

The University of San Francisco

## USF Scholarship: a digital repository @ Gleeson Library | Geschke Center

---

DNP Qualifying Manuscripts

School of Nursing and Health Professions

---

Fall 10-24-2023

### Community Health Worker Program: Chronic Non-Communicable Diseases in Children

Julia L. Newell

University of San Francisco, [jlnewell2@usfca.edu](mailto:jlnewell2@usfca.edu)

Follow this and additional works at: [https://repository.usfca.edu/dnp\\_qualifying](https://repository.usfca.edu/dnp_qualifying)



Part of the [Community Health Commons](#), [Community Health and Preventive Medicine Commons](#), and the [Public Health and Community Nursing Commons](#)

---

#### Recommended Citation

Newell, Julia L., "Community Health Worker Program: Chronic Non-Communicable Diseases in Children" (2023). *DNP Qualifying Manuscripts*. 84.

[https://repository.usfca.edu/dnp\\_qualifying/84](https://repository.usfca.edu/dnp_qualifying/84)

This Manuscript is brought to you for free and open access by the School of Nursing and Health Professions at USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. It has been accepted for inclusion in DNP Qualifying Manuscripts by an authorized administrator of USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. For more information, please contact [repository@usfca.edu](mailto:repository@usfca.edu).

**Community Health Worker Program:  
Chronic Non-Communicable Diseases in Children**

Julia L. Newell

University of San Francisco, School of Nursing and Health Professions

NURS 789: DNP Prospectus

Committee Chair: Dr. Joshua Cleary

Committee Chair: Dr. Alexa Curtis

October 24<sup>th</sup>, 2023

## Table of Contents

### Section I: Title and Abstract

Title .....	1
Abstract .....	5

### Section II: Introduction

Background.....	7
Problem Description .....	9
Setting .....	10
Specific Aim .....	11
Available Knowledge .....	11
PICOT Question.....	11
Search Methodology.....	12
Integrated Review of the Literature .....	12
Summary/Synthesis of the Evidence .....	22
Rationale .....	23

### Section III: Methods

Context .....	24
Interventions .....	24
Gap Analysis.....	25
Gantt Chart .....	26
Work Breakdown Structure .....	27
Responsibility/Communication Plan .....	28
SWOT Analysis .....	28
Budget and Financial Analysis .....	29

Study of the Interventions.....31

Outcome Measures .....31

    CQI Method and/or Data Collection Instruments.....32

Analysis .....32

Ethical Considerations .....33

**Section IV: Results.....34**

**Section V. Discussion .....35**

    Summary.....35

    Interpretation.....36

    Limitations .....36

    Conclusions .....38

**Section VI: Funding.....40**

**Section VII. References .....41**

**Section VIII: Appendices**

    Appendix A. ....51

    Appendix B. ....56

    Appendix C. ....58

    Appendix D. ....84

    Appendix E. ....85

    Appendix F. ....86

    Appendix G. ....87

    Appendix H. ....88

    Appendix I. ....89

Appendix J. ....90

Appendix K. ....91

    Figure K1. ....92

## **Community Health Worker Program: Chronic Non-Communicable Diseases in Children**

### **Abstract**

**Background:** Childhood obesity, asthma, and untreated mental health conditions, are three examples of chronic non-communicable diseases (CNDs) that pose a host of negative consequences later in life. Community health workers (CHWs) are in a unique position to address these negative health externalities by leveraging linguistic, cultural, and socioemotional connectedness within their communities.

**Local Problem:** Minority children in the Central Valley of California, face additional risk factors for the development of CNDs. CHWs working in this area require enhanced training on CNDs to improve their practice.

**Methods:** In partnership with Save the Children (STC), the University of San Francisco (USF) Doctor of Nursing Practice (DNP) student conducted five synchronous, one-hour, educational modules on pediatric CNDs, for CHWs, over a 3-month period. The goal was to achieve a 30% increase in CHW knowledge and self-efficacy from baseline to post-assessment. Pre- and post-test assessments were administered via Canvas™ online learning platform, and results were analyzed.

**Results:** Results on pre- and post-intervention assessments for the pediatric CND modules, demonstrated average improvements ranging from 35% to 53%. This surpassed the initial goal of a 30% improvement.

**Conclusions:** The educational modules led by the DNP student yielded significantly improved knowledge and self-efficacy among the CHWs. CHWs verbalized being able to apply this knowledge to concrete interventions with the families they serve. This intervention can improve

CHW competence in conducting effective interventions to help community members appropriately manage pediatric CNDs.

*Keywords:* community health workers, low-income, asthma, obesity, mental health, health outcomes

## **Community Health Worker Program: Chronic Non-Communicable Diseases in Children**

### **Background**

Among the chronic illnesses faced by children in the United States, three conditions with broad ranging impacts include: obesity, asthma, and mental health conditions. These chronic conditions have a host of adverse short and long-term consequences, especially when not identified and properly treated. Past efforts to improve these conditions have focused on both community and home-based interventions.

According to the Centers for Disease Control and Prevention (CDC) (2022), among children and adolescents aged 2-19 years old in 2017-2020, the prevalence of obesity in the United States was 19.7% and impacted 14.7 million children and adolescents. Sociodemographic data reveals that obesity prevalence disproportionately impacts Hispanic children (26.2%), and Black children (24.8%), relative to their non-Hispanic White (16.6%) and non-Hispanic Asian (9.0%) counterparts (CDC, 2022). Ogden et al. (2018) found that among children and adolescents aged 2-19 years old, the prevalence of obesity decreased as the head of the household's educational level increased. Further, obesity prevalence was highest in the low and middle-income groups studied, relative to the high-income groups (Ogden et al., 2018). Complications related to obesity include diabetes mellitus, asthma, hypertension, sleep apnea, and joint issues. Thus, preventative measures and early interventions to address childhood obesity is critical in aiding the prevention of these complications in adolescence and adulthood (Calcaterra et al., 2020).

Similarly, asthma is a serious chronic lung disease that often involves exacerbations, requiring urgent care visits and hospitalization. The CDC (2021) estimates that approximately 4.7 million children ages 0-18 years old suffer from asthma, with the greatest proportion of these



children living below the poverty threshold. Over time, asthma can cause permanent lung damage and can impact a child's ability to participate in physical activity. When inadequately managed, asthma can lead to increased morbidity and mortality among children. Some of the negative outcomes associated with uncontrolled asthma in children include: school absenteeism, low school performance, emotional and behavioral disorders, increased ED utilization, and reduction in quality of life (Al-khateeb & Al khateeb, 2015; Das & Gulla, 2021; Marye, 2021; Banjari et al., 2018). Due to structural racism and inequities in social determinants of health (SDoH), Latinx and Black Americans have a greater prevalence of asthma diagnoses and asthma-related morbidity, relative to their White counterparts (Grant et al., 2022).

Mental health and neurodevelopmental disorders in children have a host of deleterious consequences, especially when not identified and addressed early in life. Particularly, depression and anxiety have increased in children ages 6-17 years old (CDC, 2023). Attention deficit hyperactivity disorder (ADHD) and autism spectrum disorder (ASD), which are frequently comorbid, can impact learning, school performance, educational achievements, and predispose children to the development of anxiety and depression (Avni et al., 2018). Relative to children of higher socioeconomic status (SES), children of lower SES suffer from higher rates of parent-reported mental health issues and untreated mental health needs (Hodgkinson et al., 2017). Research demonstrates that Latinx children residing in rural and urban areas are less likely to receive mental health services than White children (Howell & McFeeters, 2008).

The CHW role is centered on enhancing community member access to healthcare services. Four key dimensions of healthcare services are the focus of CHW interventions, including: insurance status, source of care, receipt of physical exam, and self-efficacy (Capitman et al., 2009). CHWs act as liaisons between community members and healthcare institutions

through home visits. This partnership provides underserved community members with a critical link to local health and social services (Logan & Castedaña, 2020). During these home visits, CHWs provide critical education on the importance of routine primary care, medication and treatment adherence, and how to appropriately utilize health services or other community resources to maximize wellness. CHWs, specifically Promotoras, come from and often live in the communities of the families they serve, are native speakers of the language of their clients, and share similar values and life experiences to community members (Logan & Castedaña, 2020). These qualities of Promotoras foster culturally sensitive services and enhance collaboration with families. Promotoras are in a unique and entrusted position within the community, to serve as advocates and leaders. Ultimately, the work of Promotoras helps to bridge the gap in access to care among underserved families and to circumvent structural inequities. Thus, home visits provide an invaluable opportunity for CHWs to help community members navigate the complexities of the healthcare system and ultimately improve health outcomes.

### **Problem Description**

Currently, low-income, minority children in the San Joaquin Valley are facing suboptimal health outcomes, increased mortality, diminished quality of life, and long-term health consequences due to these chronic conditions and lack of access to appropriate, effective services (Lama et al., 2018). Located in Central California, the San Joaquin Valley is home to one of the largest agricultural industries in the nation. Hispanic/Latinx individuals represent the largest proportion of the population (41.8%) in the San Joaquin Valley (United States Census, 2020). It is well established that the Latinx community faces a host of sociocultural disparities, which manifest as poor health outcomes and increased morbidity and mortality among this group

(Foster et al., 2018; Salvo et al., 2021). The demographic, cultural, and geographic underpinnings for these disparities are complex and multifaceted.

Over 20% of the 1.8 million residents of the cities across the San Joaquin Valley have incomes below 100% of the poverty level (Finocchio & Paci, 2020). The region's topography and environmental contaminants are strongly linked to the development of respiratory conditions, including asthma (Acala et al., 2018). In addition to these environmental factors, the San Joaquin Valley is one of the most medically under-resourced regions in California. Most neighborhoods in the region are situated in food deserts, where residents lack access to healthy options, including supermarkets with fresh fruits and vegetables (Minkoff-Zern, 2014). Instead, convenient options include largely fast-food restaurants and stores with processed foods. Thus, the prevalence of obesity and type 2 diabetes (DM2) is at an all-time high among children in the San Joaquin Valley (Sadeghi et al., 2017).

### **Setting**

University of San Francisco (USF) DNP students partnered with CHWs from Save the Children (STC) to conduct educational sessions on a range of health topics faced by the community. The partnership between USF DNP students and the STC Organization was established in 2012. DNP students have delivered health education for CHWs who work as Early Childhood Coordinators and home visitors. Some of the topics include: nutrition, adverse childhood experiences (ACES), breastfeeding education, the impacts of toxic stress, and chronic diseases. Historically, these educational sessions have helped to equip CHWs with greater knowledge on these topics and increased their competence in serving families.

The CHWs work in California's Central Valley, a region primarily inhabited by Spanish-speaking, socioeconomically disadvantaged, vulnerable families, including a substantial number

of immigrants. These demographic traits impose a substantial socioeconomic burden and further compound the challenges these families face in accessing healthcare resources. However, the CHWs working for the STC program, were raised, live, and work in the communities in which they serve. Further, they are native Spanish speakers and are socially connected to the families that they work with. This engenders a greater sense of trust and cultural connectedness between CHWs and families.

### **Specific Aim (Purpose)**

The purpose of this project was to educate CHWs from STC on CNDs, which are prevalent among pediatric residents in the Central Valley of California. By May 2023, this project aimed to develop, implement, and evaluate, an educational curriculum for CHWs on CNDs to increase their competence in teaching home-based management strategies to children and their families. Outcomes were measured through pre- and post-test surveys. The three primary objectives were: (1) To increase CHW knowledge of home-based interventions for CND management by 30%, (2) achieve a 30% improvement in CHWs' perceived self-efficacy in implementing home-based CND management interventions, and (3) for CHWs to verbalize and teach back two health maintenance activities related to each CND in the modules.

### **Available Knowledge**

### **PICOT**

For CHWs (P), how will a series of educational sessions led by the DNP student (I), compared to no education (C), improve their knowledge of and self-efficacy to facilitate pediatric CND management interventions, for community members residing in the Central Valley (O), over a period of three months (T)?

## **Search Methodology**

To obtain the best available literature on chronic non-communicable diseases among children, as well as the most efficacious community-based interventions to address them, a systematic review was conducted. Databases utilized included PubMed and the Cumulative Index to Nursing and Allied Health Literature (CINAHL). Initially, the keywords: *chronic disease*, *pediatric*, and *community health worker*, were utilized, which yielded 63 results. However, these results included a broad range of chronic diseases, many of which were irrelevant to the diseases of interest to this project. Thus, three separate additional searches were conducted. The keywords: *asthma* and *obesity*, were combined with *pediatric* and *community health worker*. Each of these searches yielded 69 results and 82 results, respectively. The search terms *mental health*, AND *pediatric*, AND *community health worker*, yielded 116 results. Additional evidence was obtained through reviewing the references of various sources, to gather the most current literature on these topics. Inclusion criteria for the evidence were: English language, articles published from 2008-2022, full-text articles, and articles that were peer-reviewed.

## **Integrated Review of the Literature**

A review of the literature was conducted to assess current research on the utility of the CHW role in addressing the complex healthcare needs of low-income pediatric community members. Included literature focuses on CHW-led interventions to curtail adverse outcomes associated with pediatric asthma, obesity, and mental health disorders.

### **Asthma**

As asthma is one of the leading chronic diseases in the San Joaquin Valley, a thorough understanding of the possibilities for CHW-led asthma management programs, is essential. Jonas

et al. (2022) conducted a randomized controlled trial of CHW-delivered home based asthma interventions, or the Wee Wheezers asthma education program. Participants included children ( $N = 151$ ), ages two through nine years old, with persistent asthma. The intervention involved eight hours of content, including: asthma signs and symptoms, medication and medication administration, symptom prevention including trigger reduction, asthma action plans, and techniques for communicating asthma-related needs. CHWs underwent a six-week training course prior to implementing home visits and educational content to families. Asthma symptom days was the primary outcome measure (the mean number of days in the past 14 days, where children experienced daytime symptoms) and was self-reported by caregivers. Secondary outcomes included healthcare utilization, caregivers' asthma knowledge, and illness management behaviors. These variables were assessed through demonstrations during home visits, Horne's Questionnaire, the Asthma Knowledge Questionnaire, the Asthma Illness Representation Scale, and the Asthma Routines Questionnaire. Descriptive statistics were generated, and data were analyzed using a repeated measures approach, with equations accounting for within-subject correlation. The coefficient  $\beta_i$  (group-by-time interactions) and corresponding  $p$  values were used to determine statistically significant changes. At the nine-month mark, the intervention group had a reduction of 2.15 more symptom days ( $\beta_i = -0.43$ , 95% CI:  $-0.86$  to  $-0.01$ ;  $p = 0.044$ ) than the control. At 12 months, the intervention group had a reduction of 2.32 more symptom days ( $\beta_i = -0.47$ ; 95% CI:  $-0.92$  to  $-0.03$ ;  $p = 0.038$ ) than the control group. The average score on the asthma knowledge questionnaire in the intervention group improved by 1.81 points more than the control group ( $\beta = 1.81$ ; 95% CI:  $0.85$  to  $2.77$ ;  $p < 0.001$ ). Taken together, these results show significant reductions in asthma symptom days among children and knowledge acquisition regarding asthma management among their caregivers.

Similarly, Gutierrez Kapheim et al. (2015) implemented a 1-year asthma and healthy homes intervention across six public housing developments in Chicago's inner city. The population included low-income children ( $N = 59$ ), aged 2-17, 95% of whom were African American. The CHWs involved in this study were also residents of the public housing developments. CHWs taught study participants about asthma pathophysiology, asthma symptomatology, proper medication usage, recognition, and mitigation of triggers. CHWs also communicated with PCPs to establish asthma action plans. The researchers used a pre-and post-test design and utilized the non-parametric Wilcoxon signed-rank test to determine statistically significant changes at the  $P < 0.05$  level. From baseline to the 12-month follow up, daytime ( $P < 0.001$ ) and nighttime ( $P = 0.01$ ) asthma symptoms reduced significantly (by an average of 0.8 days in the past two weeks). Quality of life scores for caregivers improved from 5.4 at baseline to 6.1 at the 12-month follow up (an increase of 0.7 points,  $P < 0.05$ ). Lastly, urgent health resource utilization, specifically the number of children making two or more ED visits, decreased from 27% at baseline to 5% at the 12-month follow up ( $P < 0.001$ ).

Campbell et al. (2015) utilized a randomized parallel group trial of home visits by CHWs to Medicaid enrolled children ( $N = 154$ ) in King County, Washington. CHWs conducted baseline knowledge assessments, assessed home environments/asthma triggers, and evaluated self-management processes. CHWs gave participants supplies to optimize their homes to reduce environmental triggers, provided asthma education, and coached participants and their caregivers on proper use of devices. Data on intervention effects were analyzed using multivariable linear regression and logistic regression for continuous, binary, and outcome variables. The intervention group had significantly greater improvements in symptom-free days (2.1 days in two weeks,  $P < .001$ ), relative to the control group. Urgent health care utilization also

significantly decreased among the intervention group (1.3 fewer visits over 12 months than controls,  $P = .001$ ). Economically, these results are estimated to yield \$633.88 in cost savings per participant in the control group and a return on investment (ROI) of 1.90 (190%). This ROI is based on a significant reduction in baseline costs (medications, ED visits, provider visits and hospitalizations).

Woods et al. (2016) implemented the Community Asthma Initiative (CAI), for low-income, predominantly Black and Latinx children, living in Boston, Massachusetts. The researchers hired multicultural, bilingual (in Spanish) CHWs to provide home visits and comprehensive case management to children and their families ( $N = 908$ ) from 2005-2012. Interventions involved individualized asthma education and care coordination, home environmental assessments, education on use of home green-cleaning methods, integrated pest management education, and encouragement of smoking cessation. Paired t-tests were used to assess changes in the total number of asthma-related ED and hospital encounters one year before and one year after enrollment. The rates among the CAI group were analyzed relative to the comparison group. McNemar's test was used for dichotomous variables (hospitalizations, missed school days, or missed physical activity), while paired t-tests and general linear model repeated measures were used for continuous variables (number of asthma related events). Results showed that at the 12-month follow up, there was a 79% decrease in asthma-related hospitalizations, a 56% decrease in ED visits, a 42% reduction in missed school days, a 46% decrease in parent/guardian missed workdays, and a 29% decrease in days of limited physical activities ( $p < .001$ ). This study is unique in demonstrating not only the positive immediate health impacts of the intervention but also measurable improvements in social and occupational functioning related to better health.



Turcotte et al. (2014) conducted a similar study in low-income urban households in the Boston area. CHWs conducted environmental assessments and interventions in households (n = 116) for children (N = 170) living with asthma. The interventions focused on household safety, targeted environmental improvements, and preventative education. The Children's Health Survey for Asthma (CHSA), an evidence-based tool, was utilized to provide information on asthma status based on the physical and emotional health of the child and family, the social activity of the child, and healthcare (hospitalizations, ED visits) utilization. The CHSA assesses the past four weeks. Statistical analyses were completed using SAS version 9.2 utilizing the CHSA user's guide. Pre- and post-intervention CHSA scores and healthcare utilization were compared using the change in paired participant pre- and post-scores. There were statistically significant improvements in all domains of the CHSA. Specifically, based on a 95% confidence interval, from baseline to follow up, children's health scores improved 23.3 points, physical activity levels improved 8.4 points, emotional health improved 20.5 points, family activity improved 8.7 points, and family emotional health improved 9.9 points. Asthma medication use decreased from 85% of children at baseline to 59% at follow up ( $P \leq .001$ ). The cost of the intervention was \$192 per child (\$32,640 for N = 170). It was compared to reductions in asthma-related ED visits, hospitalizations, and doctor visits, between the 4-week period before baseline and the four-week period before the one-year final assessment. The cost reduction was estimated to be \$71,162 for the four-week period, and the estimated net savings were \$38,522.

These studies demonstrate the potential of the CHW role in facilitating statistically significant improvements in asthma symptom reduction, emergency healthcare resource utilization, caregiver and child knowledge and comfortability in disease management, and improvements in quality of life for community members living with asthma.

## Obesity and Related Complications

Utilizing a mixed-methods design, Cloutier et al. (2017) implemented a 12-month obesity prevention program study at low-income preschools in Connecticut. Education was delivered by bilingual and bicultural CHWs and involved focus groups and interactive educational modules. The content centered on the themes of milk, sweetened beverages, screen time, and physical activity. Data on height and weight were obtained for  $n = 328$  children (69%) in 2013, and  $n = 336$  children (70%) in 2014. Results demonstrated that 37.4% of children were overweight or obese in 2013, compared to 35.9% of children in 2014 ( $P = >0.05$ ). Additionally, children beginning preschool in 2014 were more likely to be overweight than children who were in the center since 2013 (36.2% vs 23.2%,  $p < 0.05$ ). Caregivers and school administrators provided positive feedback on educational content and the CHWs leading the focus groups. Specifically, those attending the focus groups commended the way the information had been broken into manageable pieces and presented visually. While the difference between the baseline and follow-up percentages for obesity is not statistically significant, this study does point to the potential of brief, interactive interventions delivered by CHWs in community-based settings.

Crespo et al. (2012) conducted a randomized controlled community trial with 13 schools, to assess the impact of Promotoras or community health advisors, in promoting healthy eating and physical activity among Latinx children ( $N = 808$  parent-child dyads) enrolled in kindergarten through second grade. Participants were randomized to four conditions family only, community-only, combined, or measurement only. Researchers measured parent and child BMI and administered a survey assessing parent and child behaviors related to diet and lifestyle. Data were collected at baseline (M1), 1-year post intervention (M2), 1-year follow up (M3), and 2-year follow up (M4). BMI was calculated for age and gender and given Z-scores and percentiles.

Specifically, in the family + community condition, BMI percentiles at M1 were 72.63% and 74.62% at M4, and similar results were seen for the family-only and community-only groups. This indicates no statistically significant improvements in BMI among children ( $p > 0.05$ ). However, important secondary outcomes, including behavioral changes, were achieved. These were measured through Likert scales ranging from 1 (much less than others) to 5 (more than others), and mean scores were calculated. Specifically, children in the family-only group, tended to be more physically active (M1 = 2.98, M4 = 3.15), have less screen time (M1 = 2.05, M4 = 1.76), and consume more fruits and vegetables (M1 = 1.89, M4 = 2.31), as compared to the control group. Other environmental improvements due to the study included: changes in school cafeteria staff's promotion of healthy options, restructuring of school play and physical activity time, active participation from local grocery store, and commitment from local policymakers to remediate conditions of city parks.

Bender et al. (2013) implemented and evaluated a two-phase, 9-month intervention aimed at improving health behaviors in low-income Latinx mother-child dyads (N = 33) in Southern California. A bilingual, trained Promotora, delivered the educational content, which included culturally tailored education on sugar-sweetened beverages (SSBs), physical activity, healthy food choices, and wellness activities. Mothers reported 24-hour recall of children's SSB consumption and were queried about serving size (4-12 oz) and frequency of consumption (0-6 servings per day). Mothers were asked to walk 30 minutes per day and pedometers were used to measure step-counts. Height and weight, beverage consumption levels, and step-counts were measured at baseline, immediately post-intervention, and six months post-intervention. The results indicated that post-intervention, children's consumption of soda declined by 82% and other SSBs also declined by 73% ( $p < 0.0167$ ). Water consumption also improved significantly

by 46% ( $p < 0.0167$ ). While child BMI did not decrease, maternal BMI decreased significantly from 30.7 kg/m<sup>2</sup> to 29.2 kg/m<sup>2</sup>, a reduction of 1.5 kg/m<sup>2</sup> in BMI ( $p < 0.05$ ). Notably, compared to pre-intervention maternal BMIs, which were  $\geq 30$  kg/m<sup>2</sup> and in the ‘obese’ category, post-intervention maternal BMIs were  $\leq 30$  kg/m<sup>2</sup>, representing a shift to the ‘overweight’ category. This reduction in maternal BMI is likely due to increased step counts and healthy nutrition, encouraged by the Promotoras.

Similarly, Falbe et al. (2015) conducted a randomized controlled trial with parent-child dyads (N = 55), using a 10-week Active and Healthy Families (AHF) model. This care model consisted of biweekly, 2-hour group sessions led by Promotoras. Registered dietitians (RDs) and primary care physicians also helped to deliver the sessions. Promotoras, RDs, and physicians, were all fluent in Spanish, besides one physician who knew basic Spanish. Sessions focused on healthy eating behaviors, recipes, and targeted less optimal foods commonly eaten in Latinx households. Topics also included portion sizes, interactive and accessible physical activities, and personalized goal setting. Multivariate linear regression models adjusting for age, sex, and baseline values, were utilized to compare pre-intervention and post intervention changes between participants and controls. Children assigned to the AHF group, displayed significant improvements in BMI z-scores (-0.10, 95% CI -0.19, -0.02,  $P = .02$ ) and triglycerides (-26.8 mg/dL; 95% CI -50.1, -3.6;  $P = 0.3$ ), relative to controls (increase of .02 in BMI Z-score).

Taken together, the results of these studies suggest that CHW-led interventions foster lifestyle changes and behavior modifications that can combat obesity and factors associated with the development of obesity.

## **Mental Health**

Evidence suggests that CHW-delivered mental healthcare interventions can increase access to mental health services among communities that might not ordinarily have it. However, most current, high-quality studies on CHW care delivery, are targeted to address physical health needs. Regardless, the selected studies provide a broad overview of current efforts to try to link low-income communities to much needed mental health services for a broad range of caregiver and pediatric conditions.

Barnett et al. (2017) conducted a systematic review to assess current research on CHWs' delivery of mental health interventions in low-income communities. Search criteria included randomized controlled trials, quasi-experimental trials, and pre- post non-experimental trials, with CHWs as providers, from 1990 to 2015. Ultimately, N = 43 articles, met the inclusion criteria. The researchers found that the most common mental health conditions targeted included depression, psychological trauma, anxiety, and substance use. The CHWs in the selected studies were most commonly Promotoras, with a minimum of a high-school level degree. Importantly, more than 66% of randomized controlled trials with CHW models of mental health delivery demonstrated positive outcomes for participants in underserved communities relative to controls.

Garcia et al. (2012) outline the development of Project Wings, a collaborative partnership between a public school in Minnesota, a community-based clinic, and the University of Minnesota School Of Nursing. The goal of their program is to address the unmet mental health needs among Latinx adolescents. Their community-based participatory model is founded on several principles including: community as the unit of identity, building upon strengths in the community, facilitating equitable and collaborative partnerships, and attending to multiple determinants of health and disease. This grant-funded program involved a one-day training pilot

for CHWs and an educational workshop for more than 60 Latinx parents. Parents were taught about strategies to address Latinx mental health issues and school and community-based resources for addressing these needs. While this program pilot is preliminary in nature, it provides a foundation for a multi-faceted mental health promotion model led by CHWs.

Hovey et al. (2014) conducted a cognitive-behavioral support group for Latina migrant farmworkers ( $N = 6$ ), with elevated levels of depression. This intervention involved a six-session intervention led by a clinical psychologist, aided by a Promotora. Participants completed baseline, post-treatment, and 6-month follow-up assessments, which included the Migrant Farm Worker Stress Inventory, the Beck Hopelessness Scale, and the Rosenberg Self-Esteem Inventory. The results showed that 83% of participants achieved clinically significant improvements in their symptoms. Particularly, participant stress ( $Z = 2.2, p = .01$ ) and depressive symptom scores ( $Z = 2.0, p = .02$ ) reduced significantly, which was maintained at follow up (stress:  $Z = 1.6, p = 0.58$  and depressive symptoms:  $Z = 2.0, p = .02$ ). Importantly, having the Promotora as a group leader enhanced levels of trust among the women, and reduced stigma.

Magaña et al. (2015) implemented a randomized controlled trial to improve health behaviors of Latina mothers of youths and adults diagnosed with intellectual and developmental disabilities (IDD). The participants were separated into the intervention group (IG) ( $n = 42$ ) and control group (CG) ( $n = 48$ ) Using a community-based research approach, the researchers conducted 3-day trainings with Promotoras, who then conducted eight home visits with Latinx mothers. During the home visits, Promotoras taught a curriculum called “Caring for Myself,” that emphasized health-related self-efficacy, stress reduction, and positive health behaviors. A randomized two-group pre- and post-test design was used to test the efficacy of the Caring for Myself intervention. Results showed significant improvements in the pre- and post-test scores for

the IG ( $P < 0.001$ ), as well as significant between-group differences between the IG and CG. Specifically, the IG achieved significantly higher post-test scores (89.40) relative to the CG (74.63) in health-related self-efficacy self-care (IG: 68.20, CG: 51.56), nutrition (IG: 75.20, CG: 63.39), and overall health behaviors (IG: 68.07, CG: 54.21) ( $P < 0.001$ ).

### **Summary and Synthesis of the Evidence**

The 13 selected articles were evaluated using the Johns Hopkins Appendix E Research Evidence Appraisal Tool and the Appendix F Non-Research Evidence Appraisal Tool (Dang & Dearholt, 2017) (see Appendix C). One study, Garcia et al. (2012) was found to be level V (non-research evidence), but good quality. While non-research evidence is typically not regarded as good-quality, Garcia et al. (2012) provided a solid outline of a community-based, home visitation pilot program to enhance access to mental health services among Latinx adolescents and caregivers. Six studies were categorized as level II (quasi-experimental) and were all found to be of good quality. Many of these had consistent results, adequate sample sizes, and reliable conclusions. However, the level II studies lacked a control group, and some did not fully flush out the limitations, future directions, or broader implications of the results. Six studies were level I (randomized controlled trials) and were found to either be high quality (A) or good quality (B). The studies reiterate the value of CHWs in delivering highly needed health services to low-income Latinx and minority communities, and ultimately improving patient outcomes.

While many of the large scale randomized controlled trials came from the studies conducted on asthma and obesity, there is a dearth of high quality studies on the CHW role in delivering mental health services. The reasons for this are multifactorial, but largely stem from underfunding, lack of resource allocation to mental health services, and the shortage of behavioral health professionals. Often, the provision of mental health services requires a licensed

clinician. However, as demonstrated in studies such as Hovey et al. (2014), the CHW or Promotora, can be an asset to the clinician. That is, CHWs are in a unique position to enhance the credibility of the clinician, promote therapeutic alliance between patients and clinicians, and can ultimately increase treatment adherence and improve healthcare outcomes.

### **Rationale**

This project was guided by Pender's (1982) Health Promotion Model (HPM). The HPM focuses on three dimensions: individual characteristics and experiences, behavioral cognitions, and behavioral outcomes (Pender, 1982). This theoretical framework recognizes the complexity of interactions between interpersonal and environmental factors in determining health outcomes (Pender, 1982). In the context of this project's design and evaluation, key concepts of the HPM include: (1) enhanced perceived self-competence and self-efficacy significantly boost the likelihood of committing to and successfully executing a specific behavior, and (2) people are more inclined to adopt and actively participate in health-promoting behaviors when they observe these behaviors being modeled by significant others, anticipate the occurrence of such behaviors, and receive support to facilitate their execution.

Thus, the rationale in using the HPM framework here, is that with increased knowledge and self-efficacy gleaned through the educational modules taught by the DNP student, CHWs can then improve their own practice and spread this knowledge to families through home visits. Ultimately, this will help reduce barriers to appropriate CND management among children and their families.



## **Methods**

### **Context**

This intervention was a subset of a larger project and partnership between USF and the STC Organization. The STC organization strives to provide children with learning opportunities and to protect children from harm (Save the Children, 2022). Within the Central Valley, community health workers (CHWs) affiliated with Save the Children, act as Promotoras. The Promotoras are typically members of the communities they serve, and hence, possess enriched perspectives on that community's unique needs, language, and culture (Capitman et al., 2009).

Key stakeholders directly involved with this project included the project leader (the DNP student), the project chair, other DNP students, and the CHWs receiving the teaching. Other DNP students involved in the project taught about various health topics, which included: ACEs, reproductive health, and toxic stress. More indirectly, stakeholders also included the patients receiving the interventions, insurance companies, local health care clinics, and hospitals. The major stakeholders were supportive of the project and open to the need for change. Ultimately, if the goal of advancing the knowledge and competence of the CHWs were effective, all stakeholders would benefit. That is, CHWs teaching children and their caregivers how to make lifestyle modifications and integrate health maintenance routines, would ultimately improve the quality of life of their community members/clients.

### **Interventions**

Interventions included five educational sessions, each lasting approximately 1 hour, over the course of a 3-month period. Content included in the educational sessions focused on CNDs among pediatric patients. The three primary pediatric CNDs that were emphasized included: obesity, asthma, and mental health issues, commonly faced by this population. For obesity,

content included strategies to curtail sweetened beverage consumption, limiting screen time, promoting physical activity, and methods to maximize healthy food choices whenever possible. For asthma, CHW education centered on optimizing the home environment to reduce environmental triggers, and the development and communication of asthma action plans with school stakeholders, proper medication use, and primary care provider follow up. Lastly, mental health modules involved information on the etiology and pathophysiology of common pediatric mental health conditions (e.g., ADHD, anxiety/depression, and ASD), as well as non-pharmacological strategies (sleep hygiene, study environment, and diet) to enhance functioning.

The participants included N = 14 CHWs from the STC organization. Prior to and following the teaching sessions, quizzes on these topics were administered online via Canvas™. Improvements in knowledge and self-efficacy, demonstrated by pre-test and post-test scores, were measured by percentage of change. In accordance with the concepts from the HPM, the goal of this was to equip CHWs with improved knowledge and self-efficacy in these content areas, and hence to enhance their commitment to action (i.e., use the tools learned through the educational sessions to help the families they serve).

### ***Gap Analysis***

It is well documented in the research that CHWs have facilitated significant positive change within the low-income communities that they serve (Kim et al., 2016). While CHWs previously received some education on CNDs, they had not been formally trained how to tailor home visits and interventions to address patients' specific needs related to pediatric obesity, asthma, and mental health issues.

Currently, there is a dearth of empirically validated curricula for CHWs on the pediatric CNDs addressed in this project. Although several toolkits and CHW training programs exist,

there is a lack of national standardization for CHW training and certification (National Center for Healthy Housing [NCHH], 2018). Further, the official CHW certification is not yet approved in California (California Department of Healthcare Services [CDHS], 2022). This adversely impacts important sources of funding and reimbursement, specifically by Centers for Medicare and Medicaid Services (CMS) (NCHH, 2018).

Thus, a gap analysis was conducted to identify gaps between current and best practices, major barriers, and how the implementation of this project will address these barriers (see Appendix D). Best practices include utilizing CHWs in low-income communities to improve access to healthcare resources and improve patient outcomes. Strategies for best practice include education for CHWs and improving training delivery for CHWs to enhance knowledge and self-efficacy on pediatric CNDs. Additionally, the implementation of an official CHW certification in California will facilitate improved funding and eventually reimbursement by CMS. Barriers include: knowledge gaps among policymakers on CNDs, and hence less funding for community resources to address these issues (Ahmed et al., 2022).

### ***GANTT Chart***

A timeline for this project is presented visually on the GANTT chart (see Appendix E). The implementation of this project occurred from September 2022 to November 2022. Leading up to and during the intervention period, curriculum planning, team meetings, and logistical coordination for the teaching sessions, were completed. Data from the intervention was analyzed during the spring of 2023 and culminated in the submission of the DNP student's final DNP paper in the summer/fall of 2023.

### ***Work Breakdown Structure***

The work breakdown structure (WBS) for this project was separated into five phases: initiation, planning, execution, control, and closeout (See Appendix F). For the initiation phase, tasks for the project leader included the initial research on pediatric CNDs in the Central Valley, project planning, writing initial project papers for the N7005 course, and implementing feedback from assignments into future work. This involved discussing the topic of research with the project chair and the development of the project prospectus. In the planning phase, specific logistics and timeline for the teaching sessions for the fall of 2022, were discussed. Planning required team meetings with faculty and DNP students, finishing and submitting the prospectus, reviewing feedback from prospectus, identifying objectives for the curriculum, and editing and receiving approval for the prospectus. Ultimately, outcomes and findings from the project were streamlined into the comprehensive DNP report, which was submitted for final approval.

The execution phase included the pre-teaching meetings between DNP students, the five virtual teaching sessions, gathering outcome data from the sessions, writing the manuscript, and completing the final presentation. In terms of control, this phase entailed project management. Specifically, this included discussion of results with the team, identification and management of the risks involved with the teaching sessions, and the planning of next steps. During the closeout, DNP students and CHW stakeholders discussed and documented strengths and areas of improvement for the teaching sessions. Finally, this information was passed to future DNP students to refine and optimize future teaching sessions and project management. This handoff and feedback were essential for the next cohort of DNP students teaching CHWs to identify and build upon strengths, opportunities for growth, and to stay informed of project plan updates.

### ***Responsibility/Communication Plan***

The communication plan was critical to ensure role clarity and help delineate who was responsible for which tasks (See Appendix G). The CND education plan necessitated active participation between the DNP project leader, other DNP students, USF Faculty Chair, CHWs who participated in the intervention, and the larger Save the Children organization. Having a thorough but simple communication plan, that detailed the timeline and scope of each team member, enhanced accountability and understanding of each party's respective roles.

### ***SWOT Analysis***

A strengths, weaknesses, opportunities, and threats (SWOT) analysis was conducted to assess various dimensions of this project (See Appendix H). In terms of strengths, having a dedicated project leader as well as multiple DNP students to collaborate with, were assets that helped the successful implementation of this project. The project leader served as a point person for participants and stakeholders to go to with questions and ideas. The DNP student-led sessions, which were conducted on an accessible, virtual modality, increased the number of CHWs able to participate, and yielded gains in knowledge acquisition. Finally, the majority of community members in the Central Valley are primarily Spanish speaking and Latinx. Having CHWs that were both bilingual and culturally competent was a strength of this project. These assets increase the chances that the home-based interventions will be understood and well-received by community members.

In terms of weaknesses, the main obstacles included potential CHW resistance to change, inadequate knowledge acquisition, and not gaining full buy-in by the CHWs. However, these things were mitigated by clear communication of broader project goals and objectives throughout the teaching sessions. For opportunities, this educational intervention provided a chance for

CHWs to build upon their existing knowledge and skills and helped empower CHWs to be liaisons between the community and healthcare resources. Ultimately, this project provided an opportunity to bridge the gaps of healthcare inequity that exist among community members, and hence improve health outcomes.

Threats involved with this project, included an increase in the work responsibilities of CHWs, changes in current research that could have outdated the practices taught in the modules, and the potential for lack of resources and support of the CHWs by the larger organization. However, clear communication of the significance of the course content, helped motivate CHWs to integrate what they've learned into their home visits. In terms of resources and support, there was no indication that this was an issue for the CHWs. However, budget cuts and management changes, was a broader concern in terms of employees having adequate resources. Communication with management and those responsible for resource allocation within the STC organization on the importance and objectives of these interventions, helped offset this potential for lack of support.

### ***Comprehensive Financial Analysis***

**Budget.** Costs associated with this project were modest, and as the teaching modalities were virtual, costs primarily included hourly wages for the CHWs during the educational sessions with the DNP students. The CHW modules required a total of 8 hours of training. Based on the best available data, the hourly wage for CHWs in the Fresno area in 2022 was approximately \$21.11 per hour (Indeed, 2022). To account for wage increases, \$1.00 was added to this, each consecutive year of the intervention. Food for the CHWs was estimated to cost \$20/CHW (\$160 total) in the first year, \$21/CHW (\$168 total) in the second year, and \$22/CHW (\$176 total) in the third year, with an \$1 increase per CHW annually to account for inflation,

totaling \$504 for food across the three years of project implementation. Expenditures for office supplies/technology were estimated to be approximately \$80 in year one, \$85 in year two, and \$90 in year three, for a total of \$225 spent on supplies overall. 30% for fringe benefits, which included health insurance for CHWs, technology, and other CHW benefits, was factored in. Fringe benefits for year one were estimated to be \$405.31, \$424.51 for year two, and \$443.71 for year three, for a total of \$1,273 across the three years. Based on these estimates, the total costs for year 1 of implementation was \$1,996.35 (\$249.54 per CHW), \$2,092.55 for year 2 (\$261.56 per CHW), and \$2,188.75 for year 3 (\$273.59) (see Appendix I).

**Cost-Benefit Analysis.** Current research was reviewed to determine a cost-benefit analysis (CBA) associated with the CHW interventions. To do this, the average total costs for CHW training for years one (\$1,996.35), two (\$2,092.55), and three (\$2,188.75), obtained through calculating the budget, were compared to the average number of patients that eight CHWs were expected to see annually (480 patients). Based on recent available data from a report by the California Healthcare Foundation (2021), it was estimated that CHWs conduct approximately 60 home visits annually. This means that eight CHWs would see approximately 480 (60 home visits x 8 CHWs) patients per year. The training costs and number of patients seen annually were then compared to the estimated healthcare cost savings associated with these interventions.

A large-scale study, which analyzed the effectiveness of six different CHW programs, found that CHW interventions were associated with a total cost of care reduction of between \$143 and \$2,044, per beneficiary, per quarter (Cross-Barnet et al., 2018). These numbers, cost savings projected by another study by the Centers for Disease Control and Prevention (2020), as well as the volume and scope of the CHWs involved in this study, were used to estimate the

savings associated with CHW interventions. These savings were ultimately estimated to be \$112.50, per patient, per year. Based on this number, net benefits were calculated by subtracting the total benefits by the annual cost for the CHW trainings for each of the three years of the intervention. For year one net benefits were \$52,003.65 (\$54,000 – \$1,996.35), \$51,907.45 for year two (\$54,000 – \$2,092.55), and \$51,811.25 for year three (\$54,000 - \$2,188.75).

The cost benefit ratios were obtained by dividing the total benefits for each year (\$54,000) by the annual CHW training costs for years one, two, and three. Cost benefit ratios were found to be 27.05 for year one, 25.81 for year two, and 24.67 for year three, with an average of 25.84 across all three years. This indicated that the intervention will greatly reduce medical expenditures and will be benefit generating (see Appendix J for a table representation of the CBA).

### **Study of the Intervention**

The ongoing partnership between USF DNP students and the Save the Children CHWs, has helped to equip CHWs with an increased foundation of knowledge, self-efficacy, and greater ability to make meaningful impacts within their communities. DNP students obtained feedback from CHWs prior to and following each teaching session. This valuable input helped inform the DNP students' curricula, teaching and assessment methods, and course content. Importantly, it helped foster rapport and collaboration between DNP student teachers and CHW learners.

### **Outcome Measures**

The primary outcome measures were improvements in CHW knowledge and self-efficacy, acquired through the five educational sessions with the DNP students. Knowledge acquisition was assessed by pre- and post-intervention quizzes, taken prior to and following each of the five educational sessions. The goal of the teaching sessions was to achieve a 30% increase



in CHW knowledge and self-efficacy regarding the content taught in each class. This was measured through percent improvement of pre-course quiz to post-course quiz.

Throughout and following the sessions, CHWs were encouraged to ask questions, as well as to provide suggestions and general feedback for consecutive lessons. After the conclusion of each class, DNP students and CHW leaders met for debriefing sessions. Based on this, DNP students adjusted future classes, quizzes, and course content. CHWs were also given a discussion board forum to share and collaborate on important takeaways from each lesson.

### ***CQI Method and Data Collection Tools***

The CQI method utilized was the Plan, Do, Study, Act (PDSA) framework. This is due to the nature of the project, which involved gathering continual feedback, and utilizing this feedback to continually make process improvements over the course of the intervention.

Participants were provided with content and materials for each educational session through the Canvas learning management system. Through Canvas, pre- and post-intervention quizzes were administered, and included five multiple choice and open response questions related to the content for each topic. Scoring was calculated by Canvas for multiple choice questions, but manually scored by the DNP student for open response questions. To determine improvement, the scores for each student were compared from their pre-course to post-course quizzes. This data was then compiled, and descriptive statistics were used to identify trends across the group.

### **Analysis**

Data for pre-course and post-course quizzes was exported from Canvas and transferred into a Microsoft Excel © spreadsheet. This helped provide an understanding of the overall group performance and allowed the project leader to determine whether the goal of a 30% knowledge increase was reached. Since the items on the pre-test and post-test assessments were the same,

the methods utilized had strong retest reliability. For each of the five modules, the means, medians, modes, standard deviations, and variances of the pre- and post-test scores, as well as the percentage of improvement across each module, were calculated (see Appendix K).

Wilcoxon signed-rank tests were carried out via Statistical Package for Software Sciences © (SPSS), to obtain inferential statistics.

### **Ethical Considerations**

This project was approved by the USF DNP department as a quality improvement project, and was exempt from IRB approval. The interventions in this project were in line with both the American Nurses Association (ANA) ethical standards, as well as the Jesuit values of the University of San Francisco (USF). Provision five of the ANA code of ethics, states that it is the nurse's responsibility to promote the integrity and safety, as well as the professional growth of others (American Nurses Association, 2015). This was done by delivering the educational modules in a culturally sensitive, respectful fashion. Provision three of the ANA Code of Ethics states that patient confidentiality must be maintained (American Nurses Association, 2015). This was done by always protecting the identities of the CHW participants, using anonymous identifiers when coding results, and ensuring not to reveal any identifiers when presenting findings.

The USF mission statement emphasizes embracing persons of all races and ethnicities, religious, cultural, and socioeconomic backgrounds (University of San Francisco, n. d.). Accordingly, the project leader recognized and honored individual values and preferences of the participants in the study and tailored teaching interventions accordingly. Ultimately, the goal of this project was to enhance the lives of community members of the Central Valley.

## Results

Broadly, the topic for this intervention was the CHW's role in preventing and managing pediatric CNDs, including mental health, asthma, and obesity. The content focused on five specific topics: pediatric 1) anxiety and depression, 2) ADHD, 3) autism spectrum disorders, 4) asthma, and 5) obesity and related complications. For these modules, the percentage improvement in quiz scores ranged from 35% to 50%. The percentage improvements for each module were 1) 35%, 2) 37%, 3) 48%, 4) 53%, and 5) 50%, respectively (see Figure K1 for a graphical representation of this).

The average overall percentage increase across the five modules was 45%. Improvements on both the individual modules and the average across the modules exceeded the target knowledge and self-efficacy improvement of 30%, from baseline to post-course. For module 1, pediatric anxiety and depression, the average score on the pre-course quiz (2.54/5) was somewhat higher relative to pre-course quiz scores for the four other modules. This could indicate a higher level of baseline knowledge on this topic, which might have lessened the average percentage of improvement (35%) from baseline to post-intervention quiz for this module.

All pre-course and post-course quizzes were completed by most of the CHWs (N = 14). However, for module 5, only N = 7 students completed the post-course quiz. Thus, to ensure that the percent improvement for module 5 was accurate, n = 7 students' scores on the pre-course quiz were omitted. The average improvement was then re-calculated to reflect only the scores of the n = 7 students that took the pre-course and post-course quizzes for this module.

In addition to the course feedback provided by the CHWs in real time, the DNP students and project chair held a focus group with CHWs to discuss the utility of the information gleaned

from the teaching sessions, as well as strengths and areas for growth of the intervention. The CHWs shared that they felt more confident in applying the knowledge learned through these sessions, with the families that they serve.

In terms of inferential statistics, the five modules had their pre- and post-test scores compared via the Wilcoxon signed-rank test to determine statistical significance. These Wilcoxon signed-rank tests were performed using SPSS 29 software. The Wilcoxon ranked-sign test was selected because it is a non-parametric test that does not require a parametric assumption, an important factor in the data analysis of the results due to the study's sample sizes being under 50. The results of the Wilcoxon signed-rank tests indicated a statistically significant ( $p < .05$ ) increase in CHW knowledge in all five modules administered during the trainings (see Appendix K).

## **Discussion**

### **Summary**

The results from this project validate the notion that training on pediatric CNDs help foster increased knowledge and self-efficacy among CHWs. This allows them to more effectively assist the families that they serve. As demonstrated by the quantitative data, significant improvements in knowledge were made from baseline to post-intervention, across all five modules that were covered. Further, the qualitative feedback provided by the CHWs during both the debriefing sessions and the focus group, was extremely positive. Specifically, this feedback revealed feelings of increased confidence among CHWs, as well as a greater sense of being able to apply their learning to help some of the most vulnerable families they work with.

## **Interpretation**

DNP student-led educational modules on pediatric CNDs provided an avenue for CHWs to not only enhance their knowledge base on these topics, but also to grow as professionals. Pediatric CNDs, when inappropriately managed or not addressed at all, can lead to many adverse consequences. However, enhancing CHW awareness and comfortability with these topics, can help inform and bolster the interventions that they conduct with families. Thus, some of the harmful consequences of unmanaged pediatric CNDs can be lessened or even prevented, ultimately improving the quality of life for children and families in these communities.

In line with Pender's HPM framework, following the intervention, the HCWs demonstrated and verbalized increased self-efficacy and competence in the health education topics that they commonly encounter with their clients. Additionally, modeling of health-promoting behaviors and education by the DNP students to the CHWs, facilitated commitment to action (i.e. the CHWs implementing the education in their practice).

Financially, the costs associated with this intervention are minimal. Importantly, the potential for cost-savings on medical expenditures associated with unmanaged pediatric CNDs, is promising. The increased knowledge and self-efficacy gained through this intervention by CHWs, can yield higher-quality home visits, improved client education, and eventually improved health maintenance and hence a reduction in unnecessary healthcare costs. The expansion of this project to reach and include more CHWs, would likely yield sizeable net benefits, and should be considered for the future.

## **Limitations**

The major anticipated challenge in the implementation of this project was communication among stakeholders. Because there were multiple DNP students working on this project

simultaneously, this posed the risk for communication breakdowns, specifically in terms of role clarity and proper delegation of selected topic focus areas. Failing to adequately address communication challenges could have resulted in issues like scope creep and redundancy in educational content. However, proper planning, consistent meetings between stakeholders, and the use of tools like the responsibility matrix and work breakdown structure, helped prevent miscommunications and helped delineate roles and responsibilities.

A notable limitation for the mental health module is that because there is a lack of high quality (level I and II) studies on this topic, the curricula for this topic was more preliminary in nature. That is, the DNP student had to compile and maximize the highest quality available evidence on CHW-led mental health interventions.

Another challenge was achieving a reasonable cadence for the teaching sessions, for both the CHWs and the DNP students. As many DNP students and faculty had conflicts, varying work schedules, and clinical rotations, tailoring the teaching schedule to the group needs posed a challenge. Additionally, this schedule needed to work for the CHWs. However, this was alleviated by providing the Save the Children coordinators and CHWs with options and advance notice for the teaching schedule. Once the CHWs' schedules were provided, the schedule for the teaching sessions was coordinated with the schedules of the DNP students.

Another limitation was the time and scope of this project, and hence a limited ability to see the long-term impacts of CHW knowledge acquisition. While the immediate outcome of a 30% CHW knowledge increase was achieved, the broader goal was for the CHWs to utilize and spread this knowledge to members of the community in the Central Valley.

In terms of the study methods, the sample size of CHWs was small ( $N = 14$ ), and thus limits the generalizability of project outcomes to other settings. Having a larger sample size of

CHWs would provide more robust evidence for the results and conclusions from this project. Because of the small sample size, non-parametric tests were performed, which are less statistically powerful than parametric tests. Thus, a larger sample size and the ability to utilize a parametric test, would increase the sensitivity and accuracy of the statistical analysis.

There are also many factors associated with the development and exacerbation of these CNDs, that might not all be addressed in the CHW home interventions. For instance, socioeconomic constraints and unanticipated life stressors, both contribute to poor health status, and might be unable to be fully addressed by the interventions of the CHWs.

## **Conclusions**

The literature demonstrates the broad-ranging positive impacts of CHW-led home-based interventions on improving the quality of life and health outcomes of those in low-income communities. Further, in most of these studies, CHWs or Promotoras underwent similar trainings to those implemented through this project, with the trainings designed to increase their knowledge and understanding of the topics. Similarly, the DNP student provided training to CHWs on pediatric CNDs, including asthma, obesity, and mental health. Through these educational modules, the DNP student facilitated enhanced CHW knowledge and self-efficacy on these topics.

Because of the limitations related to small sample size mentioned above, the project should be replicated with a larger sample size of CHWs. Doing so will shed light on the efficacy, generalizability, and feasibility of the project.

In the short-run, a major implication of what was demonstrated through this project is that DNP students can help advance the knowledge, self-efficacy, and skillset of CHWs, in the domain of pediatric CNDs. Consequently, CHWs will now be able to utilize what they've gained

from these modules to provide informed, evidence-based support and education to families they work with. With improved knowledge and competence, CHWs can better assess and identify the needs of families with children either at risk for or living with CNDs. Appropriate and timely assessment of these needs is a conduit to needed referrals to healthcare resources within the community.

A long-term implication of this intervention is the possibility of gaining more traction and funding for similar efforts which provide continuing education to CHWs. In terms of patient outcomes, if the home-based interventions taught in the modules are implemented effectively with members of the community, they have the potential to reduce disease burden caused by obesity, asthma, and mental health conditions, and ultimately improve quality of life for these individuals.

In terms of implications for the DNP role, this intervention with CHWs aligns with the broader goals of preparing the DNP student for academic leadership. Specifically, this project required the application and dissemination of nursing knowledge to improve the health of diverse populations. This project required DNP students to synthesize and deliver theoretical concepts and clinical knowledge from multiple disciplines.



**Funding**

For this project, there was no utilization of funding by the DNP student. Hourly wages paid to the CHWs during this project were covered by Save the Children. Since the interventions were implemented through a virtual modality, no additional costs for this project were accrued.

## References

- Acala, E., Cisneros, R., & Capitman, J. (2018). Healthcare access, concentrated poverty, and pediatric asthma hospital use care in California's San Joaquin Valley: A multilevel approach. *Journal of Asthma*, 55(11), 1253-1261. <https://doi.org/10.1080/02770903.2017.1409234>
- Ahmed, S., Chase, L. E., Wagnild, J., Akhter, N., Sturridge, S., Clarke, A., Chowdhary, P., Mukami, D., Kasim, A., & Hampshire, K. (2022). Community health workers and health equity in low- and middle-income countries: systematic review and recommendations for policy and practice. *International Journal for Equity in Health*, 21(1), 49. <https://doi.org/10.1186/s12939-021-01615-y>
- Al-khateeb, A.J. & Al khateeb, J.M (2015). Research on psychosocial aspects of asthma in the Arab world: A literature review. *Multidisciplinary Respiratory Medicine* 10(15). <https://doi.org/10.1186/s40248-015-0011-6>
- American Nurses Association (2015). *Code of ethics for nurses with interpretive statements*. Retrieved August 2<sup>nd</sup>, 2022 from <https://www.nursingworld.org/practice-policy/nursing-excellence/ethics/code-of-ethics-for-nurses/coe-view-only/>
- Avni, E., Ben-Itzhak, E., & Zachor, D. A. (2018). The presence of comorbid ADHD and anxiety symptoms in autism spectrum disorder: Clinical presentation and predictors. *Frontiers in Psychiatry*, 9, 717. <https://doi.org/10.3389/fpsyt.2018.00717>
- Baek, J., Huang, K., Conner, L., Tapangan, N., Xu, X., & Carrillo, G. (2019). Effects of the home-based educational intervention on health outcomes among primarily Hispanic children: A quasi-experimental study. *BMC Public Health*, 19(912), 1-8. <https://doi.org/10.1186/s12889-019-7272-5>

- Balcazar, H., Rosenthal, E. L., Brownstein, N., Rush, C. H., & Matos Lorenza Hernandez, S. (2011). Community health workers can be a public health force for change in the United States: Three actions for a new paradigm. *American Journal of Public Health, 101*(12), 2199-2203. <https://doi.org/10.2105/AJPH.2011.300386>
- Banjari, M., Kano, Y., Almadani, S., Basakran, A., Al-Hindi, M., & Alahmadi, T. (2018). The Relation between asthma control and quality of life in children. *International Journal of Pediatrics, 65*17329. <https://doi.org/10.1155/2018/6517329>
- Barnett, M. L., Gonzalez, A., Miranda, J., Chavira, D., & Lau, A. (2017). Mobilizing community health workers to address mental health disparities for underserved populations: A systematic review. *Administration and Policy in Mental Health and Mental Health Services Research, 45*, 195-211. <https://doi.org/10.1007/s10488-017-0815-0>
- Bender, M. S., Nader, P. R., Kennedy, C., & Gahagan, S. (2013). A culturally appropriate intervention to improve health behaviors in Hispanic mother-child dyads. *Childhood Obesity, 9*(2), 157–163. <https://doi.org/10.1089/chi.2012.0118>
- Benka-Coker, W., Hoskovec, L., Severson, R., Balmes, J., Wilson, A., & Magzamen, S. (2020). The joint effect of ambient air pollution and agricultural pesticide exposures on lung function among children with asthma. *Environmental Research, 190*, 109903. <https://doi.org/10.1016/j.envres.2020.109903>
- Biener, A. I., Cawley, J., & Meyerhoefer, C. (2020). The medical care costs of obesity in youth: An instrumental variables approach. *Health Economics, 29*(5), 624-639. <https://doi.org/10.1002/hec.4007>
- Calcaterra, V., Regalbuto, C., Porri, D., Pelizzo, G., Mazzon, E., Vinci, F., Zuccotti, G., Fabiano, V., & Cena, H. (2020). Inflammation in obesity-related complications in children: The

protective effect of diet and its potential role as a therapeutic agent. *Biomolecules*, 10(9), 1324. <https://doi.org/10.3390/biom10091324>

California Department of Healthcare Services (2022). DHCS proposal to add community health workers. Retrieved June 27<sup>th</sup>, 2023, from <https://www.dhcs.ca.gov/provgovpart/Pages/Community-Health-Workers.aspx>

California Department of Public Health (2017). Asthma prevalence in California: A surveillance report. [https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHIB/CPE/CDPH/DocumentLibrary/Asthma\\_Surveillance\\_in\\_CA\\_Report\\_2017.pdf](https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHIB/CPE/CDPH/DocumentLibrary/Asthma_Surveillance_in_CA_Report_2017.pdf)

California Healthcare Foundation (2021). Advancing California's community health worker & promotor workforce in Medi-Cal. Accessed August 5<sup>th</sup>, 2022 from: <https://www.chcf.org/wp-content/uploads/2021/09/AdvancingCAsCHWPWorkforceInMediCal.pdf>

Campbell, J. D., Brooks, M., Hosokawa, P., Robinson, J., Song, L., & Krieger, J. (2015). Community health worker home visits for Medicaid-enrolled children with asthma: Effects on asthma outcomes and costs. *American Journal of Public Health*, 105(11), 2366-2372. <https://doi.org/10.2105/AJPH.2015.302685>

Capitman, J., Gonzalez, A., Ramirez, M., & Pacheco, T. L. (2009). The effectiveness of a Promotora health education model for improving Latino healthcare access California's Central Valley. *California Valley Health Policy Institute*. <https://chhs.fresnostate.edu/cvhpi/documents/cms-final-report.pdf>

Carrillo, G., Perez Patron, M. J., Johnson, N., Zhong, Y., Lucio, R., & Xu, X. (2018). Asthma prevalence and school-related hazardous air pollutants in the US-Mexico border area. *Environmental Research*, 162, 41-48. <https://doi.org/10.1016/j.envres.2017.11.057>

- Centers for Disease Control and Prevention (2020). *Integrating community health workers on clinical care teams and in the community*. Accessed August 5<sup>th</sup>, 2022 from <https://www.cdc.gov/dhdsppubs/guides/best-practices/chw.htm>
- Centers for Disease Control and Prevention (2021). *Most recent national asthma data..* Accessed July 2<sup>nd</sup>, 2023 from [https://www.cdc.gov/asthma/most\\_recent\\_national\\_asthma\\_data.htm](https://www.cdc.gov/asthma/most_recent_national_asthma_data.htm)
- Centers for Disease Control and Prevention (2022). *Childhood obesity facts: Prevalence of childhood obesity in the United States*. Accessed July 2<sup>nd</sup>, 2023 from <https://www.cdc.gov/obesity/data/childhood.html>
- Centers for Disease Control and Prevention (2023). *Data and statistics on children's mental health: Children's mental health*. Accessed July 2<sup>nd</sup>, 2023 from <https://www.cdc.gov/childrensmentalhealth/data.html>
- Chavira, D. A., Bustos, C. E., Garcia, M. S., Ng, B., & Camacho, A. (2017). Delivering CBT to rural Latino children with anxiety disorders: A qualitative study. *Community Mental Health Journal*, 53(1), 53–61. <https://doi.org/10.1007/s10597-015-9903-3>
- Cloutier, M. M., Wiley, J. F., Trapp, C., Haile, J., & Gorin, A. A. (2018). The childcare center: An untapped opportunity to engage and educate families in healthy behaviors. *Journal of Racial and Ethnic Health Disparities*, 5(2), 430–438. <https://doi.org/10.1007/s40615-017-0386-5>
- Coutinho, M. T., Subzwari, S. S., McQuaid, E., & Koinis-Mitchell, D. (2020). Community health workers' role in supporting pediatric asthma management: A review. *Clinical Practice in Pediatric Psychology*, 8(2), 195-210. <https://doi.org/10.1037/cpp0000319>
- Crespo, N. C., Elder, J. P., Ayala, G. X., Slymen, D. J., Campbell, N. R., Sallis, J. F., McKenzie, T. L., Baquero, B., & Arredondo, E. M. (2012). Results of a multi-level intervention to

- prevent and control childhood obesity among Latino children: the Aventuras Para Niños Study. *Annals of Behavioral Medicine: A Publication of the Society of Behavioral Medicine*, 43(1), 84–100. <https://doi.org/10.1007/s12160-011-9332-7>
- Cross-Barnet, C., Ruiz, S., Skillman, M., Dhopeswarkar, R., Singer, R., Carpenter, R., Campanella, S., Freij, M., Snyder, L., & Colligan, E. (2018). Higher quality at lower cost: Community health worker interventions in the Health Care Innovation Awards. *The Journal of Health Disparities Research and Practice*, 11. 150-164.
- Dang, D., & Dearholt, S. (2017). *Johns Hopkins nursing evidence-based practice: Model and guidelines* (3rd ed). Sigma Theta Tau International.
- Das, R. R., & Gulla, K. M. (2021). Psychiatric and behavioral problems in childhood asthma: An opportunity for prevention. *Indian Journal of Pediatrics*, 88(10), 957–958. <https://doi.org/10.1007/s12098-021-03925-z>
- Falbe, J., Cadiz, A. A., Tantoco, N. K., Thompson, H. R., & Madsen, K. A. (2015). Active and healthy families: A randomized controlled trial of a culturally tailored obesity intervention for Latino children. *Academic Pediatrics*, 15(4), 386–395. <https://doi.org/10.1016/j.acap.2015.02.004>
- Finocchio, L., & Paci, J. (2020). San Joaquin Valley: Despite poverty and capacity constraints, healthcare access improves: A CHCF regional market study. California Healthcare Foundation. <https://www.chcf.org/publication/san-joaquin-valley-despite-poverty-capacity-constraints-health-care-access-improves/>
- Foster, B., Aquino, C. A., Mejia, S., Turner, B., & Singhal, A. (2018). Identification and characterization of families that are positively deviant for childhood obesity in a Latino

population: A case control study. *Journal of Obesity*, 2018, 1-11.

<https://doi.org/10.1155/2018/9285164>

Garcia, C., Hermann, D., Bartels, A., Matamoros, P., Dick-Olson, L., & Guerra de Patino, J.

(2012). Development of project wings home visits, a mental health intervention for Latino families using community-based participatory research. *Health Promotion Practice*, 13(6), 755–762. <https://doi.org/10.1177/1524839911404224>

Gharibi, H., Entwistle, M. R., Ha, S., Gonzalez, M., Brown, P., Schweizer, D., & Cisneros, R.

(2019). Ozone pollution and asthma emergency department visits in the Central Valley, California, USA, during June to September of 2015: A time-stratified case-crossover analysis. *The Journal of Asthma: Official Journal of the Association for the Care of Asthma*, 56(10), 1037–1048. <https://doi.org/10.1080/02770903.2018.1523930>

Grant, T., Croce, E., & Matsui, E. C. (2022). Asthma and the social determinants of

health. *Annals of Allergy, Asthma & Immunology: Official Publication of the American College of Allergy, Asthma, & Immunology*, 128(1), 5–11.

<https://doi.org/10.1016/j.anai.2021.10.002>

Gutierrez Kapheim, M., Ramsay, J., Schwindt, T., & Margellos-Anast, H. (2015). Utilizing the

Community Health Worker Model to communicate strategies for asthma self-management and self-advocacy among public housing residents. *Journal of Communication in Healthcare*, 8(2), 95-105.

<https://doi.org/10.1179/1753807615Y.0000000011>

Kim, K., Choi, J. S., Choi, E., Nieman, C. L., Joo, J. H., Lin, F. R., Gitlin, L. N., & Han, H. R.

(2016). Effects of community-based health worker interventions to improve chronic disease management and care among vulnerable populations: A systematic

review. *American Journal of Public Health*, 106(4), e3–e28.

<https://doi.org/10.2105/AJPH.2015.302987>

Hovey, J. D., Hurtado, G., & Seligman, L. D. (2014). Findings for a CBT support group for Latina migrant farmworkers in Western Colorado. *Current Psychology*, 33, 271–281.

<https://doi.org/10.1007/s12144-014-9212-y>

Herndon, A. C., Williams, D., Hall, M., Gay, J. C., Browning, W., Kreth, H., Plemmons, G., Morgan, K., Neeley, M., Ngo, M. L., Clewner-Newman, L., Dalton, E., Griffith, H., Crook, T., & Doupnik, S. K. (2020). Costs and reimbursements for mental health hospitalizations at children's hospitals. *Journal of Hospital Medicine*, 15(12), 727–730.

<https://doi.org/10.12788/jhm.3411>

Hodgkinson, S., Godoy, L., Beers, L. S., & Lewin, A. (2017). Improving mental health access for low-income children and families in the primary care setting. *Pediatrics*, 139(1), e20151175. <https://doi.org/10.1542/peds.2015-1175>

Howell, E., & McFeeters, J. (2008). Children's mental health care: Differences by race/ethnicity in urban/rural areas. *Journal of Health Care for the Poor and Underserved*, 19(1), 237–247. <https://doi.org/10.1353/hpu.2008.0008>

Indeed (2022). Community health worker salary in Fresno, CA. Retrieved August 1<sup>st</sup>, 2022 from

<https://www.indeed.com/career/community-health-worker/salaries/Fresno--CA>

Jonas, J. A., Leu, C. S., & Reznik, M. (2022). A randomized controlled trial of a community health worker delivered home-based asthma intervention to improve pediatric asthma outcomes. *The Journal of asthma: Official Journal of the Association for the Care of Asthma*, 59(2), 395–406. <https://doi.org/10.1080/02770903.2020.1846746>



- Lama, G., Acala, E., & Capitman, J. A. (2017). Poor people are hospitalized three times more for mental health services than the non-poor in Central Valley, California. *Healthcare*, 6(1), 1-12. <https://doi.org/10.3390/healthcare6010005>
- Lessard, L. N., Alcala, E., & Capitman, J. A. (2016). Pollution, poverty, and potentially preventable childhood morbidity in Central California. *The Journal of Pediatrics*, 168, 198-204. <https://doi.org/10.1016/j.jpeds.2015.08.007>
- Logan, R. I., & Castañeda, H. (2020). Addressing health disparities in the rural United States: Advocacy as caregiving among community health workers and Promotores de Salud. *International Journal of Environmental Research and Public Health*, 17(24), 9223. <https://doi.org/10.3390/ijerph17249223>
- Magaña, S., Li, H., Miranda, E., & Paradiso de Sayu, R. (2015). Improving health behaviours of Latina mothers of youths and adults with intellectual and developmental disabilities. *Journal of Intellectual Disability Research: JIDR*, 59(5), 397–410. <https://doi.org/10.1111/jir.12139>
- Marye S. (2021). Health insurance, pediatric asthma, and emergency department usage. *Public Health Nursing*, 38(5), 931–940. <https://doi.org/10.1111/phn.12926>
- Meng, Y. Y., Rull, R., Wilhelm, M., Lombardi, C., Balmes, J., & Ritz, B. (2010). Outdoor air pollution and uncontrolled asthma in the San Joaquin Valley, California. *Journal of Epidemiology and Community Health*, 66(2), 142-147. [10.1136/jech.2009.083576](https://doi.org/10.1136/jech.2009.083576)
- Minkoff-Zern, L. A. (2014). Hunger amidst plenty: Farmworker food insecurity and coping strategies in California. *The International Journal of Justice and Sustainability*, 19(2), 204-219. <https://doi.org/10.1080/13549839.2012.729568>

- National Center for Healthy Housing [NCHH] (2018). Community health workers: Delivering home-based asthma services. Retrieved June 27<sup>th</sup>, 2023 from: [https://nchh.org/resource-library/technical-brief\\_community-health-workers\\_delivering-home-based-asthma-services.pdf](https://nchh.org/resource-library/technical-brief_community-health-workers_delivering-home-based-asthma-services.pdf)
- Ogden, C. L., Carroll, M. D., Fakhouri, T. H., Hales, C. M., Fryar, C. D., Li, X., & Freedman, D. S. (2018). Prevalence of obesity among youths by household income and education level of head of household - United States 2011-2014. *Morbidity and Mortality Weekly Report*, 67(6), 186–189. <https://doi.org/10.15585/mmwr.mm6706a>
- Pender, N. (1982). *Health promotion in nursing practice*. Stamford, Connecticut: Appleton & Lange.
- Rashid, S., Carcel, C., Morpew, T., Amaro, S., & Galant, S. (2014). Effectiveness of a Promotora home visitation program for underserved Hispanic children with asthma. *The Journal of Asthma: Official Journal of the Association for the Care of Asthma*, 52(5), 1-14. [10.3109/02770903.2014.986738](https://doi.org/10.3109/02770903.2014.986738).
- Sadeghi, B., Schaefer, S., Tseregounis, I. E., Aguilera, A. L., Martinez, L., Gomez-Camacho, R., Shaikh, U., Gomez, M. M., Whent, L., & de la Torre, A. (2017). Prevalence and perception of childhood obesity in California's farmworker communities. *Journal of Community Health*, 42(2), 377–384. <https://doi.org/10.1007/s10900-016-0266-7>
- Salvo, D., Parra, D. C., Jáuregui, A., Reséndiz, E., Garcia-Olvera, A., Velazquez, D., Aguilar-Farias, N., Colón-Ramos, U., Hino, A. A., Kohl, H., 3rd, Pratt, M., Ramirez Varela, A., Ramirez-Zea, M., & Rivera, J. A. (2021). Capacity for childhood obesity research in Latin American and US Latino populations: State of the field, challenges, opportunities, and future directions. *Obesity Reviews: An Official Journal of the International*

*Association for the Study of Obesity*, 22 Suppl 3(3), e13244.

<https://doi.org/10.1111/obr.13244>

Syamlal, G., Bhattacharya, A., & Dodd, K. E. (2020). Medical expenditures attributed to asthma and chronic obstructive pulmonary disease among workers — United States, 2011–2015. *Morbidity and Mortality Weekly Report*, 69, 809–814.

[http://dx.doi.org/10.15585/mmwr.mm6926a1external icon](http://dx.doi.org/10.15585/mmwr.mm6926a1external%20icon).

Turcotte, D., Alker, H., Chaves, E., Gore, R., & Woskie, S. (2014). Healthy homes: In-home environmental asthma intervention in a diverse urban community. *American Journal of Public Health*, 104(4), 665-671. <https://doi.org/10.2105/AJPH.2013.301695>

University of San Francisco (n. d.). Mission statement. Accessed August 2<sup>nd</sup>, 2022 from

<https://myusf.usfca.edu/mission-council/mission-statement>

Wenzel S. E. (2012). Asthma phenotypes: the evolution from clinical to molecular approaches. *Nature medicine*, 18(5), 716–725. <https://doi.org/10.1038/nm.2678>

Woods., E., Bhaumik, U., Sommer, S., Chan., E., Tsopelas, L., Fleeger, E., Lorenzi, M., Klements, E., Dickerson, D., Nethersole, S., & Dulin, R. (2016). Community asthma initiative to improve health outcomes and reduce disparities among children with asthma. *Morbidity and Mortality Weekly Report*, 65(1), 11-20.

[http://dx.doi.org/10.15585/mmwr.su6501a4external icon](http://dx.doi.org/10.15585/mmwr.su6501a4external%20icon)

## Appendix A

### Statement of Determination



UNIVERSITY OF  
SAN FRANCISCO

School of Nursing and  
Health Professions

## Doctor of Nursing Practice Statement of Non-Research Determination (SOD) Form

*The SOD should be completed in NURS 7005 and NURS 791E/P or NURS 749/A/E*

### General Information

<b>Last Name:</b>	<u>Newell</u>	<b>First Name:</b>	<u>Julia</u>
<b>CWID Number:</b>	<u>20316293</u>	<b>Semester/Year:</b>	<u>Summer 2022</u>
<b>Course Name &amp; Number:</b>	<u>NURS7005</u>		
<b>Chairperson Name:</b>		<b>Advisor Name:</b>	
<b>Second Reader Name</b>	<u>Jo Ann Loomis</u>		<u>Jo Ann Loomis</u>

### Project Description

#### 1. Title of Project:

Educating Community Health Workers (CHW) on the Management of Pediatric Chronic Diseases

#### 2. Brief Description of Project *(Clearly state the purpose of the project and the problem statement in 250 words or less):*

The purpose of this project is to improve CHW's knowledge of and confidence in implementing home-based interventions for pediatric chronic diseases, including asthma, obesity and related complications, and mental health, for children residing in the Central Valley. Currently, children in the Central Valley, suffer disproportionate rates of asthma and obesity, as well as unaddressed mental health issues relative to the rest of California and the nation. This is largely related to the widespread nature of the agricultural industry and

environmental pollutants in this region, and is compounded by the low-lying geography of the region. Additionally, food insecurity and lack of access to healthy foods, as well as mental health stigma and lack of resources, contribute to the development of these CNDs. Children in the community and their families face inadequate access to health education and appropriate healthcare resources, due to socioeconomic inequities. Thus, CHWs have the potential to bridge this gap, by serving as a liaison between members of the community and healthcare providers. Equipping CHWs with the knowledge and skills to reach this population, will empower members of the community and reduce will ultimately reduce adverse health outcomes for these children.

### **3. AIM Statement: What are you trying to accomplish?**

- Provides clear, well-defined, and concise statement regarding the purpose of the project and describes the specific aim in the IHI format: What?; How much?; For whom?; Where?; By when? The Aim Statement needs to follow the SMART guidelines: specific, measurable, achievable, realistic, and timely.
- To improve (your process) from (baseline)% to (target)%, by (timeframe), among (your specific population)

*Complete the AIM statement by answering the following elements: What?; How much improvement?; For whom?; Where?; By when?:*

By May 2023, this project aims to develop, implement, and evaluate, an educational curriculum for CHWs on chronic non-communicable diseases to increase their competence in teaching home-based management strategies to children and their families. Outcomes will be measured through pre- and post-test assessment surveys. The three primary objectives are: (1) To increase CHW knowledge of home-based interventions for CND management by 30% (by May 2023), (2) achieve a 30% improvement in CHWs' perceived self-efficacy in implementing home-based CND management interventions (by May 2023), and (3) for CHWs to verbalize and teach back two health maintenance activities related to each CND in the modules, by May 2023.

### **4. Brief Description of Intervention (150 words):**

For this project, the intervention will involve developing, planning, and implementing a curriculum on pediatric CND management for CHWs employed by Save the Children. The interventions will involve a variety of teaching modalities, including didactic, break-out room work, and role play, to achieve measurable improvements in CHW knowledge on this area of focus. The curriculum will include background information and statistics on the prevalence and importance of pediatric CNDs in this region, methods to manage and prevent complications of these CNDs at home, strategies for CHWs to address knowledge gaps among members of the community and their families, and ongoing needs assessments and identification of when referrals are appropriate/required.

#### **4a. How will this intervention be implemented?**

- Where will you implement the project?

- This project will be implemented virtually with CHWs during a total of 5 teaching sessions, including an in-person immersion/teaching day in Fresno, CA.
- Attach a letter from the agency with approval of your project.
  - This project is part of a larger project led by Dr. Loomis with Save the Children.
- Who is the focus of the intervention? (Needs to match population [for whom?] in Aim statement.)
  - The focus of the intervention is on community home workers who are a part of Save the Children
- How will you inform stakeholders/participants about the project and the intervention?
  - I will inform participants about the project through email prior to the intervention (introductions, baseline knowledge assessment surveys, pre-course communications) and during the intervention when I implement the curriculum. Stakeholders will also include my classmates (particularly those conducting projects on similar topics) and project chair, who will be kept abreast of the progression of my project, each step of the way.

### **5. Outcome measurements: How will you know that a change is an improvement?**

- Measurement over time is essential to QI. Measures can be outcome, process, or balancing measures. Baseline or benchmark data are needed to show improvement.
- Align your measure with your problem statement and aim.
- Try to define your measure as a numerator/denominator.
- What is the reliability and validity of the measure? Provide any tools that you will use as appendices.
- Describe how you will protect participant confidentiality.

Measures that will be recorded include: baseline knowledge assessments on specific dimensions of pediatric CNDs, as well as post-intervention knowledge assessments. Specifically, as mentioned in my aim statement, I hope to achieve roughly a 30% improvement in CHWs' knowledge and self-efficacy, as they pertain to educating members of the community and their families on pediatric CND management strategies. In order to measure validity, I will use the correlation coefficient method. To protect participant confidentiality, I will ensure to not include any identifying information and to refer to the participants using code names, such as "Participant A." This will ensure that their identities are protected and that my paper contains no clues regarding their identities.



## DNP Statement of Determination

### Evidence-Based Change of Practice Project Checklist\*

The SOD should be completed in NURS 7005 and NURS 791E/P or NURS 749/A/E

**Project Title:**

Educating Community Health Workers (CHW) on the Management of Pediatric Chronic Diseases

<b>Mark an "X" under "Yes" or "No" for each of the following statements:</b>	<b>Yes</b>	<b>No</b>
The aim of the project is to improve the process or delivery of care with established/ accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.	X	
The specific aim is to improve performance on a specific service or program and <b>is a part of usual care</b> . <u>All</u> participants will receive standard of care.	X	
The project is <b>not</b> designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control). The project does <b>not</b> follow a protocol that overrides clinical decision-making.	X	
The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does <b>not</b> develop paradigms or untested methods or new untested standards.	X	
The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does <b>not</b> seek to test an intervention that is beyond current science and experience.	X	
The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.	X	
The project has <b>no</b> funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.	X	
The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., <b>not</b> a personal research project that is dependent upon the voluntary participation of colleagues, students and/ or patients.	X	
If there is an intent to, or possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: <i>"This project was undertaken as an Evidence-based change of practice project at X hospital or agency and as such was not formally supervised by the Institutional Review Board."</i>	X	

#### **Answer Key:**

- If the answer to all of these items is "Yes", the project can be considered an evidence-based activity that does not meet the definition of research. IRB review is not required. Keep a copy of this checklist in your files.
- If the answer to any of these questions is "No", you must submit for IRB approval.

\*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used: <http://answers.hhs.gov/ohrp/categories/1569>



UNIVERSITY OF  
SAN FRANCISCO

School of Nursing and  
Health Professions

## DNP Statement of Determination Evidence-Based Change of Practice Project Checklist Outcome

*The SOD should be completed in NURS 7005 and NURS 791E/P or NURS 749/A/E*

This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). **Student may proceed with implementation.**

This project involves research with human subjects and **must be submitted for IRB approval before project activity can commence.**

### Comments:

<b>Student Last Name:</b>	Newell	<b>Student First Name:</b>	Julia
	_____		_____
<b>Student Signature:</b>	JLN	<b>Date:</b>	7/3/2022
	_____		_____
<b>Chairperson Name:</b>	Jo Ann Loomis		
	_____		
<b>Chairperson Signature:</b>		<b>Date:</b>	
	_____		_____
<b>Second Reader Name:</b>		<b>Date:</b>	
	_____		_____
<b>Second Reader Signature:</b>			
	_____		_____
<b>DNP SOD Review Committee Member Name:</b>			
	_____		
<b>DNP SOD Review Committee Member Signature:</b>		<b>Date:</b>	
	_____		_____



## Appendix B

### Letter of Support from Agency

**From:** Mitchell, SaRonnn smitchell@savechildren.org   
**Subject:** Save the Children and USF Partnership  
**Date:** October 31, 2021 at 5:32 PM  
**To:** Jo Ann Loomis (jaloomis2@usfca.edu) jaloomis2@usfca.edu



To Whom it May Concern:

It gives me great pleasure to be in partnership with USF and its students to bring much needed support and training to Save the Children's partner staff and the communities we serve. Our new and bold endeavor of building a Community Health Worker program, for example, will not only support families with understanding the importance of identifying a medical home, but will support our Early Childhood Coordinators/home visitors with a variety of interventions that will improve the overall quality of life and productivity for the communities they serve.

Since 2012, Save the Children and University of San Francisco have worked together in partnership to promote positive health outcomes for families and children in California's Central Valley. The USF students have provided health education and training for Early Childhood Coordinators/home visitors on topics such as breastfeeding education, oral health, child and family nutrition, and the effects of toxic stress and violence on children. The USF students were able to accompany the home visitors to provide nursing support with early childhood developmental screenings. These home visits were highlights of the experiences for USF students with the intention of providing them with deeper insight into some of the health needs of the families we serve, in rural America. This learning experience was vast in its approach as it included meeting program families and working with them on a one-to-one basis helped teach the need and create the 'heart' for many of the students to consider living and working in rural California. Working with the early childhood coordinators was an important part of these experiences, as they provided insight into the community needs to the USF students who many live and attend school in urban San Francisco.

Today, as we continue our work together, we will co-design a Community Health Worker training program for our local Early Childhood Coordinators/home visitors. Like our Early Childhood Coordinator, Community Health Workers literally meet families where they live, and see their economic, physical, and related mental health struggles on a daily basis. The Early Childhood Coordinators will be strategically positioned to provide support for the whole person as they assess the wide array of environmental, economic, and social determinants of health for this population. They visit with parents in their homes and see first-hand the effects of poverty, language barriers, and other social disadvantages that affect physical and mental health. This educational program will be designed to equip and enlarge the skills, attitudes, and behaviors of the early childhood coordinators as CHW to assess the whole person, in respect for the individual circumstances and needs of parents and families in the community, especially those families who experience traumatic and adverse determinants of health.

We are committed to creating new approaches to support systemic and collaborative community health-based initiatives that promote among other things, optimal birth outcomes and positive family and child outcomes. Furthermore, our early childhood coordinators will be better equipped during regular home visits to support families. Early Childhood Coordinators will provide families with health-related knowledge and tools to be better advocates for themselves as parents and for their children.

Again, I'm excited and look forward to working with USF and the USF students, so that these opportunities can continue to benefit USF students, Save the Children's partner staff but most importantly benefit the many families and children in the Central Valley our collective efforts will touch.

Warmly,  
SaRonn Mitchell

**SaRonn Mitchell**  
SENIOR SPECIALIST, EARLY CHILDHOOD



**Save the Children.**

CA & WA—Rural Education  
Mobile: 559•313•7070

## Appendix C

## Evaluation Table

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
Barnett, M. L., Gonzalez, A., Miranda, J., Chavira, D., & Lau, A. (2017). Mobilizing community health workers to address mental health disparities for underserved populations: A systematic review. <i>Administration and Policy in Mental Health and Mental Health Services Research</i> , 45, 195-211. <a href="https://doi.org/10.1007/s10488-017-0815-0">https://doi.org/10.1007/s10488-017-0815-0</a> [Quantitative Study]							
<p><b>Purpose:</b> To assess and characterize the characteristics of community health workers (CHWs) and their role in the delivery of mental health services to low-income communities. Additionally, the goal was to assess the effectiveness of CHW-led mental health interventions</p>	<p><b>Method:</b> -Systematic Review</p>	<p><b>Sample:</b> N = 43 included studies which were RCTs, quasi-experimental studies,</p>	<p>-Background characteristics of CHWs (race/ethnicity, education level) -Interventions by CHWs in the studies (EBT, novel, community informed interventions) -Outcomes from RCTs (were there statistically significant improvements?)</p>	<p>-Researchers sought to compare interventions conducted in low- and middle income countries, relative to interventions conducted in the United States. -Outcomes included Patient-level mental health outcomes as the primary outcome</p>	<p>-Chi-squared analysis were used to analyze the differences between trials conducted in the US vs. LMICs for interventions, study design, clients served, and implementation support</p>	<p>The most common mental health conditions targeted included depression, psychological trauma, anxiety, and substance use. -CHWs most commonly Promotoras with a minimum of a high-school level degree. Importantly, more than 66% of randomized controlled trials with CHW</p>	<p><b>Level of Evidence (Critical Appraisal Score):</b> Level IIC/B (Good)</p> <p><b>Worth to Practice:</b> -Describes the educational and demographic characteristics of CHWs</p> <p><b>Strengths:</b> -This study contained a moderate number of high quality studies, including RCTs</p> <p><b>Weaknesses:</b> -Because the systematic review included studies that were quasi-experimental and some pre- and post-test design, the results are inherently less high quality -Studies did not focus on a theme of mental health conditions, but rather</p>

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
						<p>models of mental health delivery, demonstrated positive outcomes for participants in underserved communities, relative to controls.</p>	<p>a broad range of conditions</p> <p><b>Conclusions:</b>                      -CHWs have been utilized to help treat a broad range of mental health conditions including depression, anxiety, trauma, and behavioral disorders                      -CHWs in the included studies were typically the sole treatment providers                      -In the RCT, modest improvements in mental health outcomes were achieved</p> <p><b>Recommendations:</b>                      -Further RCTs need to be funded and carried out to assess the true impact of CHWs on implementing mental health services in low-income US communities.</p>

Definition of abbreviations: CHW = community health worker; EBT = Evidence-based training

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
Bender, M. S., Nader, P. R., Kennedy, C., & Gahagan, S. (2013). A culturally appropriate intervention to improve health behaviors in Hispanic mother-child dyads. <i>Childhood Obesity</i> , 9(2), 157–163. <a href="https://doi.org/10.1089/chi.2012.0118">https://doi.org/10.1089/chi.2012.0118</a>							
<p>Researchers utilized a community engagement approach to assess whether a 9-month intervention to enhance health behaviors among Latinx mother-child dyads was effective</p>	<p><b>Design:</b> A one group pretest, post-test design was implemented to assess differences in outcome variables from baseline to post-intervention</p>	<p><b>Sample:</b> Low income Hispanic mothers (18-35 y/o) with children 3-5 y/o, total sample size of N=33 mother child dyads</p> <p><b>Setting:</b> Southern California Urban health center</p>	<p><b>IV:</b> Via Saludable, a 2-phase intervention delivered over 9 months -involved promotora led activities including trips to the grocery stores, physical activity, and cooking classes</p> <p><b>DV:</b> Objective measures of BMI (weight/height) , SSB consumption, step counts</p>	<p>-Health behavior questionnaire or HBQ was used to evaluate participants' beverage intake amounts – was reported on 24-hour recall -Pedometers: measured mothers' step counts -Demographic data of mom and child, including height/weight</p>	<p>-Descriptive statistics were used for all variables -Linear mixed modeling for children's' beverage consumption -McNemar Chi-squared test to analyze changes in categorical variables</p>	<p>-SSB consumption, post-intervention significantly decreased for soda and sugary drinks - Consumption of water significantly increased -Maternal BMI decreased, while childrens' BMIs remained stable -Maternal step counts increased significantly</p>	<p><b>Level of Evidence (Critical Appraisal Score): Level II / B – quasi-experimental + GOOD quality</b></p> <p><b>Worth to Practice:</b> This study shows the potential of a culturally informed, promotora-led health behavior intervention in improving multiple dimensions of obesity-related behaviors, including food choice and physical activity</p> <p><b>Strengths:</b> -utilized a community engagement approach, met participants where they were at -used reasonable outcome measures</p> <p><b>Weaknesses:</b> -Relatively small sample size -No control group</p>

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
							<p><b>Feasibility:</b> The results suggested that the intervention was highly feasible and generalizable</p> <p><b>Conclusions:</b> Results suggested that the intervention was feasible and water consumption improved; Maternal BMI decreased and parents engaged in healthy behaviors which can model those same behaviors for children</p> <p><b>Recommendations:</b> Further studies should focus on follow up of the participants</p>

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
Campbell, J. D., Brooks, M., Hosokawa, P., Robinson, J., Song, L., & Krieger, J. (2015). Community health worker home visits for Medicaid-enrolled children with asthma: Effects on asthma outcomes and costs. <i>American Journal of Public Health, 105</i> (11), 2366-2372. <a href="https://doi.org/10.2105/AJPH.2015.302685">https://doi.org/10.2105/AJPH.2015.302685</a> [Quantitative Study]							
Purpose was to see how CHW-led home visits would reduce utilization of urgent care and whether this intervention would result in more symptom-free days	<b>Design/Methods:</b> Randomized parallel group design to see if Healthy Homes program could improve various dimensions of asthma control in participants	<b>Sample:</b> N = 373 participants - 182 in intervention and 191 in control group, children aged 3-17 years old with provider diagnosed asthma, enrolled in 1 of 2 Medicaid plans  <b>Setting:</b> King county	<b>IV:</b> 5 home visits led by CHWs, involving education, support, and healthcare service coordination; additional interventions included telephone support, provision of cleaning supplies to optimize the home, and knowledge assessments  <b>DV(s):</b> asthma symptom-free days during the 2	Asthma symptom-free days during the 2 weeks prior, -- -Pediatric Asthma Caregiver Quality of Life Scale score -Self-reported asthma-related urgent health service use during the past 12 months -Secondary outcomes = asthma attack frequency, days with rescue medication use, and activity limited by	-Baseline differences across groups were done using T or chi-squared tests and paired T or McNemar tests  -Analysis was done on intention-to-treat basis  -Cost analyses were done using a cost allocation method	-In the intervention group, there were significant improvements in asthma free days (2.1 days over 2 weeks) and improvement in caretaker quality of life (0.4 units)	<b>Level of Evidence</b> Level I / B – RCT, Good quality  <b>Worth to Practice</b> Shows the potential of a home-based model in improving quality of life for asthma patients and their family members  <b>Strengths</b> -RCT design, adequate sample size, patient-centered outcomes, low dropout rate <b>Weaknesses</b> Participants were not blinded to the intervention, due to the nature of the experiment -Some measures did rely on self-report, and thus were subject to biases  <b>Conclusions +</b>

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
			weeks prior, Pediatric Asthma Caregiver Quality of Life Scale score, self-reported asthma-related urgent health service use during the past 12 months	asthma			<p><b>Recommendations:</b> Home visits by CHWs are an impactful, feasible alternative to traditional healthcare/community based settings. They can help identify the root causes for issues including lack of home optimization.</p> <p>Recommendations are for future studies to streamline the home visit process and include a larger number of participants.</p>



Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
Cloutier, M. M., Wiley, J. F., Trapp, C., Haile, J., & Gorin, A. A. (2018). The childcare center: An untapped opportunity to engage and educate families in healthy behaviors. <i>Journal of Racial and Ethnic Health Disparities</i> , 5(2), 430–438. <a href="https://doi.org/10.1007/s40615-017-0386-5">https://doi.org/10.1007/s40615-017-0386-5</a> [Quantitative Study]							
<p><b>Purpose:</b> To develop and implement a CHW-led obesity prevention program for caregivers of 2-5-year-old children, and analyze the corresponding effects on child BMI and parents' appraisals of the program</p>	<p><b>Method:</b> Mixed-methods approach</p>	<p><b>Sample:</b> N = 354 caregivers of low income children ages 2-5 years' old</p> <p><b>Setting:</b> Connecticut Childcare Collaborative in Hartford, CT</p>	<p><b>-IV:</b> A brief intervention (1-3 min) focusing on 1 of 4 target areas of obesity prevention (milk, sugar-sweetened beverages, screen time, and physical activity). Intervention was bilingual</p> <p><b>-DV:</b> Height and weight of all children at the beginning and end of the study</p> <p>-Focus groups on the modules in each intervention were optional for parents to discuss</p>	<p>-Child BMI before the intervention</p> <p>-Child BMI after the intervention</p> <p>-Staff endorsement of the intervention</p>	<p>-Focus groups were taped, transcribed, and analyzed</p> <p>-Descriptive statistics were used to describe the demographics and baseline behaviors for the parents</p>	<p>-37.4% of children in 2013 were overweight/obese</p> <p>-35.9% of children in 2014 were overweight/obese</p> <p>-Almost half the participants / caregivers also participated in small group sessions/home visits</p> <p>-Caregivers provided positive appraisals of CHWs and their efforts</p>	<p><b>Level of Evidence (Critical Appraisal Score): Level II / B – Quasi-experimental/Good quality</b></p> <p><b>Worth to Practice:</b> shows the value of brief, targeted interventions for caregivers and their children, and that these can help engage families, especially when led by CHWs or Promotoras</p> <p><b>Strengths:</b> Had a relatively large sample size (N = 354 caregivers); looked at multiple behavioral dimensions of obesity (physical activity, intake, screen time); interventions were designed in collaboration with the family</p> <p><b>Weaknesses:</b> Mixed-methods, so relied partially on qualitative</p>

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
			content and provide their feedback				<p>data, making the results less robust and generalizable; relied on caregiver report</p> <p><b>Conclusions/Recommendations:</b></p> <p>-Expand the intervention to include more detailed and lengthy versions of the brief intervention, to get to the root cause of behaviors</p>

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
Crespo, N. C., Elder, J. P., Ayala, G. X., Slymen, D. J., Campbell, N. R., Sallis, J. F., McKenzie, T. L., Baquero, B., & Arredondo, E. M. (2012). Results of a multi-level intervention to prevent and control childhood obesity among Latino children: the Aventuras Para Niños Study. <i>Annals of Behavioral Medicine: A Publication of the Society of Behavioral Medicine</i> , 43(1), 84–100. <a href="https://doi.org/10.1007/s12160-011-9332-7">https://doi.org/10.1007/s12160-011-9332-7</a>							
<b>[Quantitative Study]</b>							
<b>Purpose:</b> To assess the impact of a Promotor-led intervention to increase healthy eating behaviors and physical activity among Latinx youth.	<b>Method:</b> Aventuras = 3-year, 2x2 factorial design, randomized community controlled trial, randomizing participants to four separate conditions: family only, community only, family + community, and a control condition  -Health Belief Model + Social	<b>Sample:</b> N = 13 Elementary schools -n = 808 Latinx Parent-Child Dyads  <b>Setting:</b> South Bay Region of San Diego County	<b>-IV:</b> One of four conditions, involving a curriculum delivered by Promotoras that emphasized physical activity, lunch choices, participation from local partners  <b>-DV:</b> Child and parent BMI, childrens' physical activity + sports participation, dietary intake, screen time, parental	-BMI Z-scores -Physical Activity -Dietary intake -Sports Participation -Screen Time	-Analysis was based on intention-to-treat model -Outcomes were examined using mixed-effects models -Mediators were analyzed using three regression models -Power calculation at years 1, 2, and 3	-While there were no statistically significant impacts of the intervention in any of the conditions on BMI, the family condition had a significant impact on obesity-related behaviors, mediated by parent monitoring.	<b>Level of Evidence (Critical Appraisal Score): Level I / A (RCT, high quality)</b>  <b>Worth to Practice:</b> Many important environmental improvements were reached because of the study – including active participation by school cafeteria staff, participation by community partners (restaurants and grocery stores)  <b>Strengths:</b> Having 4 separate conditions, including a control, allows a deeper understanding of the dynamic interplay between home, school, family, and health professional -Large sample size (N = 808 child-parent dyads) -Many different statistical methods and variables were examined

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
	Cognitive Theory		support, family meals, behavioral strategies for fat and fiber				<p><b>Weaknesses:</b>            -Parent self-report survey measures (can be subject to bias)            -Some other measures could be subjective vs objective, and hence, less reliable</p> <p><b>Conclusions:</b>            This promotora led intervention had important positive effects on behavioral elements of child obesity, especially in the family-only condition, suggesting promise for CHW-led home-based interventions</p> <p><b>Recommendations:</b>            -Further hone in on the family-only condition and utilize principles from this setting for future studies</p>

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score)/ Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
Falbe, J., Cadiz, A. A., Tantoco, N. K., Thompson, H. R., & Madsen, K. A. (2015). Active and healthy families: A randomized controlled trial of a culturally tailored obesity intervention for Latino children. <i>Academic Pediatrics</i> , 15(4), 386–395. <a href="https://doi.org/10.1016/j.acap.2015.02.004">https://doi.org/10.1016/j.acap.2015.02.004</a> <b>[Quantitative Study]</b>							
<b>Purpose:</b> to test the influence of family-centered, culturally informed intervention (Active and Healthy Families, or AHF) to address obesity among Latinx children	<b>Design/Method:</b> Balanced (1:1), unblinded, multi-site, parallel-group, RCT -Registered dietitians, MDs, and Promotoras, made up the team delivering the intervention	<b>Sample:</b> N = 55  Setting: 2 Federally-Qualified Health Centers (FQHCs) in Contra Costa County, CA  <b>Study characteristics:</b> Participants were Spanish-speaking, had a child 5-12 years old, with a BMI in the 85 <sup>th</sup> percentile	<b>IV:</b> 10-week AHF intervention with bi-weekly sessions delivered by Promotoras, RDs, and MDs -Sessions included topics such as parenting, screen time, sugary beverages, exercise, and stress  <b>DVs:</b> Child + Parent BMI, triglycerides, blood pressure, fasting lipids, insulin, and HGB A1C	-Baseline assessments of aforementioned dependent variables were done, and then were re-measured at the 10-week mark, after the intervention	-Two-sample T-tests and linear regression models were used to examine differences at baseline in experimental vs control groups -Multivariate linear regression was used to evaluate demographic characteristics	-Child BMI at 10-weeks in the intervention group, decreased 0.50, and increased 0.32 in the control group -Children in intervention group exhibited improvements in BMI Z-scores and triglycerides as well -There were no significant changes in blood pressure or fasting blood glucose -No significant weight changes for parents	<b>Level of Evidence (Critical Appraisal Score):</b> Level I / A, high quality  <b>Worth to Practice:</b> Study shows the value of Promotoras in aiding a team of other HCPs (RDs, MDs) in addressing barriers to care (language, cultural)  <b>Strengths:</b> Had a control group, measured multiple dimensions of obesity (vs. just BMI alone)  <b>Weaknesses:</b> Because RDs and MDS worked with the Promotoras, the impact of the CHWs cannot be reliably disaggregated from other health professionals

							<p>-Missing data from control groups</p> <p><b>Conclusions:</b> The evidence from this study suggests that the AHF intervention, led in a community-health based manner, by Promotoras, can have statistically significant improvements on reducing child BMI and improving health status</p> <p><b>Recommendations:</b> Interventions should be replicated and tested with larger sample sizes, with longer follow up periods.</p>
--	--	--	--	--	--	--	---

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
Garcia, C., Hermann, D., Bartels, A., Matamoros, P., Dick-Olson, L., & Guerra de Patino, J. (2012). Development of project wings home visits, a mental health intervention for Latino families using community-based participatory research. <i>Health Promotion Practice</i> , 13(6), 755–762. <a href="https://doi.org/10.1177/1524839911404224">https://doi.org/10.1177/1524839911404224</a> [Pilot/Non-Experimental Study]							
<b>Purpose:</b> To relay the steps taken to develop Project Angel Wings, a community-based mental health promotion intervention for Latinx adolescents	<b>Design:</b> The present study is a non-experimental study to provide a description of a program that was implemented in a Minnesota Public School, in collaboration with various community agencies	<b>Sample:</b> 60 Latinx parents and 90 youth from the school attended the educational workshop  <b>Setting:</b> A public school in St. Paul Minnesota, with a collaborative partnership between a community-based clinic and the University of Minnesota	As this study is more descriptive in nature, and non-experimental, there are no independent or dependent variables	Major principles include: -Community as a unit of identity -Builds on strengths and resources in the community -Facilitates collaborative, equitable partnerships in all phases of research -Promotes co-learning among all partners -Emphasizes relevance of public health problems and ecologic perspectives -Emphasizes the	Due to the nature of this study, no data analysis took place, as it is non-experimental and simply serves as a program evaluation	N/A, preliminary program outline/recommendations for future studies.	<b>Level of Evidence (Critical Appraisal Score):</b> Level V-B: Non-research evidence, program evaluation, good quality  <b>Worth to Practice:</b> This study provides a model or foundation for future programs to address Latinx mental health issues; It also gives a rich-community focus framework  <b>Strengths:</b> Outlines 9 primary principles by which to models future programs, rooted in evidence-based practice and empirically validated tools  <b>Weaknesses:</b> As it is non-experimental, it doesn't provide any real findings, but rather a framework by which to base future programs

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
				social determinants of health and disease			<p><b>Conclusions:</b> Project Wings is a feasible program that could be implemented to address a variety of mental health needs among underserved community members, led by an interdisciplinary staff that includes CHWs.</p> <p><b>Recommendations:</b> The elements of the educational program, which place CHWs at the forefront of the intervention, are excellent. However, to validate the program, a quantitative study, preferably with a control group, needs to be implemented</p>



Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions )	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
Gutierrez Kapheim, M., Ramsay, J., Schwindt, T., & Margellos-Anast, H. (2015). Utilizing the Community Health Worker Model to communicate strategies for asthma self-management and self-advocacy among public housing residents. <i>Journal of Communication in Healthcare</i> , 8(2), 95-105. <a href="https://doi.org/10.1179/1753807615Y.0000000011">https://doi.org/10.1179/1753807615Y.0000000011</a> [Quantitative Study]							
<p><b>Purpose:</b> To test the impacts of a one-year CHW-led asthma and healthy homes project on asthma symptoms, emergency healthcare utilization, and caregiver quality of life</p>	<p><b>Design/Method:</b> -Pre-test post-test design</p>	<p><b>Sample:</b> N=59 children, 95% African American, across six public housing developments</p> <p><b>Setting:</b> Six public housing developments in Urban Chicago</p>	<p><b>-IV:</b> 6 home-visits led by CHWs, during a year-long study that involved pathophysiology, asthma symptom recognition, proper medication use, and avoidance of triggers</p> <p><b>-DV:</b> asthma symptoms, healthcare</p>	<p>-Asthma symptoms: specifically, in regards to nighttime symptoms, rescue medication use, and daytime symptoms</p> <p>-Asthma-related healthcare utilization (ED visits, hospitalizations, urgent care)</p> <p>-Caregiver asthma-related quality of life</p>	<p>-Non-parametric Wilcoxon sign-ranked test to assess statistical significance for observed changes</p>	<p>-Total urgent care visits reduced significantly from baseline to follow up (by 27%)</p> <p>-Daytime and nighttime asthma symptoms were significantly reduced</p>	<p><b>Level of Evidence (Critical Appraisal Score):</b> Level II / B (Quasiexperimental, Good Quality)</p> <p><b>Worth to Practice + Strengths:</b> The study focused not only on individualized education for families but also the case management aspects of asthma care, which are a critical link in facilitating optimal patient outcomes</p> <p><b>Weaknesses:</b> -Relatively small sample size -No control group -Not all patients had the same severity of asthma disease burden at baseline, allowing for a great deal of variability in symptom burden</p> <p><b>Conclusions:</b> Overall, through a series of CHW led home visits, the study achieved its main objectives, which were</p>

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions )	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
			utilization, caregiver quality of life				greater symptoms control for children with asthma, and lower emergency healthcare utilization <b>Recommendations:</b> Sample size should be expanded and individual level variables, specifically, asthma symptoms severity level should be controlled for

Definition of Abbreviations:

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
Hovey, J. D., Hurtado, G., & Seligman, L. D. (2014). Findings for a CBT support group for Latina migrant farmworkers in Western Colorado. <i>Current Psychology</i> , 33, 271-281. <a href="https://doi.org/10.1007/s12144-014-9212-y">https://doi.org/10.1007/s12144-014-9212-y</a> [Quantitative study]							
<p><b>Purpose:</b> Examine the impacts of a culturally-responsive, Promotora-supported cognitive-behavioral (CBT) support group for migrant farm workers, on mental health outcomes, specifically, depression</p>	<p><b>Design:</b> Pre-test Post-test design</p>	<p><b>Sample:</b> N = 6 Latina migrant farm workers with elevated levels of depression <b>Setting:</b> Montrose area of Western Colorado</p>	<p><b>IV:</b> 6-session CBT support group intervention led by mental health professionals and Promotoras  <b>DV:</b> Depression, anxiety, self-esteem, stress levels, and hopelessness</p>	<p>Dependent variables were measured through the: Migrant Farm Worker Stress inventory, Personality Assessment Inventory Anxiety Scale, the Beck Hopelessness Scale, and the Rosenberg Self-Esteem Inventory.</p>	<p>-Wilcoxon Ranked Signs tests -Descriptive Statistics -Cohen's effect sizes</p>	<p>-Participant stress levels and depressive symptoms were significantly reduced at post-treatment (specifically, 83% of the women in the study achieved clinically significant changes)</p>	<p><b>Level of Evidence (Critical Appraisal Score):</b> Level II / B (quasi-experimental / good)</p> <p><b>Worth to Practice:</b> A collaborative, community setting that emphasizes an evidence-based approach (CBT) and utilizes the help of Promotoras to reach the population in a linguistically and culturally appropriate fashion, has lots of potential</p> <p><b>Strengths:</b> -A multifaceted approach was used with the assistance of both a licensed mental health professional and Promotora</p> <p><b>Weaknesses:</b> -Very small sample size -No control group -Limited generalizability</p>

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
							<p><b>Conclusions:</b> Symptom reduction suggests increases in migrant farmworker self-esteem and decreases in anxiety at follow up from this 6-session community based CBT group intervention</p> <p><b>Recommendations:</b> A larger sample size should be utilized to test the feasibility and generalizability of the results</p>

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
Jonas, J. A., Leu, C. S., & Reznik, M. (2022). A randomized controlled trial of a community health worker delivered home-based asthma intervention to improve pediatric asthma outcomes. <i>The Journal of asthma: Official Journal of the Association for the Care of Asthma</i> , 59(2), 395–406. <a href="https://doi.org/10.1080/02770903.2020.1846746">https://doi.org/10.1080/02770903.2020.1846746</a>							
To assess the effects of a CHW-led asthma education program on symptomatology of patients (pediatric) with persistent asthma	<b>Design:</b> Randomized controlled trial  The intervention involves eight hours of content, including: asthma signs and symptoms, medication and medication administration, symptom prevention including trigger reduction, asthma action plans, and techniques for communicating asthma-related needs. CHWs underwent a 6-week training course prior to implementing home visits and educational content to families.	<b>Sample:</b> N = 151 children ages 2-9 years old  <b>Setting:</b> Recruitment was from 2 pediatric outpatient centers and a hospital ED in New York	<b>IV:</b> Implementation of the Wee Wheezers Asthma Education Program  <b>DV:</b> at 3, 6, 9, and 12 months, participants' caregiver asthma reported days were measured. Also measured were healthcare utilization, caregivers' asthma knowledge,	-Asthma symptom days -MDI spacer techniques -Perceptions of environmental triggers -Knowledge of proper medication use -Utilization of emergency healthcare settings -Caregivers' illness representation was assessed using the Asthma Illness Representation Scale, or AIRS	-Descriptive statistics were used for all variables -Intention to treat principles	-At 9 and 12 months, reduction in asthma symptom days was significant for those in the intervention group -There were improvements in MDI spacer technique and knowledge -Improvements in MDI habits at 3 and 6 months	<b>Level of Evidence (Critical Appraisal Score):</b> Level I (RCT) / B (Good quality)  <b>Worth to Practice:</b> The reduction in asthma symptom days points to the potential value of the intervention across space and time <b>Strengths:</b> -Utilization of a control group <b>Weaknesses:</b> -Subjects could not be blinded to group assignment -Data were based in caregiver self-report <b>Conclusions:</b> The results from this study point to the value of a CHW-led home asthma intervention, across a 9-12-month period, both in the domain of symptom control and mastery of medication use <b>Recommendations:</b>

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
			home triggers, and management techniques				Further studies should emphasize long-term follow up and the maintenance of habits surrounding asthma control

Definition of abbreviations:

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
Magaña, S., Li, H., Miranda, E., & Paradiso de Sayu, R. (2015). Improving health behaviours of Latina mothers of youths and adults with intellectual and developmental disabilities. <i>Journal of Intellectual Disability Research: JIDR</i> , 59(5), 397–410. <a href="https://doi.org/10.1111/jir.12139">https://doi.org/10.1111/jir.12139</a>							
A randomized controlled trial to improve health behaviors of Latina mothers of youths and adults diagnosed with intellectual and developmental disabilities	<b>Design:</b> Randomized controlled trial with a 3-month follow up period	<b>Sample:</b> N= 90, n = 42 in intervention group, and n = 48 in control group of Latina mothers <b>Setting:</b> Exact region not specified by researchers	<b>IV:</b> Eight home visits conducted by Promotoras over a 2-3-month period <b>DV:</b> -Health Related Self-efficacy -Positive health behaviors (Family Habits Scale) -Depressive symptoms (Center for Epidemiologic Studies Depression Scale) -Caregiver Burden	-Health Related Self-efficacy -Positive health behaviors (Family Habits Scale) -Depressive symptoms (Center for Epidemiologic Studies Depression Scale) -Caregiver Burden	-Paired Samples T-tests for intervention and control groups -Paired Samples T-tests to generate means and standard deviations -Effect sizes using Morris & DeShon's (2002) method -Outcome variables + time were analyzed using RM-ANCOVA	-Significant within group over time improvements on health-related self-efficacy, exercise behaviors, nutrition behaviors, reduction in depressive symptoms, and lessened caregiver burden	<b>Level of Evidence (Critical Appraisal Score):</b> Level I / B (RCT/Good quality)  <b>Worth to Practice:</b> Results indicated that at the 9 and 12-month marks, for those in the intervention group, compared to the control, there was a 2-day improvement in symptom days. Further, caregivers' asthma knowledge significantly improved at all follow-up intervals.  <b>Strengths:</b> -Use of a control group -Moderately large (N=90) sample size <b>Weaknesses:</b> -Double blinding was not done as it was not feasible given the nature of the study

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
							<p>-Self-reporting of depression and health behaviors is always subject to bias and thus not 100% reliable</p> <p><b>Conclusions + Recommendations:</b>  A CHW-led intervention can have positive impacts on health behaviors and self-efficacy of Latina mothers of children and adults with intellectual and developmental disabilities</p>



Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
Turcotte, D., Alker, H., Chaves, E., Gore, R., & Woskie, S. (2014). Healthy homes: In-home environmental asthma intervention in a diverse urban community. <i>American Journal of Public Health, 104</i> (4), 665-671. <a href="https://doi.org/10.2105/AJPH.2013.301695">https://doi.org/10.2105/AJPH.2013.301695</a> [Quantitative study]							
The purpose was to assess the impacts of a comprehensive health and environmental assessment and intervention on health outcomes for children living with asthma in the Boston area.	<b>Design:</b> Observational study, health of children was assessed prior to and 11-12 months after completing the study	<b>Sample:</b> n = 170 children living with Asthma in N = 116 households <b>Setting:</b> The Urban Boston Area	<b>IV:</b> 4-9 home visits founded on the Healthy Home Intervention Program, plus a customized remediation plan over 1-6 home visits, led by home health workers (or CHWs) <b>DV:</b> -Asthma Status -Environmental condition of the home -Healthcare costs savings	-Asthma Status – measured using the Children’s Health Survey for Asthma (CHSA) -Environmental condition of the home (general outdoor allergens and safety survey) -Healthcare costs savings (data obtained from the Massachusetts DPH for hospitalizations for asthma usage)	-CHSA scores were computed using the SAS + Wilcoxon rank sum tests were used to analyze change in CHSA scores  -Post-data collection analysis was done to classify participants into high-risk or non-high risk categories	-Results suggested significant improvements in CHSA scores, less emergency health service utilization, and reduced rescue medication use	<b>Level of Evidence (Critical Appraisal Score):</b> Level II / B (Quasi-experimental / Good quality)  <b>Worth to Practice:</b> Positive health outcomes can not only mean improved quality of life for patients but also, less healthcare costs, due to lower healthcare utilization  <b>Strengths:</b> -Relatively large sample size (N = 170 children) -Medication use is a robust, objective, and important indicator of asthma status, which is something this study measured.  <b>Weaknesses:</b> -Lack of a control group -Asthma can improve related to

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
							<p>other unknown variables naturally  -Questionnaires were not validated against medical records</p> <p><b>Conclusions + Recommendations:</b> Results suggested significant improvements in CHSA scores, less emergency health service utilization, and reduced rescue medication use; Future studies should use control groups</p>

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
Woods., E., Bhaumik, U., Sommer, S., Chan., E., Tsopelas, L., Fleeger, E., Lorenzi, M., Klements, E., Dickerson, D., Nethersole, S., & Dulin, R. (2016). Community asthma initiative to improve health outcomes and reduce disparities among children with asthma. <i>Morbidity and Mortality Weekly Report</i> , 65(1), 11-20. <a href="http://dx.doi.org/10.15585/mmwr.su6501a4external_icon">http://dx.doi.org/10.15585/mmwr.su6501a4external icon</a> [Quantitative study]							
Community Asthma Initiative for low-income, predominantly Black and Latinx children living in Boston, Massachusetts. This involved hiring multicultural, bilingual (in Spanish) CHWs to provide home visits and comprehensive case management to children and their families	<b>Design:</b> Longitudinal study, quasi-experimental study	<b>Sample:</b> N = 908 Children, ages 2-18 years old with poorly controlled asthma + a control group in other similar zip codes throughout the Boston Area  <b>Setting:</b> Greater Boston Area	<b>IV:</b> A 12-month long CHW-led, culturally sensitive individualized asthma education, care coordination and home visits  <b>DV:</b> asthma-related hospitalizations, ED visits, missed school days, days of limited physical activity, and parent/caregiver missed workdays	-Data were collected via face-to-face interviews with parents, or via telephone conversations -Most variables were measured numerically	-ED events, missed school days, limitation of physical activity was treated as either continuous or dichotomous variables -McNemar's test was used for dichotomous variables -Paired t-tests were used for continuous variables	-At the 1-year mark, there were significant decreases in asthma-related hospitalizations, ED visits, missed school days, days of limited physical activity, and parent/caregiver missed workdays	<b>Level of Evidence (Critical Appraisal Score):</b> Level I / A (experimental with control group, and high quality study)  <b>Worth to Practice:</b> Showed a broad range of improvements in social, occupational, and medical functioning among children because of CHW-led, culturally sensitive individualized asthma education, care coordination and home visits  <b>Strengths:</b> -This study showed a broad range of primary outcomes including not just symptom control, but social and occupational functioning related to asthma management -Diverse sample

Purpose of Article or Review	Design / Method / Conceptual Framework	Sample / Setting	Major Variables Studied (and their Definitions)	Measurement of Major Variables	Data Analysis	Study Findings	Level of Evidence (Critical Appraisal Score) / Worth to Practice / Strengths and Weaknesses / Feasibility / Conclusion(s) / Recommendation(s) /
							<p><b>Weaknesses:</b>            -Comparison group did not have an accurate enrollment date            -potential for inaccuracy due to the reliance on self-report for the data</p> <p><b>Conclusions + Recommendations:</b>            -Future studies should utilize greater accuracy to measure the start date of the control group control group for comparison            -Conclusions are that low-income children with poor asthma control can benefit from a CHW-led intervention</p>

## Appendix D

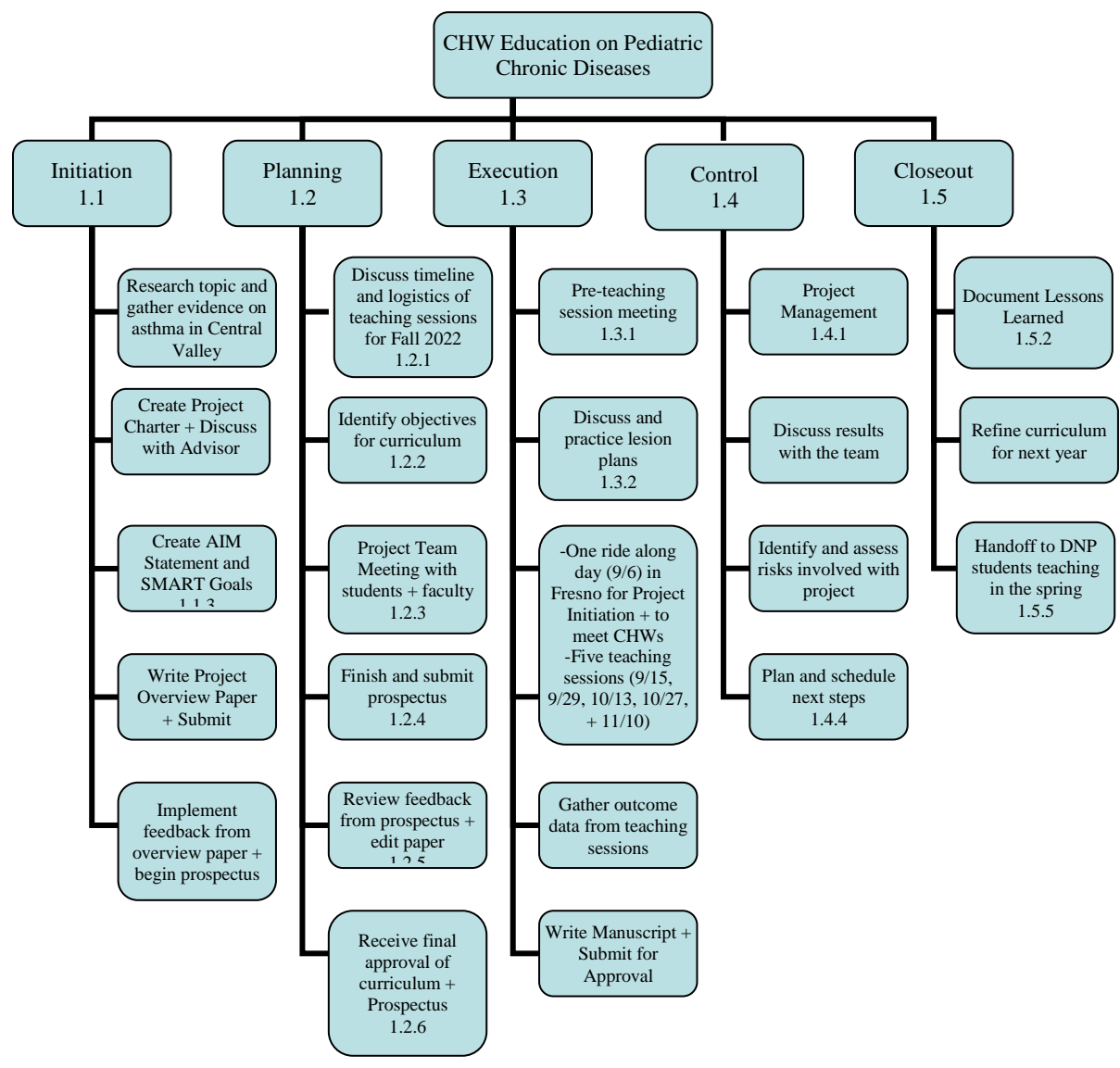
### Gap Analysis

Best Practice	Best Practice Strategies	How Your Practices Differ from Best Practice	Barriers to Best Practice	Implementation Will Implement Best Practice (Yes/No)
<p>CHWs can be utilized in low-income, high minority communities to improve access to healthcare resources and ultimately improve healthcare outcomes</p>	<p>Education for CHWs can optimize their knowledge of physical and mental health conditions that are common in rural communities.</p> <p>Improving the training of CHWs will increase the knowledge and comfortability among CHWs in addressing chronic non-communicable diseases.</p> <p>The implementation of an official CHW certification in California will facilitate improved funding and eventually reimbursement by CMS</p>	<p>Improving CHW knowledge on home-based management strategies for pediatric CNDs will enhance the efficacy of these interventions and thus reduce morbidity and mortality</p> <p>Increased education for CHWs on CNDs can provide an additional educational opportunity to facilitate the certification process</p>	<p>Gaps in current understanding among policymakers of how issues like obesity, asthma, and untreated mental health conditions can affect children later in adulthood.</p> <p>This can result in less funding for community resources directed at addressing these issues.</p>	<p>Yes--</p> <p>Instituting training for CHWs on pediatric CNDs will not only improve patient outcomes related to these diseases, but will also enhance the knowledge base of CHWs, and eventually help them to prepare for their certification exam.</p> <p>CHW certification will ultimately yield improved funding and eventually, reimbursement by CMS.</p>



### Appendix F

### Work Breakdown Structure



## Appendix G

### Responsibility Matrix

Communication	Purpose	Method	Frequency	Audience
Meeting with partner organization's coordinator	Review project goals; Get a better understanding of CHW goals for education	Zoom	Monthly	STC staff, DNP students
DNP Team Meetings	Go over the criteria for the training material, discuss goals, and timeline	Zoom	Monthly	DNP Students
Trainings	Education provided to CHWs on Pediatric Chronic Non-Communicable Diseases	Zoom	Two times per month	Community Health Workers
Training Evaluation, and Updates, and Data	Evaluate the effectiveness of the trainings and conduct pre- and post-test surveys	Zoom	Following trainings (After each biweekly training)	USF Professors, Save the Children DNP students, and



## Appendix H

### SWOT Analysis

<p style="text-align: center;"><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Having multiple DNP students to collaborate with</li> <li>• Having a project leader</li> <li>• Utilizing an outcomes-based process that has demonstrable knowledge improvements in the past</li> <li>• Having bilingual, culturally competent CHWs</li> </ul>	<p style="text-align: center;"><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Need to have commitment/buy-in of CHWs to integrate teaching points into practice</li> <li>• Inadequate knowledge acquisition from the interventions</li> <li>• CHW resistance to change</li> </ul>
<p style="text-align: center;"><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Improve CHW knowledge and awareness of pediatric disease management</li> <li>• Empower CHWs to be a liaison between the community and local resources</li> <li>• Reduce chronic disease-related expenditures at local hospitals and urgent care clinics</li> <li>• Continuing education opportunity for CHWs on how to improve their existing interventions</li> </ul>	<p style="text-align: center;"><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Can potentially increase the daily volume of work for CHWs</li> <li>• Future research could change what current best practices are in asthma management</li> <li>• Lack of resources and support for CHWs by the larger organization</li> </ul>

## Appendix I

### Budget

	2022-2023	2023-2024	2024-2025	Totals
<b>Hourly Rate for 8 CHWs x 8 hours</b>	\$1,351.04	\$1,415.04	\$1,479.04	\$4,245.12
<b>Fringe benefits (30%)</b>	\$405.31	\$424.51	\$443.71	\$1,273.53
<b>Supplies</b>	\$80	\$85	\$90	\$255
<b>Food</b>	\$160	\$168	\$176	\$504
<b>Total/year</b>	\$1,996.35	\$2,092.55	\$2,188.75	\$6,277.65
<b>Total/CHW/year</b>	\$249.54	\$261.56	\$273.59	\$784.69

#### Hourly Wages of CHWs:

⇒ Year 1:  $\$21.11 \times 8 \text{ hours} = \$168.88 \times 8 \text{ CHWs} = \$1,351.04$

⇒ Year 2:  $\$22.11 \times 8 \text{ hours} = \$176.88 \times 8 \text{ CHWs} = \$1,415.04$

⇒ Year 3:  $\$23.11 \times 8 \text{ hours} = \$184.88 \times 8 \text{ CHWs} = \$1,479.04$

#### Food

⇒ Year 1:  $\$20/\text{CHW} \times 8 \text{ CHWs} = \$160$

⇒ Year 2:  $\$21/\text{CHW} \times 8 \text{ CHWs} = \$168$

⇒ Year 3:  $\$22/\text{CHW} \times 8 \text{ CHWs} = \$176$

**Appendix J**  
**Cost-Benefit Analysis**

	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>
<b>CHW Training Cost</b>	\$1,996.35	\$2,092.55	\$2,188.75
<b>Projected Benefits</b>			
Number of Patients Seen by CHWs (Annually)	480	480	480
Cost Savings after CHW Interventions	\$112.50	\$112.50	\$112.50
<b>Total Benefits</b>	\$54,000	\$54,000	\$54,000
<b>Net Benefits</b>	\$52,003.65	\$51,907.45	\$51,811.25
<b>Cost-benefit Ratio</b>	27.05	25.81	24.67

**Net Benefits:**

- A) Year 1:  $\$54,000 - \$1,996.35 = \$52,003.65$
- B) Year 2:  $\$54,000 - \$2,092.55 = \$51,907.45$
- C) Year 3:  $\$54,000 - \$2,188.75 = \$51,811.25$

**Cost Benefit Ratio:**

- A)  $54,000 / 1,996.35 = 27.05$
- B)  $54,000 / 2,092.55 = 25.81$
- C)  $54,000 / 2,188.75 = 24.67$

## Appendix K

### Data Analysis Tables

**Table II.** Individual CHW Student Pre-Session and Post-Session Quiz Scores, Descriptive Statistics, and Average Percentage Increases between Pre- and Post-Session Quiz Scores

Student	Module 1: Pre-Course Quiz	Module 1: Post-Course Quiz	Module 2: Pre-Course Quiz	Module 2: Post-Course Quiz	Module 3: Pre-Course Quiz	Module 3: Post-Course Quiz	Module 4: Pre-Course Quiz	Module 4: Post-Course Quiz	Module 5: Pre-Course Quiz	Module 5: Post-Course Quiz
A	2.46	4.13	1	1	3.33	4	1.91	3.92	--	--
B	1.86	4.8	1.3	3.66	3.08	5	1.91	5	2.16	5
C	2.93	5	1.3	5	2.34	5	2.25	5	--	--
D	1.53	4.13	0.66	4	3	4	1.91	5	--	--
E	2.8	3	1.5	3.33	2	5	2.08	5	2.33	4.67
F	3.93	3.3	2.5	5	2	5	4.5	5	--	--
G	2.13	5	--	2.5	2	3.5	1.17	5	--	--
H	3.13	2.6	2.5	--	1.83	4	2.59	5	2	4.75
I	0.6	4.6	1.66	4	1.5	5	0.5	--	2.08	4.17
J	3.3	5	1	4	1.33	--	2.25	5	1.42	5
K	2.93	4.46	1.66	4.5	2.5	--	2.5	5	--	--
L	2.8	5	3.33	3.33	2.33	5	2.83	--	2.67	4.75
M	2.53	--	0.33	3.5	2	4.5	2.58	4.75	2.75	4.5
N	--	--	2	2	2	--	--	--	--	--
Mean	2.54	4.17	1.68	3.5	2.29	4.2	2.23	4.89	2.20*	4.69
Median	2.8	4.315	1.6	3.67	2.25	5	2.25	5	2.16	4.75
Mode	2.8	5	1	4	2	5	1.9	5	N/A	4.75
Standard Deviation	0.85	0.8	0.84	1.1	0.58	1.4	0.93	0.31	0.45	0.29
Variance (S <sup>2</sup> )	0.73	0.64	0.7	1.3	0.34	1.9	0.86	0.098	0.2	0.084
% Avg. Increase		35%		37%		48%		53%		50%
Wilcoxon signed-rank		W=5, p<.05, Critical Value=13		W=0, p<.05, Critical Value=5		W=0, p<.05, Critical Value =10		W=0, p<.05, Critical Value =10		W=0, p<.05, Critical Value=2

**Figure K1.** Chart Depicting Improvement from Pre-Session to Post-Session Quiz Scores by Module

