health problems?

(Please choose a response of "Yes" or "No" for each of the following health problems.)	Yes	No	If "Yes," please check here if you sought medical or health care for this problem: For All: Unchecked = No = 0; Checked = Yes = 1	If "Yes," please check here if you think this health problem was related to your work in the nail salon:
Eye irritation	☐	☐	☐	☐
Difficulty concentrating	☐	☐	☐	☐
Joint pain	☐	☐	☐	☐
Hand pain	☐	☐	☐	☐
Elbow pain	☐	☐	☐	☐
Neck pain	☐	☐	☐	☐
Numbness or tingling in arms or hands	☐	☐	☐	☐
Carpal tunnel syndrome	☐	☐	☐	☐
Difficulty breathing	☐	☐	☐	☐
Asthma	☐	☐	☐	☐
Injuries	☐	☐	☐	☐

I.2 MONTH HEALTH — **Within the past four weeks (one month), have you had any other health problems caused by work?**

- ☐ Yes*
- ☐ No *(If "No," please skip to the question I.3.)*

***If "Yes," please describe:**

I2bc: Write in: _____

***If "Yes," did you seek medical or health care?**

I2c:
- ☐ Yes
- ☐ No

I.3 DOC EVER — **Have you ever seen a doctor because of health problems or injuries related to your work?**

- ☐ Yes* →
- ☐ No

→ ***If "Yes," for which health problem(s)?**

I3bc: Write in: _____

I.4 MISSED WORK — **Have you ever missed work because of health problems or injuries related to your work?**

- ☐ Yes*
- ☐ No

***If "Yes," for which health problem(s)?**

I4bc: Write in: _____

I.5 DOC LAST — **When was the last time that you saw a doctor or health provider?**

- ☐ Within the past four weeks (one month)
- ☐ Within the past year
- ☐ More than one year ago

Continue on other side. ⟹

J. The following questions are about your posture and the way you work.

Descriptive: Ergonomic Practices
Outcomes:
Adherence to Ergonomic Practices

s," "No," or "Don't know" to the following questions:

J.1 When I work in the nail salon performing manicure or pedicure tasks ..."

POSTURE WORK

		Yes	No	Don't know
I use hand tools and instruments that are shaped comfortably for my hands.	J1a_posture_shaped	1	0	8
I use furniture that is adjustable to minimize strains on my body.	J1d_posture_furniture	1	0	8
I use tables that are adjustable.	J1f_posture_tables	1	0	8
I hold clients' hands or feet with relaxed, minimal strain on my body.	J1h_posture_hold	1	0	8
I sit straight with my back fully against the back support of the chair.	J1i_posture_straight	1	0	8
I use chairs that are comfortable when I perform a manicure.	J1t_posture_chairs_manicure	1	0	8
I do my work tasks without holding my elbows out and away from my body.	J1m_posture_elbows	1	0	8
I keep my hands or wrists in a neutral position when I am working.	J1p_posture_wrists_neutral	1	0	8
I work without bending my neck forward.	J1r_posture_neck	1	0	8
When I sit, my feet are flat on the floor with my thighs parallel to the floor.	J1s_posture_feet_flat	1	0	8
I position clients' hands and feet to prevent straining on my body.	J1v_posture_position_clients	1	0	8
My tasks and tools are in front of me.	J1x_posture_tools_placement	1	0	8
I do not have to reach more than 12 inches for my tools or to perform tasks.	J1z_posture_reach	1	0	8

Descriptive: Social Support

K. The following questions are about your support network.

Please choose the best response for each question.

K.1 How much do each of these people go out of their way to do things to make your work life easier for you?

	Very much	Somewhat	A little	Not at all	Don't have such a person
Other people at work	5	4	3	2	1

K.2 How easy is it to talk with each of the following people?

	Very much	Somewhat	A little	Not at all	Don't have such a person
Other people at work	5	4	3	2	1

K.3 How much can each of these people be relied on when things get tough at work?

	Very much	Somewhat	A little	Not at all	Don't have such a person
Other people at work	5	4	3	2	1

K.4 How much is each of the following willing to listen to your personal problems?

	Very much	Somewhat	A little	Not at all	Don't have such a person
Other people at work	5	4	3	2	1

Continue on other side.

External Variables Descriptive

L. The following questions are about your family and your health.

L.1 **How many people (including yourself) live in your home in each of the following age categories?**

L1a_family_under5
L1b_family_5_12
L1c_family_13_18
L1d_family_19_65
L1e_family_over65

	# People
Under 5 years of age:	# (0-99)
5-12 years of age:	# (0-99)
13-18 years of age:	# (0-99)
19-65 years of age:	# (0-99)
Over 65 years of age:	# (0-99)

L.2 **Do you have primary responsibility for childcare duties?**

- [1] Yes
- [0] No

L.3 **Are you responsible for the physical care of an elderly or disabled person on a regular basis in your home?**

- [1] Yes
- [0] No

L.4 **Financially, do you consider yourself and your immediate family to be:**

- [5] **Wealthy**— We have all that we need and can afford many extra luxuries.
- [4] **Comfortable**—We have all we need and can afford extras.
- [3] **Doing well enough**—We can always buy our necessities.
- [2] **Getting by**—We can only afford the most necessary items.
- [1] **Very few resources**—We have great difficulty every month and sometimes cannot pay for necessities.

L.5 **Do you have health insurance?**

- [1] Yes, I have a health insurance plan.
- [0] No, I don't have health insurance.
- [-1] I don't know.

L.6 **Do you have Medicaid or Medical Assistance?**

- [1] Yes, I have Medicaid or Medical Assistance.
- [0] No, I don't have Medicaid or Medical Assistance.
- [-1] I don't know.

L.7 **Do you have Medicare?**

- [1] Yes, I have Medicare.
- [0] No, I don't have Medicare.
- [-1] I don't know.

L.8 **Do you smoke cigarettes?**

- [1] Yes
- [0] No

L.9 **How easy is it to take time off during your work to take care of personal or family matters?**

Perceived Normative Pressure/ Environmental Factors

- [5] Very eas
- [4] Easy
- [3] Somewhat difficult
- [2] Difficult
- [1] Very difficult

L2_family_childcare
L3_family_adultcare
L4_family_income
L5_health_insurance
L6_health_me
L7_health_medicare
L8_health_smoke
L9_health_time_off

M. These questions are about your health and well-being.[1]

For each of the following questions, please place a [√] check mark in the one box [☐] that best describes your answer.

The SF-12 has its own software for scoring and analysis. This whole section gets one score for each individual, so never a variable for the SF-12 score for each survey.

M.1 In general, would you say your health is:

Excellent	Very Good	Good	Fair	Poor
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

M.2 The following questions are about activities you might do during a typical day. Does <u>your health now</u> <u>limit you</u> in these activities? If so, how much?

	Yes, limited a lot	Yes, limited a little	No, not limited at all
	▼	▼	▼
<u>Moderate activities</u>, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	☐	☐	☐
Climbing <u>several</u> flights of stairs	☐	☐	☐

M.3 During the <u>past 4 weeks</u>, how much of the time have you had any of the following problems with your work or other regular daily activities <u>as a result of your physical health</u>?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
	▼	▼	▼	▼	▼
<u>Accomplished less</u> than you would like	☐	☐	☐	☐	☐
Were limited in the <u>kind</u> of work or other activities	☐	☐	☐	☐	☐

M.4 During the <u>past 4 weeks</u>, how much of the time have you had any of the following problems with your work or other regular daily activities <u>as a result of any emotional problems</u> (such as feeling depressed or anxious)?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
	▼	▼	▼	▼	▼
<u>Accomplished less</u> than you would like	☐	☐	☐	☐	☐
Did work or other activities <u>less carefully than usual</u>	☐	☐	☐	☐	☐

Continue on other side. ⟶

M.5 During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

Not at all	A little bit	Moderately	Quite a bit	Extremely
▼	▼	▼	▼	▼
1	2	3	4	5

M.6 These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks ...

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
	▼	▼	▼	▼	▼
Have you felt calm and peaceful?	1	2	3	4	5
Did you have a lot of energy?	1	2	3	4	5
Have you felt downhearted and depressed?	1	2	3	4	5

M.7 During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
▼	▼	▼	▼	▼
1	2	3	4	5

M1_health_status

M2a_health_limit_activities
M2b_health_limit_stairs

M3a_health_accomplished_less
M3b_health_kind_less

M4a_emotions_accomplished_less
M4b_emotions_did_less

M5_pain

M6a_calm
M6b_energy
M6c_down

M7_social

N. These final questions are about future trainings that could promote health for nail salon workers.

Descriptive (All & O/M)

Please answer whether you agree or do not agree with the following statements:

N.1 CE FEED **"Continued education on health and safety should be required when licenses are renewed."**

- ☒ I agree with this statement.
- ☒ I do not agree with this statement.
- ☐ I don't know.

N.2 CE HELP **"Required continued education on health and safety will help to protect the health of nail salon workers."**

- ☒ I agree with this statement.
- ☒ I do not agree with this statement.
- ☐ I don't know.

N1_education_required
N2_education_protect
N3a_education_internet
N3b_education_school
N3c_education_magazines
N3d_education_written
N3e_education_others
N3f_education_owners
N3g_education_suppliers
N3h_education_salon
N3i_education_community
N3j1_education_other
N3j2_education_other_describe
N4_comments

N.3a BEST CE **Which of the following are the best ways for nail salon workers to learn about health and safety?**

(Please choose all that apply.)

For all: Unchecked = No = 0; Checked = Yes = 1.

- ☐ The Internet
- ☐ Beauty or Cosmetology School
- ☐ Nail industry magazines
- ☐ Written materials for workers to read
- ☐ Other nail salon workers
- ☐ Nail salon owners
- ☐ Nail salon suppliers
- ☐ Training sessions held in my nail salon
- ☐ Training sessions held in the community
- ☐ Other source(s): N3dc OTHER SOURCE

N.4 COMMENTS **Do you have any comments that you would like to share with us?**

Write in

We appreciate you and your taking time to answer these questions.

If you are interested in entering your name into the drawing for an iPad, please call (410) 614-1363 to leave your name and phone number.

We will contact you only if you are the winner.

Please return the questionnaire in the envelope provided.

Thank you!

Appendix A.3-3. Nail Salon Survey in Vietnamese

Khảo sát về Những Tiệm Làm Móng Tay của Người Việt Mỹ

Nhân Viên Làm Móng Tay Thân Mến,

Cám ơn quý vị rất nhiều đã dành thời gian để hoàn thành bản khảo sát này. Chúng tôi lâu nay đã cộng tác chặt chẽ với nhiều người Việt trong cộng đồng và nhiều nhân viên làm móng tay để làm ra bản khảo sát này. Chúng tôi hy vọng rằng bản khảo sát này sẽ giúp tất cả các nhân viên làm móng tay trở nên khoẻ mạnh hơn và an toàn hơn trong khi làm việc. Những câu trả lời của quý vị rất quan trọng cho chúng tôi. Nếu quý vị có thắc mắc gì, xin gọi 410-375-5599 hoặc gửi email tới: johnshopkins.nailsurvey@gmail.com.
Chúng tôi hết sức cảm kích sự giúp đỡ của quý vị.

Hướng dẫn:
Quý vị hãy hoàn tất một bản khảo sát, bằng tiếng Anh hoặc tiếng Việt. Bản khảo sát này chỉ cần khoảng 30 phút. Làm ơn trả lời tất cả những câu hỏi bằng hết khả năng của quý vị. Quý vị có thể bỏ qua những câu hỏi làm quý vị khó chịu trong bất cứ khía cạnh nào, hoặc nếu quý vị không muốn trả lời câu hỏi vì một lý do nào đó. Hãy nhớ trả lời những câu hỏi trên cả mặt trước và mặt sau của mỗi trang.

Bản khảo sát sẽ được giữ bảo mật. Chúng tôi sẽ không có khả năng nhận ra và liên kết những câu trả lời của quý vị với cá nhân quý vị. Ở trang cuối của bản khảo sát này, quý vị có thể chọn để tham gia bốc thăm trúng thưởng một cái máy Ipad (giá trị $500). Làm ơn hoàn tất và gửi trả bản khảo sát này trong thời gian ngắn nhất.

Hãy đánh dấu chữ v [√] vào trong ô vuông [☐] của mỗi câu hỏi, theo như những sự hướng dẫn.
Nếu quý vị muốn kèm thêm tin tức hoặc ý kiến gì với câu trả lời của mình, quý vị có thể viết kế bên câu hỏi.

A. Vui lòng trả lời các câu hỏi sau đây trước khi bắt đầu bản khảo sát:

A.1 Hiện giờ quý vị có đang làm trong tiệm làm móng tay không?

☐ Có *
☐ Không **

*Nếu "có," xin tiếp tục trả lời.

**Nếu "Không," cảm ơn quý vị đã sẵn lòng làm bản khảo sát này. Chúng tôi cần thông tin từ những nhân viên hiện đang làm trong các tiệm làm móng tay. Quý vị không cần phải hoàn thành bản khảo sát này.

A.2 Quý vị có phải 18 tuổi trở lên không?

☐ Có *
☐ Không **

*Nếu "Có," xin tiếp tục.

**Nếu "Không," cảm ơn quý vị đã sẵn lòng làm bản khảo sát này. Chúng tôi cần thông tin từ những nhân viên làm móng tay 18 tuổi trở lên. Quý vị không cần phải hoàn thành bản khảo sát này.

A.3 Quý vị có phải là người Việt hay Mỹ gốc Việt không?

☐ Có *
☐ Không **

*Nếu "Có," xin tiếp tục.

**Nếu "Không," cảm ơn quý vị đã sẵn lòng làm bản khảo sát này. Chúng tôi cần thông tin từ những nhân viên làm móng tay người Việt hay Mỹ gốc Việt. Quý vị không cần phải hoàn thành bản khảo sát này.

A.4 Quý vị đã có hoàn tất qua bản khảo sát này lần nào chưa?

☐ Có*
☐ Không**

**Nếu "Không," xin tiếp tục.

*Nếu "Có," cám ơn. Quý vị không cần điền một lần nữa. Chúng tôi chỉ cần một bản khảo sát một người.

Tiếp tục ở mặt sau. ⟹

B. Những câu hỏi dưới đây là về quý vị và công việc của quý vị.

B.1 Quý vị là Nam hay Nữ?

- ☐ Nam
- ☐ Nữ

B.2 Quý vị bao nhiêu tuổi? _____ tuổi

B.3 Quý vị sinh ra ở đâu?

- ☐ Việt Nam
- ☐ Mỹ
- ☐ Nước khác: _____

B.4 Nếu quý vị <u>không</u> sinh ra ở Mỹ, quý vị sang Mỹ năm nào?

Năm sang Mỹ: _____

B.5 (Những) ngôn ngữ nào quý vị nói khi ***ở nhà?***

- ☐ Tiếng Việt
- ☐ Tiếng Anh
- ☐ Cả tiếng Việt và tiếng Anh

B.6 (Những) ngôn ngữ nào quý vị nói khi ở ***nơi làm việc?***

- ☐ Tiếng Việt
- ☐ Tiếng Anh
- ☐ Cả tiếng Việt và tiếng Anh

B.7 Trình độ học vấn của quý vị/Trường lớp mà quý vị đã tốt nghiệp?

- ☐ Từ 0 -12 năm
- ☐ Bằng trung học phổ thông (Cấp 3) hoặc GED (tương đương với bằng trung học phổ thông)
- ☐ Trường kĩ thuật
- ☐ Cao đẳng (2 năm)
- ☐ Cử nhân
- ☐ Thạc sĩ hoặc cao hơn
- ☐ Trình độ khác : _____

B. 8 Vai trò của quý vị ở tiệm làm móng tay là gì?
(Chọn vai trò chính phù hợp nhất cho quý vị)

- ☐ Chủ tiệm làm móng tay
- ☐ Người quản lý tiệm làm móng tay
- ☐ Chuyên viên làm móng tay
- ☐ Chuyên viên làm đẹp (Cosmetologist)
- ☐ Chuyên viên làm đẹp về da (Esthetician)
- ☐ Thợ học nghề
- ☐ Vai trò khác (vui lòng mô tả):

_____

B.9 Quý vị đã có làm trong tiệm các làm móng tay hơn một năm chưa?

- ☐ Có*
- ☐ Không

** <u>Nếu "Có,"</u>* quý vị đã làm trong các tiệm làm móng tay mấy năm rồi? _____ năm

B.10 Có bao nhiêu nhân viên làm móng tay làm việc trong tiệm làm móng tay của quý vị?
_____ # nhân viên

B.11 Có bao nhiêu bàn làm móng tay trong tiệm làm móng tay của quý vị?
_____ bàn làm móng tay

B.12 Có bao nhiêu ghế làm chân trong tiệm làm móng tay của quý vị? _____ ghế làm chân

B.13 Giá làm của một bộ móng tay đơn giản ở tiệm của quý vị là bao nhiêu? $ _____

B.14 Trung bình <u>mỗi tuần</u> quý vị làm việc ở tiệm làm móng tay bao nhiêu <u>tiếng</u>?
_____ # giờ một tuần

B.15 Trung bình, quý vị làm ***<u>móng tay</u>*** cho bao nhiêu người trong một <u>ngày đông khách</u>?
____ # khách

B.16 Trung bình, quý vị làm ***<u>móng chân</u>*** cho bao nhiêu người trong một <u>ngày đông khách</u>?
_____ # khách

B.17 Trong <u>một ngày đông khách</u>, quý vị <u>nghỉ giải lao</u> mấy lần, bao gồm cả bữa ăn?
_____ # lần

B.18 Tiệm quý vị còn làm dịch vụ gì khác nữa?
(Hãy chọn tất cả những gì áp dụng được)

- ☐ Làm mặt
- ☐ Những phục vụ Spa
- ☐ Tẩy lông
- ☐ Làm tóc
- ☐ Không có những thứ ở trên
- ☐ Dịch vụ khác: _____

B.19 Quý vị có làm công việc khác không?

- ☐ Có*
- ☐ Không

**Nếu "Có," thời gian quý vị làm nơi công việc thứ 2? ___ tiếng

**Nếu "Có," Công việc đó là gì? _____

C. Những câu hỏi dưới đây là về những giáo huấn quý vị có thể đã có.

C.1 **Quý vị đã được học về cách bảo vệ sức khoẻ khi làm việc ở tiệm làm móng tay chưa?**

- ☐ Có
- ☐ Không *

* Nếu "Không," xin lướt qua đến câu hỏi C.4.

C.2 **Trong khi làm việc, quý vị đã được học về cách bảo vệ sức khoẻ nơi nào?** ***(Xin hãy chọn tất cả những chọn lựa áp dụng được)***

- ☐ Trong trường dạy làm đẹp hoặc thẩm mỹ
- ☐ Từ một chủ tiệm làm móng tay
- ☐ Từ các nhân viên làm móng tay khác
- ☐ Từ một chương trình giáo dục tài trợ bởi cơ quan chính phủ bảo vệ môi trường (U.S. Environmental Protection Agency - EPA) hoặc cơ quan chính phủ khác.
- ☐ Ở một trung tâm cộng đồng
- ☐ Trên mạng (Internet)
- ☐ Nơi khác: _____

C.3 **Lần gần đây nhất mà quý vị được học về sức khoẻ và an toàn liên quan đến làm việc trong các tiệm làm móng tay là khi nào?**

- ☐ Trong vòng một tháng vừa qua
- ☐ Trong vòng sáu tháng vừa qua
- ☐ Trong 1 năm vừa qua
- ☐ Hơn một năm qua
- ☐ Tôi chưa bao giờ được học về sức khoẻ và an toàn khi làm việc ở tiệm làm móng tay

C.4 **Từ đâu quý vị có những nguồn thông tin chủ yếu về sức khoẻ và an toàn lao động?** ***(Hãy chọn tất cả những chọn lựa áp dụng được)***

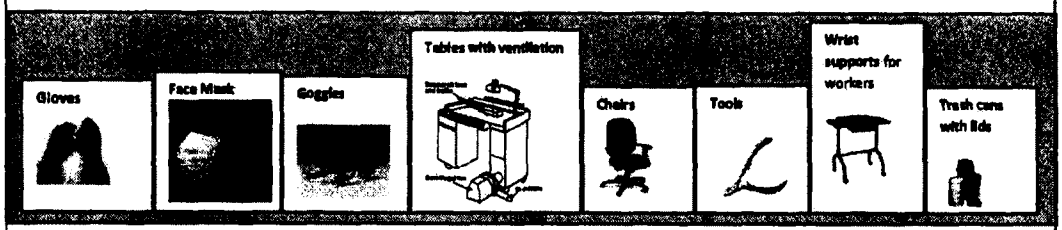
- ☐ Chủ tiệm làm móng tay
- ☐ Các nhân viên làm móng tay khác
- ☐ Một tiệm bán đồ nghề làm móng tay
- ☐ Bạn bè và gia đình
- ☐ Trên mạng (Internet)
- ☐ Trường dạy làm đẹp hoặc thẩm mỹ
- ☐ Các chương trình giáo dục trong cộng đồng
- ☐ Đài Ra đô
- ☐ Ti Vi
- ☐ Báo chí
- ☐ Sách báo về ngành làm móng tay
- ☐ Văn Bản Bảo Vệ sự An Toàn (Material Safety Data Sheets - MSDS)
- ☐ Hội Đồng Tiểu Bang Viện Thẩm Mỹ
- ☐ Các nguồn thông tin khác:

_____

Tiếp tục ở mặt sau. ⟹

D. Các câu hỏi sau đây là về thiết bị làm việc.

Với mỗi câu hỏi, xin hãy chọn tất cả những chọn lựa có thể áp dụng được.



D.1 **Tiệm làm móng tay của quý vị <u>có</u>...** ***(Chọn tất cả những chọn lựa có thể áp dụng được)***

- ☐ Găng tay?
- ☐ Mặt nạ?
- ☐ Kính bảo vệ mắt?
- ☐ Bàn có xây thiết bị thông khí (quạt)
- ☐ Ghế có sự <u>điều chỉnh độ cao</u> (lên và xuống)?
- ☐ Ghế có thể <u>quay</u> (từ bên này qua bên kia)?
- ☐ Ghế có chỗ <u>tựa lưng</u>?
- ☐ Dụng cụ tay dễ chịu thoải mái khi dùng?
- ☐ Nơi đỡ cổ tay cho nhân viên?
- ☐ Thùng rác có <u>nắp tự đóng đóng lại</u>?
- ☐ Trụ vòi nước rửa mắt?

D.2 **Quý vị có dùng ...** ***(Chọn tất cả những chọn lựa có thể áp dụng được)***

- ☐ Găng tay?
- ☐ Mặt nạ?
- ☐ Kính bảo vệ mắt?
- ☐ Bàn có xây thiết bị thông khí (quạt)
- ☐ Ghế <u>có sự điều chỉnh độ cao</u> (lên và xuống)?
- ☐ Ghế có thể <u>quay</u> (từ bên này qua bên kia)?
- ☐ Ghế có chỗ <u>tựa lưng</u>?
- ☐ Dụng cụ tay dễ chịu thoải mái khi dùng?
- ☐ Nơi đỡ cổ tay cho nhân viên?
- ☐ Thùng rác có <u>nắp tự đóng đóng lại</u>?
- ☐ Trụ vòi nước rửa mắt?

D.3 **Ghế quý vị dùng có điểm tựa gác tay không?**

- ☐ Có
- ☐ Không

D.4 **Tiệm quý vị làm có thùng rác có nắp tự <u>đóng đóng lại ở mỗi trạm làm việc không?</u>**

- ☐ Có
- ☐ Không

D. 5 **Quý vị đã từng được <u>hướng dẫn sử dụng</u>...** ***(Chọn tất cả những chọn lựa có thể áp dụng được)***

- ☐ Găng tay?
- ☐ Mặt nạ?
- ☐ Kính bảo vệ mắt?
- ☐ Bàn có xây thiết bị thông khí (quạt)
- ☐ Ghế <u>có sự điều chỉnh độ cao</u> (lên và xuống)?
- ☐ Ghế có thể <u>quay</u> (từ bên này qua bên kia)?
- ☐ Ghế có chỗ <u>tựa lưng</u>?
- ☐ Dụng cụ tay dễ chịu thoải mái khi dùng?
- ☐ Nơi đỡ cổ tay cho nhân viên?
- ☐ Thùng rác có <u>nắp tự đóng đóng lại</u>?
- ☐ Trụ vòi nước rửa mắt?

D.6 **Quý vị tin rằng thiết bị nào sẽ bảo vệ sức khoẻ của quý vị?** ***(Chọn tất cả những chọn lựa có thể áp dụng được)***

- ☐ Găng tay?
- ☐ Mặt nạ?
- ☐ Kính bảo vệ mắt?
- ☐ Bàn có xây thiết bị thông khí (quạt)
- ☐ Ghế <u>có sự điều chỉnh độ cao</u> (lên và xuống)?
- ☐ Ghế có thể <u>quay</u> (từ bên này qua bên kia)?
- ☐ Ghế có chỗ <u>tựa lưng</u>?
- ☐ Dụng cụ tay dễ chịu thoải mái khi dùng?
- ☐ Nơi đỡ cổ tay cho nhân viên?
- ☐ Thùng rác có <u>nắp tự đóng đóng lại</u>?
- ☐ Trụ vòi nước rửa mắt?

D. 7. **Ở tiệm quý vị làm, quý vị có thể được điều chỉnh thiết bị thông khí (quạt) trong phòng không?**

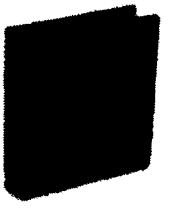
- ☐ Có
- ☐ Không

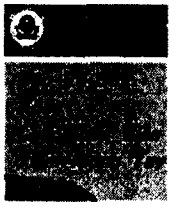
D. 8 **Ở tiệm quý vị làm, quý vị có thể được điều chỉnh nhiệt độ trong phòng không?**

- ☐ Có
- ☐ Không

E. Những câu hỏi sau đây hỏi về thông tin của sự an toàn

Hãy chọn tất cả những câu trả lời áp dụng được.





E.1 **Tiệm làm móng tay <u>của quý vị</u> có...? (*Hãy chọn tất cả những câu trả lời áp dụng được.*)**

- ☐ Tài liệu về các hoá chất trong các sản phẩm làm móng tay, đôi khi được gọi là Văn Bản Bản Vệ Sự An Toàn (Material Safety Data Sheets - MSDS), bằng <u>tiếng Anh</u>?
- ☐ Tài liệu về các hoá chất trong các sản phẩm làm móng tay (MSDS) bằng <u>tiếng Việt</u>?
- ☐ Nhãn hiệu sản phẩm trên các bình đựng hoá chất?
- ☐ Danh sách các sản phẩm có các chất độc hại?
- ☐ Huấn luyện về sự ảnh hưởng của các hóa chất trong những sản phẩm làm móng tay?
- ☐ Một hội đồng lo về sự an toàn nơi việc làm?

E.2 **Quý vị nghĩ thông tin nào sau đây sẽ bảo vệ sức khoẻ của các nhân viên làm móng tay?**
(*Hãy chọn tất cả những câu trả lời áp dụng được.*)

- ☐ Tài liệu về các hoá chất trong các sản phẩm làm móng tay, đôi khi được gọi là Văn Bản Bản Vệ Sự An Toàn (Material Safety Data Sheets - MSDS), bằng <u>tiếng Anh</u>?
- ☐ Tài liệu về các hoá chất trong các sản phẩm làm móng tay (MSDS) bằng <u>tiếng Việt</u>?
- ☐ Nhãn hiệu sản phẩm trên các bình đựng hoá chất?
- ☐ Danh sách các sản phẩm có các chất độc hại?
- ☐ Huấn luyện về sự ảnh hưởng của các hóa chất trong những sản phẩm làm móng tay?
- ☐ Một hội đồng cho sự an toàn nơi việc làm?

Tiếp tục ở mặt sau. ⟶

F. Những câu hỏi sau đây là về các quy định có thể có trong các tiệm làm móng tay.

Với mỗi câu hỏi, hãy chọn tất cả các câu áp dụng được.

F.1 **Tiệm làm móng tay của quý vị có các quy định an toàn chung không?**

- ☐ Có
- ☐ Không

F.2 **Tiệm làm móng tay của quý vị có các quy định an toàn về những điều sau đây không?** ***(Hãy chọn tất cả các câu câu áp dụng được)***

- ☐ Rửa tay sau khi làm việc với hoá chất
- ☐ Rửa tay sau phục vụ mỗi khách hàng
- ☐ Không hút thuốc nơi làm việc
- ☐ Không ăn hoặc uống trong khi làm việc
- ☐ Lưu giữ hồ sơ của các thương tích hay vấn đề sức khoẻ
- ☐ Lấy giờ nghỉ giải lao
- ☐ Cẩn thận khi chuyển hoá chất từ bình lớn sang bình nhỏ
- ☐ Đóng nắp bình đựng hóa chất khi không sử dụng
- ☐ Mở thiết bị thông khí (quạt) trong giờ làm việc
- ☐ Thông báo khi bị thương tích

F.3 **Quý vị có làm theo nguyên tắc này? (*Hãy chọn tất cả các câu áp dụng được*)**

- ☐ Rửa tay sau khi làm việc với hoá chất
- ☐ Rửa tay sau phục vụ mỗi khách hàng
- ☐ Không hút thuốc nơi làm việc
- ☐ Không ăn hoặc uống trong khi làm việc
- ☐ Lưu giữ hồ sơ của các thương tích hay vấn đề sức khoẻ
- ☐ Lấy giờ nghỉ giải lao
- ☐ Cẩn thận khi chuyển hoá chất từ bình lớn sang bình nhỏ
- ☐ Đóng nắp bình đựng hóa chất khi không sử dụng
- ☐ Mở thiết bị thông khí (quạt) trong giờ làm việc
- ☐ Thông báo khi bị thương tích

F.4 **Quý vị có tin rằng nguyên tắc này sẽ bảo vệ sức khoẻ cho nhân viên làm móng tay không (*Hãy chọn tất cả các câu áp dụng được*)**

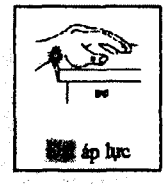
- ☐ Rửa tay sau khi làm việc với hoá chất
- ☐ Rửa tay sau phục vụ mỗi khách hàng
- ☐ Không hút thuốc nơi làm việc
- ☐ Không ăn hoặc uống trong khi làm việc
- ☐ Lưu giữ hồ sơ của các thương tích hay vấn đề sức khoẻ
- ☐ Lấy giờ nghỉ giải lao
- ☐ Cẩn thận khi chuyển hoá chất từ bình lớn sang bình nhỏ
- ☐ Đóng nắp bình đựng hóa chất khi không sử dụng
- ☐ Mở thiết bị thông khí (quạt) trong giờ làm việc
- ☐ Thông báo khi bị thương tích

G. Các câu hỏi sau đây liên quan đến những hành vi làm việc

Với mỗi câu hỏi, hãy chọn tất cả các câu áp dụng được.

G.1 Quý vị tin rằng những điều nào sau đây có thể làm tổn hại sức khoẻ nhân viên làm móng tay? (*Hãy chọn tất cả các câu áp dụng được.*)

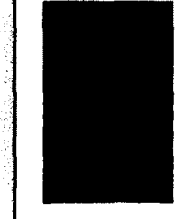
- ☐ Đặt áp lực trên cánh tay, cổ tay, hay bàn tay trong khi làm móng tay
- ☐ Động tác lặp đi lặp lại, như là dũa móng tay
- ☐ Nghiêng người phía trước khi đang làm móng tay
- ☐ Ngồi thẳng lên trong khi làm móng tay
- ☐ Hút thuốc lá nơi làm việc
- ☐ Làm việc nhiều giờ
- ☐ Làm việc ở tư thế không tốt
- ☐ Các hoá chất độc hại trong sản phẩm làm móng tay



áp lực

G.2 Quý vị có tin rằng quý vị có thể bảo vệ mình tránh khỏi sự tác hại của... ? (*Hãy chọn tất cả các câu áp dụng được.*)

- ☐ Đặt áp lực trên cánh tay, cổ tay, hay bàn tay trong khi làm móng tay
- ☐ Động tác lặp đi lặp lại, như là dũa móng tay
- ☐ Nghiêng người phía trước khi đang làm móng tay
- ☐ Ngồi thẳng lên trong khi làm móng tay
- ☐ Hút thuốc lá nơi làm việc
- ☐ Làm việc nhiều giờ
- ☐ Làm việc ở tư thế không tốt
- ☐ Các hoá chất độc hại trong sản phẩm làm móng tay



Làm việc nhiều giờ

Tư thế không tốt

Tiếp tục ở mặt sau.

H. Các câu hỏi sau đây là về lý do tại sao nhân viên làm móng tay có thể không tuân theo các quy định an toàn. *(Hãy chọn tất cả các chọn lựa áp dụng được)*

H.1 Găng tay: Lý do nào sau đây có thể làm cho nhân viên làm móng tay không dùng găng tay? *(Hãy chọn tất cả các lý do áp dụng được)*

- ☐ Không thoải mái
- ☐ Không hữu dụng
- ☐ Quá tốn tiền
- ☐ Tốn nhiều thời gian
- ☐ Chỉ cần thiết trong một số công việc
- ☐ Không có sẵn
- ☐ Không thể sử dụng
- ☐ Chủ tiệm làm móng tay không khuyến khích
- ☐ Các nhân viên làm móng tay khác không dùng
- ☐ Khách hàng phản đối

H.2 Khẩu trang: Lý do nào sau đây có thể làm cho nhân viên làm móng tay không dùng khẩu trang? *(Hãy chọn tất cả các lý do áp dụng được)*

- ☐ Không thoải mái
- ☐ Không hữu dụng
- ☐ Quá tốn tiền
- ☐ Tốn nhiều thời gian
- ☐ Chỉ cần thiết trong một số công việc
- ☐ Không có sẵn
- ☐ Không thể sử dụng
- ☐ Chủ tiệm làm móng tay không khuyến khích
- ☐ Các nhân viên làm móng tay khác không dùng
- ☐ Khách hàng phản đối

H.3 Hệ thống Thông khí: Lý do nào sau đây có thể làm cho nhân viên làm móng tay không dùng hệ thống thông khí (quạt) trong tiệm làm móng tay? *(Hãy chọn tất cả các lý do áp dụng được)*

- ☐ Không thoải mái
- ☐ Không hữu dụng
- ☐ Quá tốn tiền
- ☐ Tốn nhiều thời gian
- ☐ Chỉ cần thiết trong một số công việc
- ☐ Không có sẵn
- ☐ Không thể sử dụng
- ☐ Chủ tiệm làm móng tay không khuyến khích
- ☐ Các nhân viên làm móng tay khác không dùng
- ☐ Khách hàng phản đối

H.4 Nghỉ giải lao: Lý do nào sau đây có thể làm cho nhân viên làm móng tay không nghỉ giải lao? *(Hãy chọn tất cả các lý do áp dụng được)*

- ☐ Không hữu dụng
- ☐ Quá tốn tiền
- ☐ Tốn nhiều thời gian
- ☐ Không thể sử dụng
- ☐ Chủ tiệm làm móng tay không khuyến khích
- ☐ Các nhân viên làm móng tay khác không nghỉ giải lao
- ☐ Khách hàng phản đối

H.5 Tư thế làm việc: Lý do nào sau đây có thể làm cho nhân viên làm móng tay không làm việc ở tư thế thoải mái?
(Hãy chọn tất cả các lý do áp dụng được)

- ☐ Không hữu dụng
- ☐ Quá tốn tiền
- ☐ Tốn nhiều thời gian
- ☐ Không thể sử dụng
- ☐ Chủ tiệm làm móng tay không khuyến khích
- ☐ Các nhân viên làm móng tay khác không làm việc ở tư thế thoải mái.
- ☐ Khách hàng phản đối

H.6 Ghế điều chỉnh được: Lý do nào sau đây có thể làm cho nhân viên làm móng tay không dùng ghế điều chỉnh được? *(Hãy chọn tất cả các lý do áp dụng được)*

- ☐ Không thoải mái
- ☐ Không hữu dụng
- ☐ Quá tốn tiền
- ☐ Tốn nhiều thời gian
- ☐ Chỉ cần thiết trong một số công việc
- ☐ Không có sẵn
- ☐ Không thể sử dụng
- ☐ Chủ tiệm làm móng tay không khuyến khích
- ☐ Các nhân viên làm móng tay khác không dùng
- ☐ Khách hàng phản đối

I. Những câu hỏi sau là về sức khoẻ và những thương tích.

I.1 Trong bốn tuần vừa qua (một tháng), quý vị đã có bị những vấn đề sức khoẻ nào dưới đây không?

(Xin trả lời "Có" hoặc "Không" cho mỗi vấn đề sức khỏe sau đây).	Có	Không	Nếu "Có," xin đánh dấu vào cột này nếu quý vị đã tìm đến y tế hoặc nơi chăm sóc sức khỏe cho vấn đề này:	Nếu "Có," xin đánh dấu vào cột này nếu quý vị nghĩ vấn đề sức khỏa này có liên quan tới công việc làm móng tay:
Ngứa/cay mắt	☐	☐	☐	☐
Khó tập trung	☐	☐	☐	☐
Đau khớp tay	☐	☐	☐	☐
Đau bàn tay	☐	☐	☐	☐
Đau cùi chỏ	☐	☐	☐	☐
Đau cổ	☐	☐	☐	☐
Tê hay cảm giác như kim châm ở cánh hay bàn tay	☐	☐	☐	☐
Bệnh tê/cảm giác như kim châm ở ống cổ tay (Carpal tunnel syndrome)	☐	☐	☐	☐
Khó thở	☐	☐	☐	☐
Suyễn	☐	☐	☐	☐
Thương tích	☐	☐	☐	☐

I.2 Trong bốn tuần vừa qua (một tháng), quý vị có bị vấn đề sức khoẻ nào khác do công việc gây ra không?

☐ Có*
☐ Không *(Nếu "Không" xin tiếp tục trả lời câu hỏi I.3.)*

*Nếu "Có," xin vui lòng mô tả:

_____

* Nếu "Có", quý vị đã tìm đến y tế hoặc nơi chăm sóc sức khoẻ chưa?

☐ Có
☐ Không

I.3 Quý vị có bao giờ gặp bác sĩ vì các vấn đề sức khoẻ hoặc thương tích liên quan tới công việc chưa?

☐ Có* _____
☐ Không

→ * Nếu "Có," cho những vấn đề sức khoẻ nào:

_____

I.4 Quý vị có bao giờ nghỉ làm vì các vấn đề sức khoẻ hoặc thương tích liên quan tới công việc chưa?

☐ Có*
☐ Không

* Nếu "Có," cho những vấn đề sức khoẻ nào:

_____

I.5 Lần cuối cùng quý vị gặp bác sĩ là khi nào?

☐ Trong vòng bốn tuần (một tháng) vừa rồi
☐ Trong vòng năm vừa rồi
☐ Hơn một năm trước

Tiếp tục ở mặt sau. ⟶

J. Những câu hỏi sau đây là về tư thế và cách quý vị làm việc.

Xin trả lời "Có," "Không," hoặc "Không biết" cho những câu hỏi sau đây:

J.1 "Khi tôi làm móng tay hoặc móng chân trong tiệm..."

	Có	Không	Không Biết
Tôi dùng những dụng cụ tay và đồ nghề vừa vặn thoải mái cho tay tôi.	☐	☐	☐
Tôi dùng bàn ghế có thể điều chỉnh được để giảm sự căng thẳng cho cơ thể tôi.	☐	☐	☐
Tôi dùng bàn có sự điều chỉnh.	☐	☐	☐
Tôi cầm tay hoặc chân khách một cách thoải mái để giảm sự căng thẳng cho cơ thể tôi.	☐	☐	☐
Tôi ngồi thẳng với lưng tựa sát vào lưng ghế.	☐	☐	☐
Tôi dùng ghế mà cho tôi sự thoải mái khi làm móng tay.	☐	☐	☐
Tôi làm việc không cần phải giữ cùi chỏ xa khỏi người.	☐	☐	☐
Tôi giữ bàn tay và cổ tay ở tư thế bình thường khi làm việc.	☐	☐	☐
Tôi làm việc không cần phải ngước cổ ra phía trước.	☐	☐	☐
Khi ngồi, hai bàn chân tôi chạm sát sàn nhà với đùi tôi song song với sàn nhà.	☐	☐	☐
Tôi sửa tay và chân của khách theo tư thế tôi muốn để tránh sự căng thẳng cho cơ thể tôi.	☐	☐	☐
Tôi để những đồ nghề và đồ dùng trước mặt tôi.	☐	☐	☐
Tôi không cần phải với nhiều hơn 12 inch để lấy những đồ nghề hoặc để làm việc.	☐	☐	☐

K. Những câu hỏi sau là về sự hệ hống hỗ trợ của quý vị.

Xin trọn câu trả lời đúng nhất cho mỗi câu hỏi.

K.1 Những người sau đây hết lòng giúp đỡ cho công việc của quý vị được dễ dàng hơn và đến mức độ nào?

	Rất nhiều	Phần nào	Một chút	Không chút nào	Không có một người như này
Những người nhân viên khác trong tiệm	☐	☐	☐	☐	☐

K.2 Quý vị nói chuyện với những người sau đây dễ dàng đến mức độ nào?

	Rất nhiều	Phần nào	Một chút	Không chút nào	Không có một người như này
Những người nhân viên khác trong tiệm	☐	☐	☐	☐	☐

K.3 Những người sau đây quý vị có thể tin cậy đến mức nào khi gặp khó khăn trong công việc?

	Rất nhiều	Phần nào	Một chút	Không chút nào	Không có một người như này
Những người nhân viên khác trong tiệm	☐	☐	☐	☐	☐

K.4 Những người sau đây sẵn sàng lắng nghe đến mức nào về những vấn đề cá nhân của quý vị?

	Rất nhiều	Phần nào	Một chút	Không chút nào	Không có một người như này
Những nhân viên khác trong tiệm	☐	☐	☐	☐	☐

Tiếp tục ở mặt sau. ⟹

L. Những câu hỏi sau đây là về gia đình và sức khoẻ của quý vị.

L. 1 **Bao nhiêu người (kể cả quý vị) sống trong nhà của quý vị với mỗi nhóm tuổi sau đây?**

	# người
Dưới 5 tuổi:	_____
5-12 tuổi:	_____
13-18 tuổi:	_____
19-65 tuổi:	_____
Trên 65 tuổi:	_____

L.2 **Quý vị có vai trò chủ yếu trong việc chăm sóc con cái không?**

- ☐ Có
- ☐ Không

L.3 **Quý vị có phải là người chịu trách nhiệm chính trong việc chăm sóc một người già hay tàn tật hằng ngày ở nhà quý vị không?**

- ☐ Có
- ☐ Không

L.4 **Về mặt tài chính, quý vị có cho rằng quý vị và gia đình quý vị là:**

- ☐ **Giàu** - Chúng tôi có tất cả những thứ cần thiết và có đủ khả năng để có được nhiều thứ sang trọng.
- ☐ **Thoải mái** - Chúng tôi có tất cả những gì cần thiết, và có đủ khả năng để có những thứ khác.
- ☐ **Vừa đủ** - Chúng tôi lúc nào cũng có thể mua những thứ cần thiết.
- ☐ **Tạm đủ** - Chúng tôi chỉ mua được những thứ thật cần thiết.
- ☐ **Nghèo** - Chúng tôi có nhiều sự khó khăn hàng tháng, và đôi khi không thể có những thứ cần thiết.

L.5 **Quý vị có bảo hiểm sức khoẻ không?**

- ☐ Có, tôi có một chương trình bảo hiểm.
- ☐ Không, tôi không có bảo hiểm.
- ☐ Tôi không biết.

L.6 **Quý vị có bảo hiểm sức khoẻ của tiểu bang (Medicaid) hoặc sự hỗ trợ y tế không?**

- ☐ Có, tôi có bảo hiểm của tiểu bang (Medicaid) hoặc sự hỗ trợ y tế.
- ☐ Không, tôi không có bảo hiểm của tiểu bang (Medicaid) hoặc sự hỗ trợ y tế.
- ☐ Tôi không biết.

L.7 **Quý vị có bảo hiểm của chính phủ (Medicare) không?**

- ☐ Có, tôi có bảo hiểm của chính phủ (Medicare).
- ☐ Không, tôi không có bảo hiểm của chính phủ (Medicare).
- ☐ Tôi không biết.

L.8 **Quý vị có hút thuốc lá không?**

- ☐ Có
- ☐ Không

L.9 **Quý vị có dễ dàng xin nghỉ việc khi cần phải lo việc riêng của quý vị hoặc của gia đình không?**

- ☐ Rất dễ dàng
- ☐ Dễ dàng
- ☐ Một chút khó khăn
- ☐ Khó khăn
- ☐ Rất khó khăn

M. Những câu hỏi sau đây là về Sức Khỏe và Sự Tráng Kiện của Quý Vị

Đối với từng câu hỏi sau đây, xin vui lòng đánh dấu [√]vào một ô nào phản ảnh đúng nhất câu trả lời của quý vị.

M.1 **Nói chung, quý vị cho sức khỏe của quý vị là:**

Hết sức tốt	Rất tốt	Tốt	Tạm được	Tồi tệ
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

M.2 **Các câu hỏi sau đây nhắm vào những sinh hoạt quý vị có thể thực hiện trong một ngày tiêu biểu. Sức khỏe của quý vị hiện nay có hạn chế các sinh hoạt này không? Nếu có, hạn chế tới mức độ nào?**

	Có, hạn chế rất nhiều	Có, hạn chế một phần	Không, không hạn chế
	▼	▼	▼
Những hoạt động vừa phải, như dời một cái bàn, đẩy máy hút bụi, làm vườn, hay tập dưỡng sinh	☐	☐	☐
Leo lên được vài thang lầu	☐	☐	☐

M.3 **Trong 4 tuần vừa qua, cho biết mức độ thường xuyên quý vị đã gặp bất cứ trở ngại gì sau đây trong việc làm hay trong sinh hoạt hằng ngày của quý vị do kết quả tình trạng sức khỏe của chính mình?**

	Luôn luôn	Hầu hết	Thỉnh thoảng	Ít khi	Không bao giờ
	▼	▼	▼	▼	▼
Hoàn tất được ít hơn điều quý vị muốn	☐	☐	☐	☐	☐
Bị giới hạn trong công việc nào đó, hay các sinh hoạt khác	☐	☐	☐	☐	☐

M.4 **Trong 4 tuần vừa qua, cho biết mức độ thường xuyên quý vị đã gặp bất cứ trở ngại gì sau đây trong việc làm hay trong sinh hoạt hằng ngày của quý vị do kết quả của bất cứ tình trạng xúc động tinh thần nào (chẳng hạn như cảm thấy buồn chán hay lo sợ)?**

	Luôn luôn	Hầu hết	Thỉnh thoảng	Ít khi	Không bao giờ
	▼	▼	▼	▼	▼
Hoàn tất được ít hơn điều quý vị muốn	☐	☐	☐	☐	☐
Làm việc hay thực hiện các sinh hoạt khác ít cẩn thận hơn bình thường	☐	☐	☐	☐	☐

Continue on other side. ⟹

M.5 Trong 4 tuần vừa qua, cho biết sự đau đớn đã ngăn trở công việc bình thường của quý vị tới mức độ nào (gồm cả công việc bên ngoài và bên trong nhà)?

Hoàn toàn không có	Chút đỉnh	Vừa phải	Khá nhiều	Rất nhiều
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

M.6 Các câu hỏi này là về việc quý vị cảm thấy như thế nào và mọi chuyện đã ra sao trong 4 tuần vừa qua. Đối với mỗi câu hỏi, xin cho câu trả lời gần nhất với điều quý vị cảm thấy. Cho biết mức độ thường xuyên trong 4 tuần vừa qua...

	Luôn luôn	Hầu hết	Thỉnh thoảng	Ít khi	Không bao giờ
	▼	▼	▼	▼	▼
Quý vị đã thường cảm thấy thư thái và bình an hay không?	☐	☐	☐	☐	☐
Quý vị đã thường cảm thấy dồi dào năng lực hay không?	☐	☐	☐	☐	☐
Quý vị đã thường cảm thấy xuống tinh thần và buồn chán hay không?	☐	☐	☐	☐	☐

M.7 Trong 4 tuần vừa qua, cho biết mức độ thường xuyên các tình trạng sức khỏe hay xúc động tinh thần đã ngăn trở đến các sinh hoạt xã hội của quý vị như thế nào (như việc thăm viếng quý vị bè, người thân, v.v...)?

Luôn luôn	Hầu hết	Thỉnh thoảng	Ít khi	Không bao giờ
▼	▼	▼	▼	▼
☐	☐	☐	☐	☐

N. Những câu hỏi cuối cùng này là về các lớp giáo huấn trong tương lai mà có thể nâng cao sức khoẻ nhân viên làm móng tay.

Xin trả lời rằng quý vị đồng ý hoặc không đồng ý với những câu nói sau đây:

N.1. **"Sự tiếp tục giáo dục về sức khoẻ và sự an toàn nên bị bắt buộc khi đổi bằng mới."**

- ☐ Tôi đồng ý với câu nói này.
- ☐ Tôi không đồng ý với câu nói này.
- ☐ Tôi không biết.

N.2. **"Sự tiếp tục giáo dục về sức khoẻ và sự an toàn sẽ giúp bảo vệ sức khoẻ của nhân viên làm móng tay."**

- ☐ Tôi đồng ý với câu nói này.
- ☐ Tôi không đồng ý với câu nói này.
- ☐ Tôi không biết.

N.3. **Những thông tin nào sau đây là những cách tốt nhất để các nhân viên làm móng tay học về sức khoẻ và sự an toàn?** ***(Xin chọn tất cả các câu áp dụng được.)***

- ☐ Trên mạng (Internet)
- ☐ Trong trường dạy làm đẹp hoặc thẩm mỹ
- ☐ Báo chí ngành làm móng tay
- ☐ Các tài liệu để nhân viên làm móng tay đọc
- ☐ Từ các nhân viên làm móng tay khác
- ☐ Chủ tiệm làm móng tay
- ☐ Tiệm bán đồ làm móng tay
- ☐ Các khóa huấn luyện trong tiệm của tôi
- ☐ Các khoá huấn luyện trong cộng đồng
- ☐ Các nguồn thông tin khác: _____

N.4 **Quý vị có những ý kiến gì muốn chia xẻ thêm với chúng tôi không?**

_____

_____

_____

_____

_____

Cám ơn quý vị đã dành thời gian để trả lời những câu hỏi này.

Nếu quý vị muốn điền tên để bốc thăm trúng thưởng một <u>iPad</u>,
xin hãy gọi: (410) 614-1363
để nhắn lại tên và số điện thoại của quý vị.

Chúng tôi sẽ liên lạc với quý vị nếu quý vị trúng.

Vui lòng gửi lại bản khảo sát dùng phong bì đã gửi kèm.

Xin chân thành cám ơn!

Appendix A.3-4. Consent forms (three) in English

Approval Date: March 17, 2011
Approved Consent Version No.: 1
PI Name: Jacqueline Agnew
IRB No. 00003403

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH

INFORMED CONSENT DOCUMENT

Consent for Written Questionnaire Survey

Study Title: "Occupational health and safety practices in Vietnamese American nail salons"

Principal Investigator: Jacqueline Agnew

IRB No.:00003403

PI Version Date: 3/15/11 (v.4)

What you should know about this study

- You are being asked to complete a survey.
- This is a research study. The study is a written questionnaire survey.
- This consent form explains the purpose of the research and your part in this study.
- You are a volunteer. You can choose not to participate.
- If you agree to complete this survey, then you have given your consent to participate in this study.
- If you decide to do the survey, you may quit at any time. There will be no penalty.
- You may ask a member of the research team to explain any words or information in this informed consent that you do not understand.

Purpose of research project

You are invited to take part in a research study, which is a survey with nail salon workers.

The purpose of this study is to help us know more about the health and safety practices used by nail salon workers in their work. We have worked closely with members of the Vietnamese community to develop this study and this survey.

Why you are being asked to participate

You have been invited to complete this survey because you work in a nail salon and are familiar with the Vietnamese community. Your participation is voluntary.

Procedures
If you agree to participate, you will complete the enclosed written questionnaire. This survey should not require more than 30 minutes of your time. You may answer questions in English or Vietnamese.

You may refuse to answer any questions that you do not wish to answer. You may end the survey at any time.

Some of the questions are about your personal work conditions or personal health on the job. If a question makes you feel uncomfortable, you may choose to not answer that question. We will not ask you for any personal information. All of your responses will be kept confidential.

We will not ask you for any personal information. All of your responses will be kept confidential.

After you complete the survey, you may choose to enter a drawing for an iPad. Information about how to enter this drawing is available at the end of the survey.

Risks/discomforts
This research study involves no major risks or discomfort to you. If any question is uncomfortable to you, you may refuse to answer that question.

Benefits
There is no direct benefit to you as an individual from being in this study. This study has the potential to improve the health and safety practices of nail salon workers. The Vietnamese American community and nail salon workers may ultimately benefit from the information that we collect from this survey.

Payment
There is no payment for participation. However, you may choose to enter a drawing for an electronic device, such as an iPad, with a value of up to $500.

Protecting data confidentiality
All survey data will be kept confidential.

Protecting subject privacy during data collection
Your responses are confidential and anonymous. We will not ask for your name or any personal identifiers.

Who do I call if I have questions or problems?

- If you have questions about the survey you may contact the principal investigator, Dr. Jaqueline Agnew, at 410-955-4037.

- Call or contact the Johns Hopkins Bloomberg School of Public Health IRB Office if you have questions about your rights as a research participant, or if you think you have not been treated fairly.

  The IRB contact information is:

  Address: Johns Hopkins Bloomberg School of Public Health
  615 N. Wolfe Street, Suite E1100
  Baltimore, MD 21205
  Telephone: 410-955-3193
  Toll Free: 1-888-262-3242
  Fax: 410-502-0584
  E-mail: irboffice@jhsph.edu

Approval Date: March 17, 2011
Approved Consent Version No.: 1
PI Name: Jacqueline Agnew
IRB No. 00003403

If you agree to participate in this study, you will give your consent by completing the enclosed survey. You do not have to sign this form.

Please continue to the survey, and follow the attached directions.

Approval Date: March 17, 2011
Approved Consent Version No.: 1
PI Name: Jacqueline Agnew
IRB No. 00003403

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH

INFORMED CONSENT DOCUMENT

Consent for Interviewer-Assisted Written Survey

Study Title: "Occupational health and safety practices in Vietnamese American nail salons"

Principal Investigator: Jacqueline Agnew

IRB No.: 00003403

PI Version Date: 3/15/11 (v. 4)

What you should know about this study

- You are being asked to complete a survey.
- This is a research study. The study is a questionnaire survey.
- This consent form explains the purpose of the research and your part in this study.
- You are a volunteer. You can choose not to participate.
- If you agree to complete this survey, then you have given your consent to participate in this study.
- If you agree to complete this survey with the interviewer, you may quit at any time. There will be no penalty.
- You may ask a member of the research team to explain any words or information in this informed consent that you do not understand.
- Before you begin the survey, assisted by interviewer, we will ask for you to give your verbal consent stating that you have agreed to participate in this study.

Purpose of research project

You are invited to take part in a research study, which is a survey with nail salon workers.

The purpose of this study is to help us know more about the health and safety practices used by nail salon workers in their work. We have worked closely with members of the Vietnamese community to develop this study and this survey.

Why you are being asked to participate
You have been invited to complete this survey because you work in a nail salon and are familiar with the Vietnamese community. Your participation is voluntary.

Procedures
If you agree to participate in this survey, the interviewer will read the questions to you and wait for your responses. This survey should not require more than 30 minutes of your time. You may answer questions in English or Vietnamese.

Your answers will be recorded on paper, and the completed survey will be placed in an envelope and sealed.

You may refuse to answer any questions that you do not wish to answer. You may end the survey at any time.

Some of the questions are about your personal work conditions or personal health on the job. If a question makes you feel uncomfortable, you may choose to not answer that question. We will not ask you for any personal information. All of your responses will be kept confidential.

After you complete the survey, you may choose to enter a drawing for an iPad. Information about how to enter this drawing will be provided at the end of the survey.

Upon completion of the interview, we may ask you if you know of any other individuals who work in nail salons who would be interested in participating in a telephone survey. You are not obligated to give us any names or contacts.

Risks/discomforts
This research study involves no major risks or discomfort to you. If any question is uncomfortable to you, you may refuse to answer that question.

Benefits
There is no direct benefit to you as an individual from being in this study. This study has the potential to improve the health and safety practices of nail salon workers. The Vietnamese American community and nail salon workers may ultimately benefit from the information that we collect from this survey.

Payment
There is no payment for participation. However, you may choose to enter a drawing for an electronic device, such as an iPad, with a value of up to $500.

Protecting data confidentiality
All survey data will be kept confidential.

Protecting subject privacy during data collection
Your responses are confidential and anonymous. We will not ask for your name or any personal identifiers.

Who do I call if I have questions or problems?

- If you have questions about the survey, you may contact the principal investigator, Dr. Jaqueline Agnew, at 410-955-4037.

- Call or contact the Johns Hopkins Bloomberg School of Public Health IRB Office if you have questions about your rights as a research participant, or if you think you have not been treated fairly.

  The IRB contact information is:

  Address: Johns Hopkins Bloomberg School of Public Health
  615 N. Wolfe Street, Suite E1100
  Baltimore, MD 21205
  Telephone: 410-955-3193
  Toll Free: 1-888-262-3242
  Fax: 410-502-0584
  E-mail: irboffice@jhsph.edu

Interviewer asks if respondent agrees to these statements:

- You have been informed about this study's purpose, procedures, possible benefits and risks.
- You have been given the chance to ask questions before you agree to participate in this survey.
- You have voluntarily agreed to be in this study.

Do you agree to participate in this study?
Yes/No
To the interviewer:
Please sign that you have read this consent to the respondent.

Signature of Interviewer _____ Date _____

Please enclose one copy of this form with the survey and give one copy to the respondent

Approval Date: March 17, 2011
Approved Consent Version No.: 1
PI Name: Jacqueline Agnew
IRB No. 00003403

JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH

ORAL CONSENT SCRIPT

Oral Consent for Telephone Survey

Study Title: "Occupational health and safety practices in Vietnamese American nail salons"

Principal Investigator: Jacqueline Agnew

IRB No: 00003403

PI Version Date: 3/15/11 v. 4

Investigators are expected to write consent forms in simple language. The preferred reading level is 8th grade. Check the **instructional template** for guidance about assessing reading levels.

What you should know about this study:

- You are being asked to join a research study.
- This study is a telephone survey questionnaire.
- This consent form explains the purpose of research and your part in this study.
- Please listen carefully as this consent is read to you.
- Please ask questions at any time about anything you do not understand.
- You may ask a member of the research team to explain any words or information in this informed consent that you do not understand.
- You are a volunteer. You can choose not to take part, and you may quit at any time. There will be no penalty if you decide to quit the study.
- If you agree to participate in this telephone survey, then you have given your consent to participate in this research study.

Approval Date: March 17, 2011
Approved Consent Version No.: 1
PI Name: Jacqueline Agnew
IRB No. 00003403

Purpose
You are invited to take part in this research study because you work in a nail salon and are familiar with the Vietnamese community. Your participation is voluntary.

The purpose of this study is to help us know more about the health and safety practices used by nail salon workers in their work. We have worked closely with members of the Vietnamese community to develop this study and this survey.

Procedures
If you agree to participate, you will complete a survey over the telephone. This should not require more than 30 minutes of your time. You may answer questions in English or Vietnamese.

We will ask you a series of questions. You may refuse to answer a question that you do not wish to answer. Some of the questions we ask will be about your personal work conditions or personal health on the job. If a question makes you feel uncomfortable, you may choose to not answer that question. You may end this telephone survey at any time.

We will not record your name or any personal information in this survey. The information that you share will be kept confidential.

After you finish answering the questions, you may choose to enter a drawing for an iPad. We will give you information about how to enter this drawing.

Upon completion of the survey, we may ask you if you know of any other individuals who work in nail salons who would be interested in participating in a telephone survey. You are not obligated to give us any names or contacts.

Risks/Discomforts
This research study involves no major risks or discomfort to you. If any questions are uncomfortable to you, you may refuse to answer that question.

Benefits
There is no direct benefit to you as an individual from being in this study. This study has the potential to improve the health and safety practices of nail salon workers. The Vietnamese American community and nail salon workers may ultimately benefit from the information that we collect in this research study.

Payment(s) for Participating:
There is no payment for participation. However, you may choose to enter a drawing for an iPad, with a value of up to $500.

Voluntary participation

You do not have to agree to be in this study, and you may change your mind at any time.

- Call the principal investigator, Dr. Jaqueline Agnew, at 410-955-4037 if you have questions or complaints about being in this study.
- If you have any questions about your rights as a research participant, or if you think you have not been treated fairly, you may call the Johns Hopkins School of Public Health Institutional Review Board (IRB) at 410-955-3193, or 1-888-262-3242.

Permission to Proceed

Is it okay to proceed with this telephone survey?

Appendix A.3-5. Consent forms (three) in Vietnamese

	Approval Date: March 17, 2011 Approved Consent Version No.: 1 PI Name: Jacqueline Agnew IRB No. 00003403

TRƯỜNG SỨC KHOẺ CỘNG ĐỒNG JOHNS HOPKINS BLOOMBERG

BẢN CHẤP THUẬN

Chấp thuận để trả lời bản câu hỏi thăm dò trên giấy

Tên dự án: "Thực hành an toàn và sức khoẻ nghề nghiệp trong những tiệm làm móng gốc Việt"

Nghiên cứu viên trưởng: Jacqueline Agnew

Số do hội đồng xét duyệt cấp: 00003403

Phiên bản nghiên cứu ngày: 3/15/11 (phiên bản 4)

Bạn cần biết gì về dự án nghiên cứu này

- Bạn được mời tham gia hoàn thành một bản câu hỏi thăm dò.
- Đây là một dự án nghiên cứu. Dự án chính là bản câu hỏi thăm dò trên giấy này.
- Bản chấp thuận này giải thích về dự án nghiên cứu và vai trò của bạn trong dự án này.
- Bạn tự nguyện tham gia. Bạn có thể không tham gia nếu không muốn.
- Nếu bạn hoàn tất bản câu hỏi này, có nghĩa là bạn đã đồng ý tham gia vào dự án nghiên cứu này.
- Ngay cả khi đồng ý tham gia trả lời bản câu hỏi, bạn có thể bỏ ngang bất cứ lúc nào. Không có hình phạt nào cả.
- Bạn có thể hỏi thành viên của nhóm nghiên cứu giải thích cho bạn bất kỳ từ ngữ và thông tin nào trong bản này mà bạn chưa hiểu rõ.

Mục tiêu của dự án nghiên cứu

Bạn được mời tham gia một dự án nghiên cứu, đây là một bản thăm dò về các thợ làm móng trong tiệm.

Mục tiêu của nghiên cứu này là để chúng tôi hiểu rõ về các thực hành an toàn và sức khoẻ do các thợ làm móng thực hành trong công việc. Chúng tôi đã làm việc nhiều với các thành viên của cộng đồng người Việt để xây dựng bản thăm dò này.

Vì sao bạn được mời tham gia

Bạn được mời tham gia vì bạn làm việc trong tiệm làm móng và quen thuộc với cộng đồng người Việt. Việc bạn tham gia là hoàn toàn tự nguyện.

Quy trình
Nếu bạn đồng ý tham gia, bạn sẽ hoàn thành một bản câu hỏi trên giấy. Bản thăm dò này không mất quá 30 phút. Bạn có thể trả lời bằng Tiếng Việt hoặc Tiếng Anh.

Bạn có thể từ chối không trả lời câu hỏi nào mà bạn không muốn. Bạn có thể ngưng trả lời câu hỏi bất cứ lúc nào.

Chúng tôi không hỏi bất kỳ câu hỏi riêng tư nào. Tất cả những câu trả lời của bạn đều được giữ bảo mật.

Sau khi hoàn thành bản thăm dò, bạn có thể quyết định ghi tên rút thăm trúng thưởng một máy iPad. Cách tham gia rút thăm trúng thưởng được ghi rõ ở cuối buổi thăm dò.

Rủi ro/bất tiện
Bản nghiên cứu này không có rủi ro hay bất tiện nào đáng kể cho bạn. Nếu có câu hỏi nào làm bạn không thoải mái, bạn có thể từ chối trả lời câu hỏi đó.

Lợi ích
Không có lợi ích trực tiếp cho cá nhân bạn khi tham gia nghiên cứu này. Nghiên cứu này sẽ nâng cao các thực hành lành mạnh và an toàn cho các thợ làm móng. Cộng đồng người Mỹ gốc Việt và các thợ làm móng cuối cùng làm những người có lợi từ những thông tin chúng tôi thu thập từ bản thăm dò này.

Chi trả
Không có chi trả nào cho việc tham gia. Tuy nhiên, bạn có thể quyết định tham gia rút thăm trúng thưởng một thiết bị điện tử, ví dụ như máy iPad, trị giá $500.

Giữ thông tin bảo mật
Tất cả các dữ liệu thăm dò đều được giữ bảo mật.

Bảo vệ sự riêng tư khi thu thập thông tin
Những câu trả lời của bạn hoàn toàn ẩn danh. Chúng tôi không hỏi tên hay bất cứ câu hỏi nào để xác định danh tính cá nhân.

Nếu tôi có vấn đề thì gọi điện cho ai?

- Nếu bạn có vấn đề về bản thăm dò này, bạn có thể liên lạc nghiên cứu viên trưởng, Tiến sĩ Jaqueline Agnew, ở số điện thoại 410-955-4037.

- Gọi điện hoặc liên lạc phòng xét duyệt dự án của trường sức khoẻ cộng đồng Johns Hopkins Bloomberg, nếu bạn có câu hỏi nào về quyền lợi của người tham gia, hoặc nếu bạn nghĩ mình bị đối xử không công bằng.

Phòng phòng xét duyệt dự án:

Địa chỉ: Johns Hopkins Bloomberg School of Public Health
615 N. Wolfe Street, Suite E1100
Baltimore, MD 21205
Điện thoại: 410-955-3193
Số miễn phí: 1-888-262-3242
Fax: 410-502-0584
E-mail: irboffice@jhsph.edu

Nếu bạn đồng ý tham gia vào dự án này, bạn sẽ chấp thuận hoàn thành bản thăm dò kèm theo. Bạn không phải ký vào đơn này.

Vui lòng tiếp tục trả lời bản thăm dò theo các hướng dẫn đi kèm.

Approval Date: March 17, 2011
Approved Consent Version No.: 1
PI Name: Jacqueline Agnew
IRB No. 00003403

TRƯỜNG SỨC KHOẺ CỘNG ĐỒNG JOHNS HOPKINS BLOOMBERG

BẢN CHẤP THUẬN

Chấp thuận để được phỏng vấn một bản câu hỏi thăm dò

Tên dự án: "Thực hành an toàn và sức khoẻ nghề nghiệp trong những tiệm làm móng gốc Việt"

Nghiên cứu viên trưởng: Jacqueline Agnew

Số do hội đồng xét duyệt cấp: 00003403

Phiên bản nghiên cứu ngày: 3/15/11 (phiên bản 4)

Bạn cần biết gì về dự án nghiên cứu này

- Bạn được mời tham gia hoàn thành một bản câu hỏi thăm dò.
- Đây là một dự án nghiên cứu. Dự án chính là bản câu hỏi thăm dò trên.
- Bản chấp thuận này giải thích về dự án nghiên cứu và vai trò của bạn trong dự án này.
- Bạn tự nguyện tham gia. Bạn có thể không tham gia nếu không muốn.
- Nếu bạn hoàn tất bản câu hỏi này, có nghĩa là bạn đã đồng ý tham gia vào dự án nghiên cứu này.
- Ngay cả khi đồng ý tham gia trả lời bản câu hỏi với người phỏng vấn, bạn có thể bỏ ngang bất cứ lúc nào. Không có hình phạt nào cả.
- Bạn có thể hỏi thành viên của nhóm nghiên cứu giải thích cho bạn bất kỳ từ ngữ và thông tin nào trong bản này mà bạn chưa hiểu rõ.
- Trước khi bắt đầu bản thăm dò, do người phỏng vấn trợ giúp, chúng tôi sẽ yêu cầu bạn nói bằng lời rằng bạn đồng ý tham gia nghiên cứu này.

Mục tiêu của dự án nghiên cứu

Bạn được mời tham gia một dự án nghiên cứu, đây là một bản thăm dò về các thợ làm móng trong tiệm.

Mục tiêu của nghiên cứu này là để chúng tôi hiểu rõ về các thực hành an toàn và sức khoẻ do các thợ làm móng thực hành trong công việc. Chúng tôi đã làm việc nhiều với các thành viên của cộng đồng người Việt để xây dựng bản thăm dò này.

Vì sao bạn được mời tham gia

Bạn được mời tham gia vì bạn làm việc trong tiệm làm móng và quen thuộc với cộng đồng người Việt. Việc bạn tham gia là hoàn toàn tự nguyện.

Quy trình
Nếu bạn đồng ý tham gia vào bản thăm dò này, nhân viên phỏng vấn sẽ đọc câu hỏi và chờ bạn trả lời. Bản thăm dò này không mất quá 30 phút. Bạn có thể trả lời bằng Tiếng Việt hoặc Tiếng Anh.

Những câu trả lời của bạn được ghi lại trên giấy, và bản trả lời hoàn chỉnh sẽ được bỏ vào bao thơ dán kín lại.

Bạn có thể từ chối không trả lời câu hỏi nào mà bạn không muốn. Bạn có thể ngưng trả lời câu hỏi bất cứ lúc nào.

Chúng tôi không hỏi bất kỳ câu hỏi riêng tư nào. Tất cả những câu trả lời của bạn đều được giữ bảo mật.

Sau khi hoàn thành bản thăm dò, bạn có thể quyết định ghi tên rút thăm trúng thưởng một máy iPad. Nhân viên chúng tôi sẽ nói cách tham gia rút thăm trúng thưởng ở cuối buổi thăm dò.

Ngay khi hoàn thành bản phỏng vấn, chúng tôi sẽ hỏi bạn có biết ai làm việc trong tiệm muốn tham gia vào bản thăm dò qua điện thoại không. Nhưng bạn không bắt buộc phải đưa ra một tên hoặc số liên lạc nào.

Rủi ro/bất tiện
Bản nghiên cứu này không có rủi ro hay bất tiện nào đáng kể. Nếu có câu hỏi nào làm bạn không thoải mái, bạn có thể từ chối trả lời câu hỏi đó.

Lợi ích
Không có lợi ích trực tiếp cho cá nhân bạn khi tham gia nghiên cứu này. Nghiên cứu này sẽ nâng cao các thực hành an toàn và sức khoẻ cho các thợ làm móng. Cộng đồng người Mỹ gốc Việt và các thợ làm móng cuối cùng làm những người có lợi từ những thông tin chúng tôi thu thập từ bản thăm dò này.

Chi trả
Không có chi trả nào cho việc tham gia. Tuy nhiên, bạn có thể quyết định tham gia rút thăm trúng thưởng một thiết bị điện tử, ví dụ như máy iPad, trị giá $500.

Giữ thông tin bảo mật
Tất cả các dữ liệu thăm dò đều được giữ bảo mật.

Bảo vệ sự riêng tư khi thu thập thông tin
Những câu trả lời của bạn hoàn toàn ẩn danh. Chúng tôi không hỏi bất cứ câu hỏi nào để xác định danh tính cá nhân.

Nếu tôi có vấn đề thì gọi điện cho ai?

- Nếu bạn có vấn đề về bản thăm dò này, bạn có thể liên lạc nghiên cứu viên trưởng, Tiến sĩ Jaqueline Agnew, ở số điện thoại 410-955-4037.

- Gọi điện hoặc liên lạc phòng xét duyệt dự án của trường sức khoẻ cộng đồng Johns Hopkins Bloomberg, nếu bạn có câu hỏi nào về quyền lợi của người tham gia, hoặc nếu bạn nghĩ mình bị đối xử không công bằng.

  Phòng phòng xét duyệt dự án:

  Địa chỉ: Johns Hopkins Bloomberg School of Public Health
  615 N. Wolfe Street, Suite E1100
  Baltimore, MD 21205
  Điện thoại: 410-955-3193
  Số miễn phí: 1-888-262-3242
  Fax: 410-502-0584
  E-mail: irboffice@jhsph.edu

Người phỏng vấn hỏi nếu người nghe đồng ý với những điều sau hay không:

- Bạn đã được thông báo rõ mục tiêu, quy trình, các lợi ích và nguy cơ có thể xảy ra của việc nghiên cứu.
- Bạn có cơ hội đặt câu hỏi trước khi đồng ý tham gia và bản thăm dò
- Bạn tự nguyện tham gia vào dự án nghiên cứu này.

Bạn có đồng ý tham gia và nghiên cứu này hay không?
Có/Không

Dành cho người phỏng vấn
Vui lòng ký xác nhận rằng bạn đã đọc bản chấp thuận này cho người nghe

_____ _____ _____
Chữ ký của người phỏng vấn Ngày tháng năm

Vui lòng đưa lại một bản kèm với bản thăm dò và giữ lại một bản sao cho mình.

TRƯỜNG SỨC KHOẺ CỘNG ĐỒNG JOHNS HOPKINS BLOOMBERG

BẢN CHẤP THUẬN

Chấp thuận để được phỏng vấn một bản câu hỏi thăm dò

Tên dự án: "Thực hành an toàn và sức khoẻ nghề nghiệp trong những tiệm làm móng gốc Việt"

Nghiên cứu viên trưởng: Jacqueline Agnew

Số do hội đồng xét duyệt cấp: 00003403

Phiên bản nghiên cứu ngày: 3/15/11 (phiên bản 4)

Investigators are expected to write consent forms in simple language. The preferred reading level is 8th grade. Check the **instructional template** for guidance about assessing reading levels.

Bạn cần biết gì về dự án nghiên cứu này

- Bạn được mời tham gia hoàn thành một bản câu hỏi thăm dò.
- Dự án nghiên cứu này là một bản câu hỏi thăm dò qua điện thoại.
- Bản chấp thuận này giải thích về dự án nghiên cứu và vai trò của bạn trong dự án này.
- Vui lòng lắng nghe cẩn thận khi chúng tôi đọc bản chấp thuận này cho bạn.
- Vui lòng đặt câu hỏi bất cứ lúc nào nếu có điều gì mà bạn chưa hiểu rõ
- Bạn có thể hỏi thành viên của nhóm nghiên cứu giải thích cho bạn bất kỳ từ ngữ và thông tin nào trong bản này mà bạn chưa hiểu rõ
- Bạn tự nguyện tham gia. Ngay cả khi đồng ý tham gia, bạn có thể bỏ ngang bất cứ lúc nào. Không có hình phạt nào nếu bạn bỏ ngang nghiên cứu này.
- Nếu bạn đồng ý trả lời bản câu hỏi thăm dò, có nghĩ là bạn đã đồng ý tham gia vào dự án nghiên cứu này.

Mục tiêu của dự án nghiên cứu

Bạn được mời tham gia một dự án nghiên cứu, vì bạn làm việc trong tiệm làm móng và quen thuộc với cộng đồng người Việt. Việc bạn tham gia là hoàn toàn tự nguyện.

Mục tiêu của nghiên cứu này là để chúng tôi hiểu rõ về các thực hành an toàn và sức khoẻ do các thợ làm móng thực hành trong công việc. Chúng tôi đã làm việc nhiều với các thành viên của cộng đồng người Việt để xây dựng bản thăm dò này.

Quy trình
Nếu bạn đồng ý tham gia, bạn sẽ hoàn thành một bản thăm dò qua điện thoại. Bản thăm dò này không mất quá 30 phút. Bạn có thể trả lời bằng Tiếng Việt hoặc Tiếng Anh.

Nhân viên nghiên cứu sẽ hỏi bạn một loạt câu hỏi. Bạn có thể từ chối không trả lời câu hỏi nào mà bạn không muốn. Bạn có thể ngưng việc thăm dò qua điện thoại này bất cứ lúc nào.

Chúng tôi không ghi/thu âm tên hoặc bất kỳ thông tin cá nhân nào của bạn trong bản thăm dò này. Những thông tin bạn chia sẻ đều được giữ bảo mật.

Sau khi hoàn thành bản thăm dò, bạn có thể quyết định ghi tên rút thăm trúng thưởng một máy iPad. Nhân viên chúng tôi sẽ nói cách tham gia rút thăm trúng thưởng ở cuối buổi thăm dò.

Ngay khi hoàn thành bản phỏng vấn, chúng tôi sẽ hỏi bạn có biết ai làm việc trong tiệm muốn tham gia vào bản thăm dò qua điện thoại không. Nhưng bạn không bắt buộc phải đưa ra một tên hoặc số liên lạc nào.

Rủi ro/bất tiện
Bản nghiên cứu này không có rủi ro hay bất tiện nào đáng kể cho bạ. Nếu có câu hỏi nào làm bạn không thoải mái, bạn có thể từ chối trả lời câu hỏi đó.

Lợi ích
Không có lợi ích trực tiếp cho cá nhân bạn khi tham gia nghiên cứu này. Nghiên cứu này sẽ nâng cao các thực hành lành mạnh và an toàn cho các thợ làm móng. Cộng đồng người Mỹ gốc Việt và các thợ làm móng cuối cùng làm những người có lợi từ những thông tin chúng tôi thu thập từ bản thăm dò này.

Chi trả
Không có chi trả nào cho việc tham gia. Tuy nhiên, bạn có thể quyết định tham gia rút thăm trúng thưởng một thiết bị điện tử, ví dụ như máy iPad, trị giá $500.

Tham gia tự nguyện
Bạn không nhất thiết phải tham gia vào dự án nghiên cứu này, và khi đã tham gia, bạn có thể đổi ý bất cứ lúc nào

- Gọi điện cho nghiên cứu viên trưởng, Tiến sĩ Jaqueline Agnew, ở số điện thoại 410-955-4037, nếu bạn có câu hỏi hoặc than phiền việc việc tham gia dự án này.
- Nếu bạn có câu hỏi nào về quyền lợi của người tham gia, hoặc nếu bạn nghĩ mình bị đối xử không công bằng, bạn có thể gọi điện đến phòng xét duyệt dự án

của trường sức khoẻ cộng đồng Johns Hopkins Bloomberg ở số 410-955-3193, or 1-888-262-3242.

Cho phép tiếp tục
Tôi có thể tiếp tục thực hiện bản thăm dò qua điện thoại này được không ạ?

Appendix A.3-6. Oral script for interview


Approved: 17MAR11

Appendix
Recruitment
Oral script #1 when calling nail salon workers who have self-referred to participate in telephone survey

Oral script to be used by research assistant to speak with a nail salon worker who has called in expressing interest in the telephone survey.

Hello, my name is [Hien Tran]. I am working with the Maryland Vietnamese Mutual Association and the Johns Hopkins School of Public Health. You have expressed an interest about participating in a telephone survey?

We are conducting this brief survey to help us know more about health and safety practices and needs of people who work in nail salons. It should only take about 30 minutes.

This important survey is part of a research project that is being conducted by two nurses from the Johns Hopkins Bloomberg School of Public Health. They have worked closely with the Vietnamese community and MVMA for many years.

Here's an incentive: If you are willing to complete this phone survey, you will be eligible to enter a drawing for an i-Pad, worth approximately $500. You do not have to place your name in this drawing, unless you want to; it's just an added bonus.

You can complete the phone survey in either English or Vietnamese, whichever you choose.

Are you still interested in completing this survey? [offer alternate time if more convenient.]

☐ **Yes ->** [I will begin by reading a consent form. At the end of my reading the consent, you can say yes if you agree to participate in the survey, or no if you are no longer interested.]

May I begin?

☐ **No ->** Thank you very much for listening to this request. If you are not interested in completing this survey, do you know of any nail salon workers who may be willing to help out with this survey?

- Yes -> Would you be willing to give me their name and phone number?
- No -> Thank you very much for listening.

Appendix A.3-7. Oral script for phone interview


Approved: 17MAR11

Appendix
Recruitment for telephone survey
Oral Script #2

Oral script to use when calling to recruit nail salon workers [suggested by MVMA] or (when a nail salon worker has been referred by another nail salon worker).
Hello, my name is [Hien Tran]. I work with the Maryland Vietnamese Mutual Association and the Johns Hopkins Bloomberg School of Public Health. I am not selling anything. I am working with the Vietnamese community to promote the health of people who work in nail salons.

I am calling you because your name was given to me from [MVMA, as a friend of this community association]. (by a friend who works in a nail salon.)

We are conducting a brief survey to help us know more about the health and safety practices and needs of people who work in nail salons.

This important survey is part of a research project that is being conducted by two nurses from the Johns Hopkins Bloomberg School of Public Health. They have worked closely with the Vietnamese community and with the MVMA for many years and have provided training on health and safety to nail salon workers.

I am calling today to see if you would be willing to help by participating in a brief telephone survey. It should only take 30 minutes.

Your responses are anonymous and your answers will be confidential. Even those of us who are collecting this information will not collect your name or any personal information. We don't ask personal questions, and you can skip any questions that you don't want to answer.

Here's an incentive: If you are willing to complete this phone survey, you will be eligible to enter a drawing for an iPad, worth approximately $500. You do not have to place your name in this drawing unless you want to; it's just an added bonus.

You can complete the survey in either English or Vietnamese, whichever you choose.

Would you be willing to complete this survey? [offer alternate time if more convenient.]

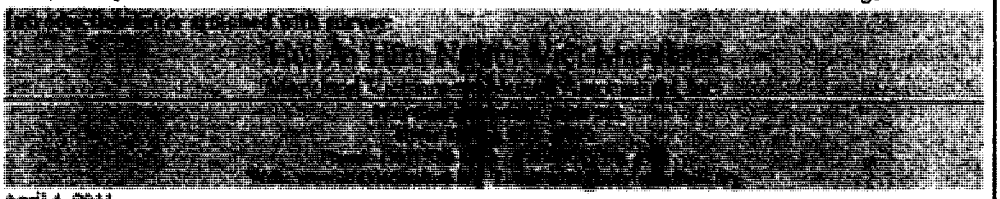
☐ **Yes ->** [I will begin by reading a consent form. At the end of my reading the consent, you can say yes if you agree to participate in the survey, or no if you are no longer interested.]

May I begin?

☐ **No ->** Thank you very much for listening to this request. If you are not interested in completing this survey, do you know of any nail salon workers who may be willing to help out with this survey?

- Yes -> Would you be willing to give me their name and phone number?
- No -> Thank you very much for listening.

Appendix A.3-8. Letters from MVMA in English and in Vietnamese



April 4, 2011

Dear friend in the nail salon business:

Hello! We would like to introduce you to an exciting survey that is being conducted by nurses at Johns Hopkins Bloomberg School of Public Health in Baltimore. We have been working with Dr. Agnew and Lori Edwards for several years and we really value their dedication to our Vietnamese community.

Dr. Agnew and Lori Edwards are conducting an important survey with **people who work in nail salons. They are very interested in hearing from you.** They are studying the safety and health practices currently used in nail salons. The information that they obtain from this survey will help to promote health and safety for nail salon workers like you.

This brief survey should only take about 30 minutes for you to complete. Your responses are confidential and anonymous. They are not collecting any names.

There are 2 great options for how you could complete this survey.

1.) You can do this over the telephone. **Just call: (410) 375-5599**
or
2.) You can fill in the survey included in this packet and mail it.

You can complete the survey in either English or Vietnamese.

Here's one bonus:
If you complete the survey, you are eligible for a drawing to win an iPad, worth $500!

If you want to complete the written survey, just complete the one enclosed in this packet. Then just mail it in the enclosed addressed stamped envelope.

If you would prefer to talk with someone over the phone, you may call the research assistant, Hien Tran. She will make arrangements with you to complete the survey at a time most convenient for you.
Just call: (410) 375-5599

If you know of anyone else who may also be interested, please give them the phone number above to contact the research assistant, Hien Tran.

We truly thank you for participating in this important work.
Sincerely,

IRB No: 00003403
Letter to nail salon workers
Agnew, J. 4/4/11

Approved: 17MAR11

Diane Vy Nguyen-Vu
Executive Director, Maryland Vietnamese Mutual Association

If you have questions, feel free to call:

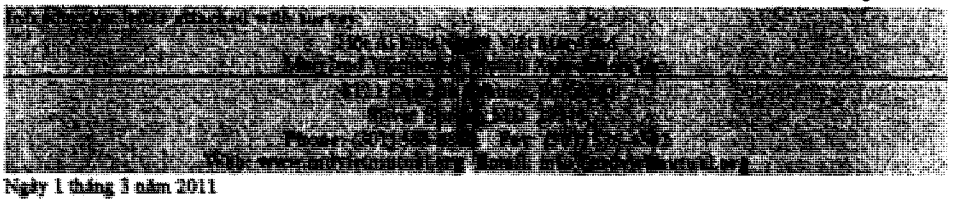
Jacqueline Agnew, RN, PhD (the primary person conducting this research).
You may contact her at:
Johns Hopkins Bloomberg School of Public Health
615 N. Wolfe Street, W7503
Baltimore, MD 21205
Phone: 410-955-4037
e-mail at jagnew@jhsph.edu

OR

Lori Edwards, RN, MPH
Phone: 410-614-2418
e-mail at loedward@jhsph.edu

OR

Hien Tran
Program Manager/ Research Assistant
Phone: 410-375-5599
johnshopkins.nailsurvey@gmail.com



Ngày 1 tháng 3 năm 2011

Kính thưa quý vị làm việc trong ngành nail:

Xin chào! Chúng tôi hân hạnh giới thiệu một bản thăm dò rất thú vị của các y tá trường Sức Khoẻ Cộng Đồng Johns Hopkins Bloomberg ở Baltimore. Chúng tôi đã làm việc với tiến sĩ Dr. Agnew và cô Lori Edwards trong nhiều năm và chúng tôi rất cảm kích tấm lòng của hai cô đối với cộng đồng Việt Nam.

Tiến sĩ Agnew và cô Lori Edwards đang thực hiện một bản thăm dò với **những người đang làm việc tại tiệm nail. Họ muốn lắng nghe ý kiến từ quý vị.** Họ đang nghiên cứu những thực hành an toàn và sức khoẻ trong các tiệm nail. Những thông tin có được sẽ giúp nâng cao an toàn và sức khoẻ cho những thợ nail như quý vị.

Bản thăm dò này chỉ mất 30 phút để hoàn thành. Các câu trả lời hoàn toàn ẩn danh và bảo mật. Họ không ghi nhận tên tuổi nào.

Có 2 cách tốt nhất để hoàn thành bản thăm dò này:

1.) Bạn có thể làm qua điện thoại. **Chỉ cần gọi: (410) 375-5599**
Hoặc
2.) Quý vị có thể điền vào bản thăm dò và gởi lại bằng bưu điện.

Quý vị có thể điền vào bản thăm dò bằng Tiếng Anh hoặc Tiếng Việt.

Đây là phần thưởng:
Nếu quý vị hoàn thành bản thăm dò, quý vị có thể rút thăm trúng thưởng một iPad, trị giá $500!

Nếu quý vị muốn hoàn thành bản thăm dò bằng giấy, chỉ cần điền vào bản đính kèm, sau đó gởi đi với bao thư có dán tem sẵn.

Nếu quý vị muốn nói chuyện qua điện thoại, quý vị có thể gọi điện cho trợ lý nghiên cứu của chúng tôi, cô Hiên Trần. Chúng tôi sẽ sắp xếp để quý vị có thể trả lời vào khoảng thời gian thuận tiện nhất.
Chỉ cần gọi: (410) 375-5599

Nếu quý vị biết những người khác cũng muốn tham gia, vui lòng đưa số điện thoại trên để họ có thể liên lạc với trợ lý nghiên cứu của chúng tôi, cô Hiên Trần.

Chúng tôi chân thành cảm ơn sự tham gia của quý vị vào dự án quan trọng này.

Chân thành,

Diane Vy Nguyen-Vu
Executive Director, Maryland Vietnamese Mutual Association
IRB No: 00003403
Letter to nail salon workers
Agnew, J. 4/4/11

If you have questions, feel free to call:

Jacqueline Agnew, RN, PhD (the primary person conducting this research).
You may contact her at:
Johns Hopkins Bloomberg School of Public Health
615 N. Wolfe Street, W7503
Baltimore, MD 21205
Phone: 410-955-4037
e-mail at jagnew@jhsph.edu

OR

Lori Edwards, RN, MPH
Phone: 410-614-2418
e-mail at loedward@jhsph.edu

OR

Hien Tran
Program Manager/ Research Assistant
Phone: 410-375-5599
johnshopkins.nailsurvey@gmail.com

CURRICULUM VITAE

Part I
LORI A. EDWARDS

PERSONAL DATA

Full Name: Lori Ann Edwards, BSN, MPH, RN, PHCNS, BC

Work Address: Johns Hopkins University School of Nursing
525 N. Wolfe Street, Room 453
Baltimore, MD 21205-2100
Phone: (410) 614-2418
FAX: (410) 502-5481
E-mail: ledward4@jhu.edu

Home Address: 2813 Berwick Ave.
Baltimore, MD 21234-7618
Phone: (410) 319-9665

EDUCATION AND TRAINING

2012 **DrPH**
Johns Hopkins Bloomberg School of Public Health.

1988 – 1989 **MPH,** Johns Hopkins University School of Hygiene and Public Health. Baltimore, MD, May 1989.
Occupational Health Nursing; Health Policy& Management

1978 – 1980 **BSN,** University of Maryland, School of Nursing, Baltimore, MD, May 1980.

1975 – 1978 College of Notre Dame of Maryland, Baltimore, MD
Majors: Pre-Nursing, Social Work and Communications

CURRENT LICENSE AND CERTIFICATION

PHCNS, BC, Board Certified Public Health Nursing.
ANCC: 0292314-19, 1997 – valid until February 28, 20013

Maryland RN Licensure: #R072459
Colorado RN Licensure: Inactive

PROFESSIONAL EXPERIENCE

Academic

1994 – Present *Instructor*
Advanced Practice Nurse, Public / Community Health Nursing
Director of Returned Peace Corps Fellows Program
Johns Hopkins University School of Nursing,
Baltimore, MD

1995–1999 *Co-Investigator and Project Director, Project H.E.A.L.*
Joint Appointment, Johns Hopkins University, School of Medicine,
Department of Pediatrics
Baltimore, MD

1993–1995 *Research Coordinator and Project Director,*
National Oral Rehydration Therapy Project.
The Johns Hopkins University, School of Medicine,
Department of Pediatrics and Emergency Department and
Johns Hopkins University School of Public Health,
Department of International Health and
Center for Native American and Alaskan Indian Health.
Baltimore, MD

Professional Clinical Experience

1992–1993 *Discharge Planner, Home Health Coordinator*
Johns Hopkins Hospital and Johns Hopkins Home Care Group
Baltimore, MD

1991–2000 *International Health Nurse*
Volunteer with several NGOs providing outreach health services in Nicaragua, Guatemala, Mexico, and Haiti.

1991 *Migrant Health Nurse*
Colorado Department of Health, Pueblo, CO

1990–1994 *Visiting Nurse and Home Health Care Nurse*
Visiting Nurse Association, Metropolitan Baltimore, MD

1988-1991	*Case Manager* Department of Health and Mental Hygiene, Maryland Medical Assistance, Personal Care Program. Baltimore, MD
1987-1991	*Triage Nurse and Home Health Care Nurse* Various Home Health agencies in Baltimore, MD. (Intrastaff, Bay Area Home Care, St. Joseph's Home Care, Peak Performance)
1987–1990	*Director of Professional Services* Johns Hopkins Home Health Care, Baltimore, MD
1984–1987	*Public Health Nurse / Program Developer.* The Johns Hopkins Hospital, Department of Home Care. Baltimore, MD
1984	*Research Assistant* Department of Preventive Medicine and Epidemiology University of Maryland, School of Medicine, Baltimore, MD
1980 – 1984	*Senior Clinical Nurse* The Johns Hopkins Hospital (Oncology, Pediatric Intensive Care Unit, and inpatient medical and psychiatric units throughout hospital.) *Baltimore, MD*

HONORS AND AWARDS

2011	Alice Gifford Occupational Health Nursing Award Johns Hopkins Bloomberg School of Public Health
2007	Maryland Daily Record Health Care Hero Top Hero Nurse
2004	Faculty of the Year Maryland Association of Higher Education, State of Maryland
2004	Lillian Hiss-Ethel Crosby Outstanding Public Health Nurse Award, JHU School of Public Health
2004	Faculty of the Year Teaching Award, Undergraduate Programs JHU School of Nursing
2003	Julie Community Center's Best Award.

2002	Mayor's Citation Award – Awarded to The Amazing Grandmothers' Project. (Baltimore City Office of the Mayor)
2000	Caroline Pennington Award, Excellence in Teaching Award, Johns Hopkins University School of Nursing.
1998	Maryland Public Health Association, Community Health Nursing Student Award, May 8, 1998. "ABC's of Home Safety - Project H.E.A.L. Home Safety Center"
1998	Mayor's Citation Award - Project H.E.A.L. (Baltimore City Office the the Mayor)
1996	Mayor's Citation Award - "For your dedication to supporting families in Southeast Baltimore and for health education initiatives, such as a peer educators theatre group." (Baltimore City Office of the Mayor)
1988	NIOSH Educational award, MPH, Johns Hopkins University School of Public Health.
1980	Sigma Theta Tau, National Honor Society for Nursing
1980	Honors, University of Maryland School of Nursing
1979	Dean's List, College of Notre Dame of Maryland

Training Support

2001 – 2011	NIOSH, ERC funding for DrPH degree program
1989	NIOSH Educational Award, Johns Hopkins University School of Public Health

RESEARCH

Funded Research and Educational Grants

Sponsored Projects

2008 - 2009 Vietnamese-American nail salon workers and work related musculoskeletal disorders. Student Investigator, Agnew, J., Advisor, Principal Investigator. Effort as doctoral student researcher at JHBSPH, Funded by Center for Health Disparities, Johns Hopkins University School of Nursing. $10,000.

2007-2008 Stress and Vision Fluctuations in Retinitis Pigmentosa. Principal Investigator, George, M. Consultant for focus groups and mindfulness interventions, 0% effort. Funded by Center for Nursing Research, Johns Hopkins, University School of Nursing. $20,000 for one year.

2005 Health Risks of Nail Salon Workers. Student Investigator and Agnew, J., Advisor, Principal Investigator Effort as doctoral student researcher at JHBSPH, Funded by Education and Research Center, NIOSH supported through Department of Environmental Health Sciences, Division of Occupational and Environmental Health. $9200.

2001-2005 The Amazing Grandmothers' Project: A community-academic partnership in East Baltimore. Principal Investigator, effort 20%. Funded by the Johns Hopkins Urban Health Institute, Baltimore, MD. One year of funding. $34,184.

2000–2003. An Innovative Practice to Care for Underserved Populations. Principal Investigaor, effort 30%. Funded by Department of Health and Human Services, HRSA, Bureau of Health Professions, Basic Nursing Education and Practice Program $545,470.

1998-1999. Community Health Workers and the WHO Assessment Tool for the Integrated Management of Childhood Illness: Evaluation of Performance Characteristics with Project H.E.A.L, Principal Investigator, effort 20%. Funded by Maternal and Child Community Health Science Consortium, Johns Hopkins University School of Public Health.$10,000,.

1997-1998 Evaluation of Project HEAL. Julius Goepp, Principal Investigator. Co-Investigator and Project Director, 10% effort. Funding by Thomas Wilson Sanitarium for the children of Baltimore City, $15,000 to conduct program evaluation by LTG Associates, Inc.

1995–1999 Project H.E.A.L.: Early detection and intervention for acute minor illness in children; the role of community health workers. Principal Investigator,

Goepp, J. Co-Investigator and Project Director, effort 60%. Maryland Health Services Cost Review Commission, $381,000.

1996–1999 Project H.E.A.L. Principal Investigator, Goepp, J. Co-Investigator and Project Director of Project H.E.A.L.,effort 40%. Chesapeake Health Plan Foundation, $387,000.

1994–1997 Health and Housing Fellows Program for Returned Peace Corps Volunteers, Principal Investigator, Shiber, S. Instructor and Coordinator of Americorps Peace Corps Fellows Program, effort 50%. Funded by Americorps, $300,000 annual for three years.

1993-1999 Heart, Body, and Soul, a community partnership between Johns Hopkins Center for Preventive Medicine and the Clergy for the Renewal of East Baltimore (CURE). Becker, D., Principal Investigator. Coordinator immunization outreach program and training of community health outreach workers, 10% effort. Funded by Kellogg Foundation.

1992-1994 National Oral Rehydration Therapy Project. Principal Investigator, Goepp, J., Project Director and Research Coordinator, effort 100%. Funded by Quaker Oats, Mead-Johnson Pharmaceuticals, and Ross Pharmaceuticals. $100,000.

PRACTICE

Sponsored Practice Projects

2007-2008 Improving pregnancy outcomes for refugees, International Rescue Committee, Baltimore Resettlement Center. Principal Investigator, and Community Outreach Program Coordinator, 1% effort. Funded by St. Francis Xavier Church, $2000.

2005- 2007 Home hygiene interventions and education with refugees at the International Rescue Committee, Baltimore Resettlement Center. Principal Investigator, and Community Outreach Program Coordinator, 1% effort. Funded by St. Francis Xavier Church, $2000.

2000-2001 Success by 6: Community Partnerships with Historic East Baltimore and Kennedy Krieger Institute. Kub, J., Program Investigator. Project nurse, program developer, co-investigator, 20% effort. Funded by Safe and Sound Campaign, Baltimore City.

1999- 2007 Community Outreach Program. Program Coordinator, effort, 40%. Funded by Carpenter Foundation to JHU School of Nursing. $100,000 annual.

1999- 2001 Domestic Violence Assessment and Interventions in David Olds Home Visitation Project within Baltimore City Health Department Maternal and Infant Nursing Program. Campbell, J., Principal Investigator. Project trainer, effort 5%. Supported, not funded by David Olds Home Visitation Project, Denver, CO.

1997 -1998 A Community Health Resource Center for Project H.E.A.L. Goepp, J. Principal Investigator. Co-Investigator and Project Director of Project H.E.A.L., effort 40%. Funded by The Children's Miracle Telethon Network. $24,835 to develop center.

1996 - 1997 Home Safety Center at Project H.E.A.L. Principle Investigator and Project Director of Project H.E.AL. and Community Health Resource Center, effort 40%. Awarded $10,000 from Children's Miracle Network Telethon Grant to develop Home Safety Center in collaboration with Center for Injury Control of Johns Hopkins University School of Public Health.

Non-Sponsored Practice Projects:

The following practice projects were conducted in Baltimore, Maryland.

2003- 2007 Developed acculturation and health education materials for refugees at Baltimore Resettlement Center.

2003 Programa Salud. Johns Hopkins Alumnae Association grant. Awarded to Lynn Desrosiers, student. Program Director, 1% effort. Total $1200.

2003 Developed community health providers resource guide for Hispanic community.

2001 - 2007 Amazing Grandmothers' Project. Developed and sustained a program to support grandmothers raising grandchildren.

2000 -2002 Early Head Start. Developed and published a childen's health education curriculum and program for young families and

1997-2003 Johns Hopkins Office of Community Health. Provided community outreach services and training of health workers.

1996-2001 St. Nicholas Greek Orthodox Church, provided annual Health Fairs and developed health ministry program.

1996-1999 WIC and Project H.E.A.L. Developed and directed WIC program for Hispanic community in Southeast Baltimore.

1996-1999 Joseph House. Health education, outreach, and health screening services provided to homeless shelter.

1995-2001 SECO Head Start. Coordinated health advisory board, and conducted annual health fairs.

1994-2001 Developed Parish Nursing programs, developed parish nurse curriculum, and instructed on parish nursing for several congregations.

1994-2002. Julie Community Center. Developed and provided health education and parenting programs. Also directed peer educator theatre projects: 1) Teen Health Ambassadors Theatre Group focused on life planning and pregnancy prevention for teens; 2) Family Life Players, a community written play focused on drug prevention education presented in Baltimore City Schools and community agencies.

1994-1999 Hollander Ridge Senior Housing Community. Provided monthly health screenings and developed health outreach programs.

1993- 1999 Heart, Body, and Soul. C.U.R.E. and Johns Hopkins Center for Preventive Medicine. Coordinated immunization outreach program; and trained community health outreach workers.

1992 – 1994 The Door. Provided women's health series and health education programs for parents of children attending this community based ministry for children.

1992–1994, 2000 Short-term international medical outreach initiatives conducted in Central America, Mexico, and Haiti.

SCHOLARSHIP

Publications

*Bittner, A., **Edwards, L.,** George, M. (2010) Coping strategies to manage stress related to vision loss and fluctuations in retinitis pigmentosa. *Journal of the American Optometric Association.* 81(9), 461-468.

*Zolotor, A., Randolph, G., Johnson, J., Wegner, S. **Edwards, L**, Powell, C., Esporas, M. (2007) Effectiveness of a practice-based, multimodal quality improvement intervention for gastroenteritis within a medical managed care network. *Pediatrics. (120) e-644-e650.*

*Endyke-Doran, C., Gonzalez, R., Trujullo, M., Solera,A., Vigilance, P., **Edwards,L.**, Groves, S. (2007) The syphilis elimination project: Targeting the Hispanic community of Baltimore City. *Public Health Nursing*, 24(1) 40-47.

*Van Zandt S., **Edwards L**, Jordan E., (2005) Lower epidural anesthesia use associated with labor support by student nurse doulas: Implications for intrapartal nursing practice. *Complementary Therapies in Clinical Practice.* 11(3), 153-160.

Edwards, L. Programa Salud – Salud to your health. (2006) *Advance for Nurses*, 2006.8(2), 18-42.

* Goepp, J., Chin, N., Massad J., **Edwards, L**. (2004) Pediatric emergency department outreach: Solving medical problems or revealing community solutions? *J Health Care for the Poor and Underserved.* 15(4), 522-529.

Hack, H.; Fisher, M; **Edwards, L.** (2004) International Nursing: The need, roles, challenges and opportunities today. *Nurse Practitioner World News*, 9(2), 3-10.

*Edwards, L.; Groves, S.; Kub, J; Dorsey, C.; Kluckman-Ault, K.; Brau, K.; McNally, R. (2003) *The Amazing Grandmothers' Project.* Journal of Urban Health, 80 (2), 59. Bulletin of the New York Academy of Medicine.

Edwards, L. Lessons Learned from Unlikely Heroes. (2000) *Vigilando, Johns Hopkins University School of Nursing Alumnae Magazine*, 99(2), 5-7.

Goepp, J., and **Edwards, L. (1998)** *Children's health in urban poverty, published proceedings from National Colloquium.* HRSA Maternal Child Health Bureau and National Center for Education in Maternal and Child Health. March 1998. Conference held at Georgetown University, Washington, DC.

Goepp, J.G. and **Edwards, L.** (1993) *Oral Rehydration Therapy Protocol Manual.* Published by the National Oral Rehydration Therapy Project.

*Nieto-Garcia, F.J, and **Edwards, L.** On the spurious correlations between changes in blood pressure and initial values. *Journal of Clinical Epidemiology*, 43,7,1990.

Edwards, L., Chapter 9, "The Staff Nurse Perspective". Quality Assurance in Home Care. Editor: Claire Meisenheimer, Aspen Publications, Rockville, MD, 1989.

*databased peer-reviewed.

Published Abstracts

Rose, L., Pugh, L., Belcher, A., **Edwards, LA.**, Walrath, J. Teaching beyond the classroom: Responding to a changing world and the changing student. *In proceedings from University of Toronto School of Nursing Conference: Accelerated nursing programs*, October 2006.

Dorsey, C. ; **Edwards, L.** *Preparing nurse leaders via a Center for Community Nursing at Johns Hopkins University School of Nursing.* Community-Campus Partnerships for Health Conference: Overcoming health disparities from partnerships between communities, health services, and health professional schools. Atlanta, GA, November 2005. International.

Presentations

Local

Edwards, L. (1999 and 2000) *Parish Nursing: Case Management*. Institute for Johns Hopkins Nursing, Case Management Academy, Towson, MD.

Edwards, L. (2000) *Health Promotion in Communities: Parish Nursing*. Invited speaker, w workshop for Baltimore City Health Department annual Nurse's Education Day, Baltimore, MD.

Edwards, L. (2003) Guest speaker: *Case presentation: Getting started in research using an academic-community partnership model.* The Nuts and Bolts of Community based participatory research, Johns Hopkins Urban Health Institute and the Bloomberg School of Public Health Scholars Program, Baltimore, MD.

Edwards, L (1995) Grand Rounds, Invited. *Family Life Players: Children living in poverty, peer education as community intervention.* Pediatric Grand Rounds, Johns Hopkins Hospital, Baltimore, MD.

Regional

Edwards, L. (2003) Speaker: "*Complementary and Alternative Medicine in Primary Care.*" Advance Practice Nurses Conference, JHU School of Nursing, Baltimore, MD May 2003.

Edwards, L. (2003) Keynote speaker. "*School Nurses: Culturally Competent in Culturally Diverse Schools.*" Maryland Association of School Health Nurses, annual conference, St. Michael's Maryland, March 2003.

Goepp, J.G., **Edwards, L.** Syron, L.B., Massad, J. *Project HEAL: A community-based, learner-centered children's health project: Building Health Partnerships: Supporting Community-Based Outreach*" with HRSA and Bureau of Primary Health Care, Washington, DC, June. Oral.

Goepp, J.G and **Edwards, L.** (1998) *Children's health in urban poverty* with. National Colloquium, sponsored by the HRSA Maternal Child Health Bureau and National Center for Education in Maternal and Child Health. Georgetown University, Washington, DC. Two Day Colloquium, March.

National

Edwards, L. (2010) "*Innovative Educational Strategies for Community /Public Health Nursing"* at University of New Mexico, School of Nursing.

Edwards, L. (2004) Invited speaker. "*Peace Corps Fellows Program Success at School of Nursing.*" Peace Corps Fellows Coordinators Meeting. Denver, CO. October 2004.

Edwards, L. (2002) Invited speaker. *Peace Corps Fellows Program at Johns Hopkins University School of Nursing.* Peace Corps Fellows Coordinators meeting. Chicago, IL. May 2000.

Edwards, L. (2001) Invited speaker. *Community Outreach through the Peace Corps Fellows Program: Building Leaders in Community Health Nursing.* Peace Corps Fellows Convocations, Miami, Florida. April 2001.

Edwards, L. and Groves, S. (2001) *Community Health Nursing Practice Model at JHU School of Nursing.* American Association of Community Health Nursing Centers, Baltimore, MD. Oral presentation.

Goepp J, **Edwards L**, Ogborn J. (2000) *Sick Child Triage by Community Health Workers.* Maternal and Child Health Epidemiology Conference, Atlanta, GA. December 2000. Oral.

Goepp J, **Edwards L**, Massad J. (1998) *Project Heal: Community-Based, Learner-Centered, Lay Health Worker Program.* The American Pediatric Society/The Society for Pediatric Research Annual Meeting, New Orleans, LA. May 1998 National. Oral.

Goepp, J.G.; **Edwards, L.;** Ladinski, M (1997) *Teaching oral rehydration therapy so it works.* Ambulatory Pediatric Association/ The Society for Pediatric Research, Annual Meeting, Washington, D.C., May 1997. National. Oral.

Goepp, J.G.; **Edwards, L.**; Ladinski, M.; Gilger, M.; Oberhelman, R. (1997) *Effect of an oral rehydration training program on residents' knowledge and attitudes.* Ambulatory Pediatric Association/ The Society for Pediatric Research, Annual Meeting, Washington, DC. May 1996. National. Oral.

Carson L, **Edwards L**, Goepp J, and Keller D.(1995) *The Community as Patient: Pediatric collaboration with Community Groups.* Ambulatory Pediatric Association Workshop, San Diego, CA. May 1995. Oral.

International

Rose, L., Pugh, L., Belcher, A., **Edwards, LA.**, Walrath, J. Teaching beyond the classroom: Responding to a changing world and the changing student. *In proceedings from University of Toronto School of Nursing Conference: Accelerated nursing programs*, October 2006.

Edwards, L. (2005) Keynote speaker: *Community-based participatory research with communities in Baltimore and the Johns Hopkins University School of Nursing.* "Celebrating 100 years of research in nursing" Conference at American University of Beirut, School of Nursing. Beirut, Lebanon.

Scholarly Presentations

Regional

1996 "*New Trends in Health Care: Congregational Nursing*", Institute on the Ministry with the Sick. Presented to Johns Hopkins Office of Pastoral Care, and Johns Hopkins Bayview Hospital chaplains.

1996 *"Parish Nursing"*. Presentation for Institute of Spirituality and Medicine National Conference, Johns Hopkins Medical Institutions, Baltimore, MD.

National

2002 "*Oral Rehydration Therapy: Make it a Family Habit*". Presented to Annual Meeting at AccessCare, Inc., Raleigh, North Carolina, June.

1998 *Project HEAL: A community-based, learner-centered lay health worker program* with Goepp, J.G., Massad, J. Ambulatory Pediatric Association/ Society for Pediatric Research Annual Conference, New Orleans, LA, May.

1998 *Children's health in urban poverty* with Goepp, J.G. National Colloquium, sponsored by the HRSA Maternal Child Health Bureau and National Center for Education in Maternal and Child Health, National.Georgetown University, Washington, DC. Two Day Colloquium, March.

International

2008 **Edwards, L.,** Agnew, JA, Lopez, M., Le, Yen., Nguyen, T. (2010) *Training community based health advocates to identify risks for work-related musculoskeletal disorders with immigrant workers.* American Public Health Association Annual Meeting, San Diego, CA, October. International (Platform)

2003 *Peace Corps and More* with **Edwards, L.A.,** Groves, S. American Public Health Association Annual Meeting, San Francisco, CA, November. International (Platform)

2003 *The Amazing Grandmothers' Project* with **Edwards, L.A**., Groves, S.; Kub, J; Dorsey, C.; Kluckman-Ault, K.; Brau, K.; McNally, R. International Conference on Urban Health, New York Academy of Medicine. October. (Poster)

2002 *A Community Academic Partnership: The Amazing Grandmothers' Project* with **Edwards, L.A.;** Groves, S.; Kub, J; Dorsey, C., Kluckman-Ault, K., Brau, K., McNally, R. American Public Health Association Annual Meeting, Philadelphia, PA. November. (Platform)

2000 *Community Outreach Program: Building Leaders for Public Health* Nursing with **Edwards, L.A.,** Groves, S. American Public Health Association Annual Meeting, International, Boston MA, November. (Poster)

2000 Soyster, M., Massiglia T., **Edwards, L**. (2000) *Methods for Evaluating Community Health Workers: Self-Efficacy and Community Capacity Building.* American Public Health Association Annual Meeting, Boston MA, November 2000. International. (Poster)

1999 *Sick Child Triage Project: Community Health Workers* with **Edwards, L.A,** Goepp, J.G., Ogborn, J. American Public Health Association Annual Meeting, International, Washington, DC. (Poster)

1998 **Edwards, L.A.,** *A community-based approach to recruiting, hiring, and implementing a community health worker program for children.* American Public Health Association Annual Meeting, International Washington, DC, November. (Poster)

1998 *Developing a community-based pediatric community health worker program - lessons learned* with **Edwards, L.A**., Goepp, J.G., Massad, J. American Public Health Association Annual Meeting, International.Washington, DC, November. (Platform)

1998 *A Learner Centered Approach to Evaluating Community Health Workers* with., Syron, L.B., **Edwards, L.A** Goepp, J.G. American Public Health

Association Annual Meetingm, International. Washington, DC, November.(Poster)

1998 *Project HEAL: A community-based, learner-centered lay health worker program* with Goepp, J.G., Massad, J., and **Edwards, L.A.** Ambulatory Pediatric Association/ Society for Pediatric Research Annual Conference, International. New Orleans, LA, May. (Platform)

1998 *A community-based approach to recruiting, hiring, and implementing a community health worker program for children.* **Edwards, LA**..American Public Health Association Annual Meeting, Washington, DC, November. (Poster)

1998 *Developing a community-based pediatric community health worker program - lessons learned* with Goepp, J.G., Massad, J., **Edwards, L.A.** American Public Health Association Annual Meeting, Washington, DC, November. (Platform)

Standards/Protocol Development

2009 – 2010
Development of educational protocol to teach management of pediatric dehydration. Consultant with national experts, through REPLACE.

1999 Protocol developed for Community Health Workers to evaluate children with acute minor illness. "Community Health Workers and the WHO Assessment Tool for the Integrated Management of Childhood Illness: Evaluation of Performance Characteristics."

While directing Project HEAL, developed protocols, performance assessment tools, family assessment and care plan tools, clinical algorithm tools, and extensive medical record/ data base systems.

Patient Care Materials

2003 Developed and published community resource guide for JHU Community Outreach students, with CD-ROM for annual updating.

Oral Rehydration Therapy, CD-ROM, Produced for Access Care, Inc. North Carolina.

"Children's Health and Safety". Created and published a book for parents and teachers of Early Head Start at Kennedy Krieger Institute, 2000.

"ABC's of Home Safety: A curriculum and training manual for Project HEAL Home Safety Center." Community Health clinical group developed this Manual under my direction with Project HEAL community health workers. Awarded Maryland Public Health Association Project of the Year, 1998.

Patient Education Materials Developed: "Health Passports for Children"

1993-1995 Developed and featured in multiple video productions focused on Oral Rehydration Therapy: 25 years. Collaborations with UNICEF, USAID. Productions by the British Broadcasting Company, and Ross Laboratories.

1995 – Collaborations and consultation with Project HOPE for implementing Oral Rehydration Protocols .

Other

1992 - 1994; 2000 Short-term international medical outreach initiatives conducted in Central America, Mexico, and Haiti.

EDITORIAL ACTIVITIES

Manuscript and Book Reviews

Ad hoc peer reviewer for:

- Progress in Community Health Partnerships: Research, Education, and Action
- Annals of Pediatrics, 1995–present
- Ambulatory Pediatrics, 2000- present

Reviewer for Publishers and Textbooks:

- Doody's Core Titles in the Health Sciences, 2007 - 2012
- Clark, M. (2008) Community Health Nursing.
- *Family Health Care Nursing: Theory, Practice, and Research.* Editor: Hanson, S.M.H. F.A. Davis Publishers, 2001.
- Thomson Delmar Learning, 2003: Chapters on Transcultural Nursing, and Parish Nursing
- Spanish medical dictionary, Fall 2003.
- Doody Enterprises, Inc. Publishers

Grant Reviewer:
Global Health Frameworks, Johns Hopkins University Center for Global Health

PROFESSIONAL ACTIVITIES

Associations

1997-present. Member. Maryland Public Health Association

1997-present. Sigma Theta Tau.

1989-present. Member. American Public Health Association

2000-present. Member. American Nurses Association

2007-present. Member Association of Community Health Nurse Educators.

Community Organizations

1994- present President Board of Directors, Julie Community Center, Baltimore, MD

2003- 2006. Faith and Health Collaborative with Diakon Lutheran Social Ministries and Amazing Grace Church, Baltimore, MD.

2003- 2006 Board member, Education Resource Center, Baltimore, MD.

2002 – 2009 Advisory panel member, Traditional Acupuncture Institute, Laurel, MD.

2002– 2004. Member of Community 2022 (Cultural diversity leadership).

2002- 2007. Parish Nursing Program development and instruction with at Amazing Grace Church.

1997-2000. Board member South East Community Organization (SECO), Baltimore, MD.

1996-2001. Health Advisory Board, SECO Head Start, Baltimore, MD

1995-1999. Chairperson, Community Advisory Board Project HEAL

1995-1997 Founder of Parish Nursing Program, Grace Fellowship Church, Baltimore County, MD.

1993-1998. Volunteer, Lay Counseling Ministry, Grace Fellowship Church., Baltimore County, MD

CONSULTATIONS

2010 Consultant for Health Care Academy

2009 – present Consultant REPLACE – Management of pediatry dehydration with oral rehydration therapy

2007-2008 Consultant to Upspring Baby, Ltd on development of home testing kits for parents and children.

2005 - 2006 Consultant to American University of Beirut School of Nursing to develop public health nursing programs.

1992 – present Consultations provided to community organizations, for program development, health education and program evaluation.

1995-2003 Consultant for development of Parish Nursing programs in several faith based communities and health care organizations. (Amazing Grace Church, 2002; Knox Presbyterian Church, 1995 – 1997; St. Nicholas Greek Orthodox Church, 1995 – 2001; Grace Fellowship Church, 1994 - 1997; Office of Pastoral Care, Johns Hopkins Hospital, 1994 – 2002)

1998-2000. Consultant to development of National Community Health Worker Resource Center, University of Southern Mississippi. (National)

1998-2002 Consultant on Oral Rehydration Therapy to AccessCare, Inc, North Carolina. Developed a statewide initiative to implement ORT in pediatric clinics throughout North Carolina.

1992-1994 Volunteer consultant establishing short-term international medical outreach initiatives in Central America, Mexico.

1993-1995 Consultant on Oral Rehydration Therapy to Citadel Health Services, Philadelphia, PA.

1993-2002 Periodic consultation provided to health providers and practices nationally as former Director of National Oral Rehydration Therapy Project.

Testimony – Health policy

2008 Congressional testimony and presentation for House of Representatives. "Complementary and Alternative Medicine education at JHU School of Nursing" Invited by Tai Sophia Institute and Association of Naturopathic Physicians.

Proposal Review Activities

2002 Internal: Review proposals for Johns Hopkins University School of Nursing, intramural grants submitted to Center for Nursing Research.

2007-present External: Grant proposal reviews, Johns Hopkins Center for Global Health, intramural.

Part II

EDUCATIONAL ACTIVITIES

Courses and Classroom Instruction

(Courses taught at JHU School of Nursing)

2005- present	Course Coordinator: NR110.405 Public Health Nursing. 5 credits. Includes clinical. Several sections, with 60 – 85 students. Supervision, hiring, training, and mentoring of 15 – 25 clinical instructors.
2010- present	Course Coordinator. NR110.306 Professional Concepts. Theory course.
1999- present	Course Coordinator. NR 110.495 and 110.595 Complementary and Alternative Medicine. 3 credits. Baccalaureate and Graduate. 30 students. Spring and Fall Semesters.
2001 – present	Course Coordinator: NR110.426 Community Outreach to Baltimore's Underserved Communities. 2 sections, each with 80 students. Fall Semester. 1 credit elective.
2002 - 2004	NR100.427 Community Outreach: Action, Reflection, Transformation. 50 students. Spring Semester. 1 credit elective.
1994–2009	Coordinator, Community Outreach Program and Peace Corps Fellows Program. Primary teaching responsibilities as Instructor and Coordinator for the Community Outreach Program. Responsible for educating, coordinating, and supervising 80 students each year in community student internships. 12-month position.
1995–2005	NR.100.405, Nursing for Community Health, undergraduate. Clinical Instructor, Lecturer, Assistant to course coordinator. 4 credit course. Clinical instructor at Baltimore City Health Department, Baltimore County Health Departments, HERO, the International Rescue Committee, and other community agencies. 8 students per clinical group.
1996– 2006 Undergraduate.	NR.100.303, Dimensions of the Nursing Role, Continuing Care Clinical Rotation, Instructor. Clinical groups, 8 students Summer and Fall semesters.

1997 – 1999	NR.100.315, Nursing for Child Health , Undergraduate. Clinical instruction for students in Ambulatory Care experiences.
1998 – 2005	NR100.301 The Context of Nursing in the Health Care System. Course Coordinator, 2006. 80 students. Baccalaureate. Guest Lecture Undergraduate. November, 1998, Lecture, "Massage Therapy" November, 1999, 2000, 2001, 2002, 2003. Lecture, "Roles and Hats of Community Health Nurses." Lecture: "Complementary and Alternative Health Care". Annually.
1998-2001	Guest Lecture. NR. 100.421, 100.621, Cultural Dimensions of Health Care, Baccalaureate and graduate. Assisted course instructor with development and design of course. Lecture: "Immigrants and Refugees", April 1999, 2000, 2001.
1998	Guest Lecture: NR.100.495 Introduction to Complementary /Alternative Health Care, Undergraduate and Graduate. Lecture: "Spirituality and Health", February 1999.

Graduate Courses:

2003 – 2006	Faculty instructor and clinical supervisor. NR.500.546 Health Promotion and Disease Prevention. 1 student per year. Direct supervision and teaching for students completing clinical hours in health promotion project.
2000,2002	Guest Lecture in: NR100.604 Patient Care Management Graduate: December. "Complementary and Alternative Health and Patient Care."
1998 – 2006	NR100.560 Program Development and Evaluation in Health Care, Graduate. Guest Lecture: "Evaluation of Project H.E.A.L.: Use of ethnographic and qualitative methods."
1998 – 2001	NR 500.601Public Health Nursing Theory and Practice, Graduate. *Lecture*. "Development of a program: Health Promotion with Community Health Workers". November 1998. *Lecture*: "Parish Nursing: Health Promotion in Faith Communities". December 1999, 2001.

1998 – 2002	NR 500.602 Public Health Nursing Theory and Practice Practicum, Graduate. Faculty advisor and instructor for graduate students. Fall 1998, 1999, 2000, 2001, 2002. Selected Projects: "Evaluation of Community Outreach Program: Leadership development of students" "Community assessment of the health needs of the Hispanic community." "Effective methods of Evaluating Project H.E.A.L".
1998 –2002	NR 500.606 Public Health Leadership and Management Practicum, Graduate. Faculty advisor and instructor for 2 graduate students who worked at Project H.E.A.L., Fall 1998, Fall 1999, Fall 2002. Fall 2002. "Evaluation of Amazing Grandmothers' Project"
1998, 1999	International Nursing at JHU SON Global Dimensions of Health Care, Summer 1998 "Orientation to East Baltimore and Project HEAL".
1997, 1998	NR100.589 Human Development and Family Theory, Workshop: "The Community Experience"
1996, 1997, 1998	NR100.556 Human Development Across the Life Span, Guest Lecture, "Cultural and Ethnic Influences on Development

Courses Taught at Other Schools:

1998, 1999	JHU School of Medicine, Physician in Society. Guest Lecturer. "Project H.E.A.L.: Working in Communities with Community Health Workers"
2002	JHU Bloomberg School of Public Health, Community Outreach in Environmental Health. "The JHU SON Community Outreach Program".

ACADEMIC SERVICE

Committees/ Roles:

School of Nursing

- Faculty Steering Committee, 2011- present
- Baccalaureate Curriculum Revision Committee, 2009-2010.
- Baccalaureate Curriculum Committee, Member, 2005 – present.
- Chairperson, Faculty Social Committee, 2010 – 2011.
- Faculty Budget Committee, 2008-2010.
- Cultural Diversity and Competency Committee, 2007-2010.
- Faculty Social Committee, member and chair. 2000-2002, 2006- 2009.
- Chairperson, Cultural Diversity and Competency Committee, 1999 – 2005
- Faculty Search Committee, appointed, 2003- 2004.
- Graduate Admissions Committee, interviewer 2003- present.
- Faculty core member of Center for Health Disparities at JHU SON.
- Faculty coordinator for JHU SON Leona Bowman Carpenter Center for Community Health Nursing.
- Baccalaureate Admissions Committee, 2001 – 2003
- Senior Class Advisor, 1998- 2001.
- Vulnerable Populations Research Council, Member. Subcommittee, Travel
- 1997-present, Undergraduate Curriculum Committee. (Secretary1998-1999).
- 1998-2000, Faculty Development and Welfare Committee (elected office)
- Faculty Assembly Committee: Member at large

East Baltimore Campus

- 2005- present. Governing Board member, Student Outreach Resource Center (Source), Schools of Public Health, Medicine, and Nursing.
- 2003- 2009. Urban Health Institute Advisory Board for Primary Care
- 2003- 2004. Bloomberg School of Public Health Interaction Community Outreach Providers Task force.
- 2004-2006, DrPh Executive Committee student representative, Bloomberg, School of Public Health.
- 2004 – Student representative for Environmental Health Sciences Student Organization.
- 1994- 2010, Office of Pastoral Care, Johns Hopkins Hospital. Planning Committee member for annual conference: "Institute of Spirituality and Medicine."
- 1994-2000. Advisory Board, JH Office of Community Health.
- 1994-2001. JHHS, JHU SHPH, SON, Community Based Public Health Consortium, funded by Kellogg Foundation.
- 1995-2000. Chair, Project HEAL Professional Advisory Board, JHU SON, SOM, SHPH, JHHS.
- 1996-2000. Consortium of Community Health Workers Projects in Baltimore City, JHHS, JHU SOM, SHPH.

- 1997-1999. Community Health Workers Training Center Committee, JHMI.

University

- 2003 – 2009. President Brody's University Diversity Leadership Council
- 2002– 2005. Office of Community Relations, JHU Homewood
- 1998-2000. President Brody's Urban Health Initiative

MENTORIMNG AND ADVISEMENT

Student Advisement

- 30 Baccalaureate and Graduate students, annually.
- Director of Returned Peace Corps Fellows Program, 40 – 50 students annually.

Independent Studies

NR100.599, Independent Study, ***Graduate,*** 3 - 4 credits.

Faculty advisor and instructor of graduate students.

2012	"Quality Assurance in Low-Resource Settings" A case analysis of United Nations Relief & Works Agency Health Centers in Lebanon". Sara Larson
2002	The Baltimore Memory Study, Environmental Health Sciences. School of Public Health. Judith Harkins.
2001	"Predictors of Adiposity in Cape Town, South Africa" student: Judith Harkins
Fall 2000,	"Complementary and Alternative Health". Student: Jennifer Holmes
Fall 1999.	"Designing a Home Safety Curriculum using persuasive Communication Techniques". Student: Jennifer Holmes

Summer 1998 Project H.E.A.L. "Adult educational principles: Application in a participatory learning community based program". Student: Sarah Inglis-Baldy

NR100.499, Independent Study, ***Undergraduate***, 3 credits.

1997 "Health Care in Jamaica." student: Kristen Kanerva

SCHOLARLY PROJECTS

2003- 2004. NR.100.509. Scholarly Project. "Occupational health nursing challenges with poultry farm workers." Lori O'Connor.

2003 NR.100.509. Scholarly Project. "International nursing in war torn countries." Heather Hack.

2001 NR.100.509. Scholarly Project. Courtney Holmes. "Complementary and Alternative Medicines Applied to Gerontologic Advanced Nursing Practice." December 2001.

2001 NR100.509, Scholarly Project, Graduate. Fall 2001, "Breast Feeding Promotion," Kelly Bower.

2000 NR100.509, Scholarly Project, Graduate. "Evaluation of health providers and their questions to patients about Complementary/ Alternative Health", Deborah Shindell.

1999 NR100.509, Scholarly Project, Graduate. "Using Persuasive Communication with a Home Safety Curriculum", Jennifer Holmes.

1998 NR 100.509, Scholarly Project, Graduate. "The Status of Nursing in the Czech Republic", Traci Krause.

1998, 1999 NR 100.509, Scholarly Project, Graduate. "South East Baltimore, a Community Assessment", Mary-Tara Ward. Summer 1998 and Fall 1998.

1998, 1999 NR 100.509, Scholarly Project, Graduate. "An Innovative Community-based Public Health Initiative", Sara Inglis-Baldy, Fall 1998, Spring 1999.

1998 NR100.599, Independent Study, Graduate, 3 credits. Faculty Instructor for Sara Inglis-Baldy, Summer 1998, at Project H.E.A.L.

"Adult educational principles: Application in a participatory learning community based program".

1995 NR100.509, Scholarly Project, Graduate. "Oral Rehydration Therapy: A Culturally Specific Intervention in Pakistan", Elaine Russell.

Honoring Diversity Week" Awarded to Marguerite Baty, Returned Peace Corps Volunteer from JHU School of Nursing Alumnae Grant Award. $500, Faculty advisor and instructor. 2004.

"Clean the Environment Curriculum" Awarded to Rhett Liebeke for adapting. *Tox in a Box* curriculum for 4th and 5th graders in Baltimore City Schools. JHU School of Nursing Alumnae Grant Award. $200, Faculty advisor and instructor. 2003.

"Community Resource Guide on CD-ROM for community outreach nursing students" Amanda Schwartz. JHU School of Nursing Alumnae Grant Award. Faculty advisor and instructor. 2002.

"Health Passports Project". JHU School of Nursing Alumnae Grant Award. Christine O'Connor, Faculty advisor and Instructor. 1998 – 1999.