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THE USE OF NONPHARMACUTICAL INTERVENTIONS IN THE PREVENTION OF COVID-19 IN PEOPLE EXPERIENCING HOMELESSNESS IN EMERGENCY SHELTERS

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Acknowledgments

COVID-19 BEHAVIORS IN PEOPLE EXPERIENCING HOMELESSNESS

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Abstract

The virus responsible for COVID-19, acknowledged as a public health threat, has been causing global disease since it was first discovered in December 2019 in China. The CDC (2021) issued a call for action through its *Science Agenda for COVID-19* to identify evidence-based interventions for interrupting disease progression in vulnerable populations such as those in emergency shelter settings.

This project focused on COVID-19 and its impact on the homeless population in northwestern Pennsylvania. The theoretical framework was the Johns Hopkins Evidenced-Based Practice Model (JHEBP). A survey collected self-reported data on the practice and barriers to using personal non-pharmaceutical interventions (NPIs). Participants were adults ages 18 and over in one of two emergency shelters on the data collection date.

The Questionnaire to Assess Preventative Practices Against the COVID-19 Pandemic in the General Population was modified to facilitate its use in an emergency shelter setting in the United States. Surveys were distributed to 142 individuals over four data collection times; 28% were returned with 93% complete.

The preventative measures used by participants most often were covering the face when sneezing or coughing and maintaining social distancing. Barriers for not following the recommendations included time, overcrowding, and personal opinion.

A variety of toolkits are available to assist in developing the continued education identified as a need for the homeless. Future research including focus groups and observation can add to the knowledge base of COVID-19 and the homeless.

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Chapter 1 - Introduction

The virus responsible for COVID-19 has been causing global disease since first discovered in December 2019 in China. Since its origin, COVID-19 has become an acknowledged threat to public health. The transmission has changed as the virus has mutated into different variants. Additionally, the transmission is based on several factors, including socioeconomic status, work environments, population density, household and transportation, epidemiological factors, healthcare systems, and high-risk environments (Surgo Ventures, 2021). This project focused on COVID-19 and its impact on the homeless population in northwestern Pennsylvania.

Background of the Problem

The first coronavirus was discovered in the mid-1960s. Coronaviruses contain a spike protein that looks like a crown microscopically. On February 11, 2020, the World Health Organization (WHO) named the virus severe acute respiratory syndrome coronavirus 2, abbreviated SARS-CoV-2, as the novel coronavirus responsible for the COVID-19 pandemic. The disease caused by SARS-CoV-2 was labeled coronavirus disease 2019, shortened to CO (for corona), VI (for virus), D (for disease), and 19 (for the year of discovery) (Johns Hopkins Medicine (JHM), 2021; the University of Maryland, n.d.; WHO, 2015).

On December 29, 2021, there were more than 282 million infected globally since its discovery in Wuhan, China, in December 2019, resulting in over 5.5 million deaths (WHO, 2022). As of December 29, 2021, 52,543,602 have been infected in the United States, resulting in 812,577 deaths (WHO, 2022).

The virus is transmitted primarily through respiratory droplets (JHM, 2021). The dominant form in the United States is the Omicron variant which was first detected in every state

and U.S. territory in December 2021. It transmits more easily than the Delta variant and can evade immunity acquired by vaccination and past infection (CDC, 2021, December 20). Omicron can cause symptoms similar to previous variants. Similar to other transmittable diseases and health conditions, the presence and severity of symptoms and illness are affected by an individual's underlying health conditions, age, vaccination status, and preventative health behaviors.

Mitigation efforts to limit the transmission of COVID-19 include vaccines, wearing masks, social distancing, hand hygiene, covering coughs and sneezes, cleaning and disinfecting objects, and following recommendations for quarantine and isolation (CDC, 2022, February 25; JHM, 2021). Although the mitigation efforts seem clear and workable, epidemiologic studies have found that transmission rates differ across demographics. Surgo Ventures (2021) has developed the COVID-19 Community Vulnerability Index (CCVI), influenced by the CDC's Social Vulnerability Index (SVI). Both scales reference a range from zero (lowest vulnerability) to 1 (highest Vulnerability). It considers indicators of social vulnerability such as socioeconomic status, minority status and language, transportation, epidemiological factors, healthcare system factors, high-risk environments, population density, and COVID-19 statistics (Surgo Ventures, 2021). Hospitals treating these populations may be under increased stress from treating new cases alongside the expected conditions that arrive in the emergency department. The CCVI examines how a community can respond to the effects of COVID-19.

Obinna (2021) discussed the disparities in race and ethnicity, indicating that African Americans and Latinos have experienced some of the most prevalent disparities. First, these groups suffer higher preexisting illnesses such as diabetes, high blood pressure, and cardiovascular disease. A second important concept is the concern of spread that can occur in

areas where social distancing is not maintainable. Homeless individuals are often included in many vulnerability indicators, and the CDC (2021, February 26) identifies the homeless at an increased risk of disease.

PICO Question

This project explores the practices and barriers to adopting non-pharmaceutical CDC recommendations for maintaining COVID-19 precautions in homeless adults in emergency shelters. The research question is presented in PICO format; P – patient, population, or problem, I – intervention, C – comparison, and O – outcome. Among homeless adults in emergency shelters (P), what are the practices and barriers (I) to adopting CDC-recommended non-pharmaceutical (personal NPIs) while maintaining COVID-19 precautions (O)?

Population

The Department of Housing and Urban Development (2022) requires a Point–in–Time Count (PITC) of people experiencing homelessness and an inventory of shelter and housing available in local communities yearly across the United States (U.S.). The PIT count is completed on one day in January every year. This data is reported in an Annual Homeless Assessment Report (AHAR) and presented to Congress.

The latest national report completed in its entirety was in January 2020. Key findings detailed that approximately 580,000 people experienced homelessness in the U.S., 61% (6 out of 10) were in emergency shelters or transitional housing, with the remaining living in unsheltered housing such as cars, abandoned buildings, and other unsuitable spaces, 70% were adult-only households, and for the fourth year in a row, the rate of homelessness increased. (See Table 1). Demographics reflect 61% being male, 47% living in shelters were African Americans, and 42.8% were white (NAEH, 2021).

It is important to note that these statistics reflect the period before the COVID-19 pandemic took hold in the U.S. The National Alliance to End Homelessness (NAEH) (2021) reported that due to COVID-19 health concerns, the Time-in-Point Count for January 2021 was disrupted, and data is not expected to be updated until late 2022 or early 2023. For the January 2021 PITC, Erie County requested and received a waiver from HUD to not do the 2021 PITC (Flowers, 2021). The earliest that data will be available to reflect the impact of COVID-19 on emergency shelters will be mid-2023.

Locally, Erie County had nine emergency shelters during the Point-in-Time Count held on January 24, 2020, offering housing from 1 to 30 days. The total overall number of adult persons who were homeless was 192. This does not include adult persons with children and unsheltered individuals, reported separately (Erie County Home Team, 2020). There was less than 1% in the 18 – 24, and 94% in the age group of 25 and older. The majority self-identified as male at 77% compared to females at 22%, and no one had self-identified as transgender or unspecified. For ethnicity, 92% identified as Non-Hispanic/Non-Latino and less than 1% identified as Hispanic/Latino. Regarding race, 58% identified as white, 35% as African American, less than 1% as Native American or multiple races, and no one as Asian or Pacific Islander. The report states that 2020 was the fourth-highest figure from 2010 – 2020. (Erie County Home Team, 2020).

A comparison between national and local statistics indicated that more females than males were homeless, and more identified as white than African-American. The City of Erie's demographics reflect a higher number of white individuals (68.9%) than African Americans (15.6%), but African Americans still represent a high percentage of homeless (United States Census Bureau, 2021). While African Americans represent 15.6% of the population in the City

of Erie, they represent 35% of the homeless population. This data supports the need for local community-level interventions as the descriptive analysis for Erie County points to a different picture than the one portrayed at the national level.

Table 1

Comparison of National and Local Point–in–Time Count

Characteristics	National PITC		Local PITC		City of Erie Demographics (U.S. Census Bureau)
	n	*%*	*n*	*%*	
Total (Sheltered & Unsheltered)	580,466		192		93, 999
Age					>18 = 71.1%
18-24	45,243	7.8%	11	< 1%	>18 but <65 =28.9%
25 and older	428,859	73.9%	180	94%	>65 = 14.9%
Gender					
Male	352,211	60.7%	148	77%	51.4%
Female	223,578	38.5%	43	22%	48.6%
Transgender	3,161	0.5%	0	0	NR
Gender Non – Conforming	1,460	0.3%	0	0	NR
Ethnicity					
Non-Hispanic	450, 107	77.5%	176	92%	91.8%
Hispanic	130, 348	22.5%	14	0.073%	8.2%
White	280, 612	48.3%	112	58%	72.4%
African – American	228, 796	39.4%	67	35%	15.6%
Asian	7,638	1.3%	0	0	2.8%
Native American	18, 935	3.3%	4	<1%	0.4%
Pacific Islander	8,794	1.5%	0	0	0%
Multiple Races	35, 680	6.1%	7	<1%	5.5%

Data for National estimates were obtained from Exhibit 1.5: Demographic Characteristics of People Experiencing Homelessness (USDHUD, 2021). Data for local estimated obtained from The 2020 Single Point in Time Count for Erie County (prepared by the Mercyhurst University Civic Institute. Erie County Demographics from the United States Census Bureau (2021).

Communities were required to hold a Point in Time Count on one of the last ten days of January 2022. If communities were experiencing surges of the Omicron variant, requests to delay the count were to be considered through March, but final data submission would still be required by April 2022 (NAEH, 2022).

The Erie County report from The Erie Home Team (2020) also provides outcome data from the Cause of Homelessness Survey. The results indicated that the top drivers of homelessness were serious mental illness, substance abuse, lack of employment, poor decision-making skills, medical and physical reasons, and domestic violence issues.

COVID-19 and Homeless Populations Challenges and Mitigation Strategies

The social determinants of health (SDOH) impact health outcomes. Disparities that individuals face in regards to their current physical and mental health status, access to health care resources and trusted health care personnel, communication, local, state, and federal policies, housing status as well as education and health literacy interact with the situations and conditions that individuals live, work, and interact with each other meet to impact morbidity and mortality outcomes.

Before the COVID-19 pandemic, people experiencing homelessness (PEH) under age 65 had all-cause mortality, which was 5-9 times higher than the general population (Baggett et al., 2013). Surgo Ventures (2021) also emphasizes that 32% of members of a vulnerable population are more likely to be diagnosed and die from COVID-19. Chronic mental and physical conditions included higher incidences of heart disease, hypertension, chronic lung disease, increased rates of smoking, liver disease, obesity, diabetes, cancer, mental illnesses, substance

abuse disorders, and non-COVID-19 infectious diseases (Baggett et al., 2018; Maremmani et al., 2017; Surgo Ventures 2021; Peak et al., 2019; Tsai and Wilson, 2020). These conditions have already increased the risk of poor health outcomes.

Housing as an SDOH poses additional challenges in improving health outcomes when the housing situation is located in an emergency shelter setting. Culhane et al. (2020) completed projective modeling of hospitalizations of PEH diagnosed with COVID-19 when infection rates peaked at 40%. The result was an average of 4.3%, ranging from 2.4% - 10.3%, who required acute care hospital admission (p.6). The recommended mitigation interventions to avoid illness, mask-wearing, social distancing, hand washing, sanitization, and self-isolation present specific challenges in this setting.

Social distancing and isolation are challenged when physical space cannot be easily expanded. Illness spread may be rapid if detection of illness is delayed (Perri et al., 2020). Limited access to health care and services and individuals underreporting symptoms for fear of losing a spot at a shelter (Iwundu et al., 2020) may contribute to the unanticipated spread. The PEH population is more transient and geographically mobile leading to high population turnover, which can prove challenging to contact tracing and quarantine interventions in reducing community transmission (Perri et al., 2020).

The availability and access of face masks may prove challenging in an environment where individuals may not have the resources to obtain or store these items. Financial resources may be limited, communication of free mask pick-up sites, and not having personal space to store masks and sanitizers presents additional challenges. Accessibility to hand washing and hand sanitizer may be limited (Iwundu et al., 2020; Tsai and Wilson, 2020)

Limited or non-existent access to health screenings, preventative services, and acute care treatment, which already plagued PEH, can be attributed to various causes such as lack of transportation to appointments, lack of insurance or underinsured, lack of trusted health care relationships, as well as perceived stigma or mistrust in health care systems (Jones, 202; Pecoraro, 2021).

A final concern is health literacy in the PEH population. Health literacy is crucial to understanding information to decrease disease transmission and follow recommended preventative behaviors, especially on a rapidly changing basis (Odoh et al., 2019). The lack of health literacy can leave an individual open to inaccurate information. Before COVID-19, limited health literacy contributed to poor health outcomes as individuals struggled to navigate health systems and adopt health behaviors that limit risk and disease. Misinformation and confusion in adopting mitigation strategies can be especially challenging in individuals with low health literacy. PEH can have the added burden of lack of internet access (Iwundu et al., 2020) which can contribute to decreased access to trusted health sources for information to influence positive health beliefs, resulting in a feeling of diminished susceptibility to illness and disease.

Evidence-based practice interventions in the form of Personal NPIs are available. The population differences are centered on the population's characteristics, vulnerabilities, and location. The goal is to lessen the adverse impact of COVID-19 on the sheltered population. Bringing attention and specific interventions to this population may help reduce health inequities and design strategies that can be applied post-pandemic (Iwundu et al., 2020). Seif et al. point out that homeless shelters vary in the availability of resources, operational plans, regulations, size, staffing, and populations served to which these traits affect COVID-19 infection occurrence

is unknown. Seif et al. call for support for emergency shelters to critically identify characteristics to potentially mitigate transmission amongst clients and staff (2021, pp. 854-855).

Definition of Terms

Homelessness – Describes a person who lacks a fixed, regular, and adequate nighttime residence.

Emergency Shelter – A facility whose primary purpose is to provide temporary shelter for homeless individuals while not requiring the individual to sign a lease or rental agreement to stay (United States Department of Housing and Urban Development [HUD], 2021).

Non-pharmaceutical Interventions (NPIs) – Actions that are different from receiving vaccinations and taking medications that individuals and the communities in which they live can implement to slow the transmission of diseases like COVID-19 and pandemic flu (CDC, August 26, 2019).

Personal NPIs – Everyday preventative actions that keep individuals from getting and spreading respiratory illnesses. These actions include covering your nose and mouth with a cloth or mask, washing your hands with soap and water, or using sanitizer when soap and water are not available, covering coughs and sneezes with a tissue, and staying away from others when sick, and clean frequently touched surfaces and objects (CDC, 2017; CDC, August 26, 2019).

Need for the Study

The Johns Hopkins, Evidenced-Based Practice Model for Nursing guided the decision that evidence existed and value was apparent in need for this project (Dang et al., 2022). The mitigation of the community spread of COVID-19 and its variants requires a multi-layered approach. Vaccination rates as of December 2021 reported by zip code were 16501, 60.7%, and 16503, 34.2% (Erie County Department of Health, 2021).

In addition to the vaccination rates, personal NPIs, and the CDC SVI for Erie County (0.6194) and the Surgo Ventures (2021) CCVI for zip code, 16501 was 0.92 and zip code 16503 was 0.94, indicating moderate to a high level of vulnerability. Both scales reference a range from zero (lowest vulnerability) to 1 (highest Vulnerability) (CDC, 2018; Surgo Ventures, n.d.). The vaccination rate does not account for the need for boosters, the vulnerability of the individual, and access to personal NPIs.

The CDC (2021) has identified a need for ongoing inquiry on COVID-19 by establishing *The CDC Science Agenda for COVID-19.* The guide encourages and focuses on developing evidence to support interventions to inform public health and policy in interrupting the disease transmission of COVID -19. One area identified as needing more information is using NPIs with vulnerable populations in settings such as emergency shelters. This survey project seeks to answer the question of the use and barriers faced by individuals who reside in emergency shelters on using NPIs to mitigate the transmission of COVID-19.

Significance of the Study

COVID-19 is a health threat across all demographics. Vulnerable populations have specific issues that increase the threat (Surgo Ventures, 2021). However, the evidence of mitigation efforts in vulnerable populations is limited, and transient issues make it difficult to determine their needs during this pandemic. This study will glimpse the barriers and protections used by homeless adults in emergency shelters.

Summary of the Problem

COVID-19, the disease caused by the transmission of the SARS-CoV-2 virus, is currently a global pandemic. Mitigation efforts in all populations are complicated by the ever-changing virus resulting in novel variants. Mitigation efforts in vulnerable populations, including

homeless adults, are not clearly understood. This project will explore the barriers and

protections against COVID-19 disease in a sample of homeless adults in emergency shelters.

Chapter 2 - Review of Related Literature

A literature search was undertaken to determine if any obstacles were identified in adopting practices and barriers of personal nonpharmaceutical (personal NPIs) for maintaining COVID-19 precautions. Additionally, the search included the influence of specific behaviors in adopting mitigation strategies and the impact of COVID-19 on vulnerable populations.

A literature review was conducted on 10/23/2020 and again between 03/13/2021 and 03/27/2021 using the same databases and keywords. The Cumulative Index to Nursing and Allied Health (CINHAL) and Cochrane databases were searched using COVID-19 prevention and barriers or obstacles and challenges, coronavirus and barriers, coronavirus and barriers, and surveys. The terms coronavirus prevention and communities and Covid-19 prevention and control measures in the community were added in the second search to expand the opportunities to identify gaps or practices in communities.

The search in October 2020 revealed less than 200 results and increased to 927 in March 2021. Most articles in the review focused on what was and was not known about COVID-19. The March 2021 search revealed four studies that reviewed the impact of social determinants of health in aggregates for African Americans, those with mental illness, developmental disabilities, substance use disorder, and those in supportive housing. As the vaccination rollout continues, more studies will be completed to determine barriers community members face in virus transmission mitigation.

There will always be a number of the population that will not be vaccinated for various reasons. Many people will be vaccinated but continue to be at risk due to compromised immune systems from chemotherapeutic agents, immunosuppressive medications, and lapses in receiving the second dose of a two-dose regimen. Variants continue to emerge, and it is unknown how

well and for how long current vaccines will fare. Well-researched guidelines focused on evidence-based personal NPIs (mask-wearing, hand washing, covering coughs and sneezes, social distancing when sick, cleaning personal items) recommendations that interrupt virus transmission will remain mainstays in the toolbox for SARS-CoV-2 and other emerging pathogens (WHO, n.d.; CDC, 2019; Association for Professionals in Infection Control and Epidemiology (APIC), n.d.).

What is Known About the Problem

It is known that SARS-CoV-2 is a novel coronavirus; while its origins are unclear, it is a virus with the ability to replicate and produce variants to ensure its survival. The public has been encouraged to prepare for pandemic flu, but education on pandemic flu did not ease communities into adopting the same practices to mitigate the pandemic development of COVID-19. Breakwell et al. (2021), Toussaint et al. (2020), and Agarwal et al. (2021) affirm that preventive practices aid in slowing SARS- CoV-2 transmission, the development of COVID-19 disease, and the development of variants.

Barriers to Implementing SARS-CoV-2 Mitigation Interventions

Behaviors. Behavior responses are interventions that interrupt the transmission of communicable diseases. The behaviors recommended by the WHO (n.d).; CDC (2019); and APIC (n.d.) include personal NPIs. Once information became available on disease transmission, efforts focused on adequate vaccine protection, medical therapies to treat symptoms, and evidence-based interventions to interrupt disease progression to long-lasting morbidity and mortality. Disease control requires behavior modification and policy development to limit transmission (Breakwell, 2021; Toussaint, 2020).

Understanding the barriers faced by PEH can assist in specific interventions directed at the behavior of PEH. Due to the lack of effective treatment, the primary way to slow down the spread of COVID-19 is by preventing the transmission of the virus among people through awareness, vaccination, and adoption of evidence-based preventive practice (Schunemann et al., 2020; Thu et al., 2020; Xiao and Torok, 2020, as cited in Agarwal et al., 2021).

Studies on individual behavior change were reviewed from past emerging infections such as SARS in 2003, Influenza A, virus subtype H1N1 (A/H1N1) in 2009, and the Ebola virus. It has been well documented that infectious disease outcomes are shaped by the behaviors of both individuals and groups (Karimi et al., 2015; Yan et al., 2018). The importance of adhering to preventative behaviors in personal NPIs indicates the compelling need to combat the transmission of COVID-19 to prevent variants that may increase the already high morbidity and mortality experienced worldwide.

Internet Use as a Source of Information. A cross-sectional survey ($n = 979$) in the United States using Amazon Mechanical Turk from April 10, 2020, to April 14, 2020 (Li et al. 2020). The aim was to identify preventative behaviors to decrease COVID-19 transmission. The source of information on COVID-19 was explored along with the participant's risk awareness. Washing hands, covering the mouth when coughing and sneezing, and social distancing was more commonly implemented than wearing a facemask, staying home, or cleaning commonly touched surfaces. This may be attributed to the second group of behaviors requiring more effort to implement. Key findings showed that demographic characteristics associated with preventative behaviors were an older age, being female, and being non-white. A limitation of this study was that the surveyed population was primarily young, educated, and working, with characteristics of participants more likely to use a crowdsourcing platform with internet access.

Romer and Hall Jamison (2020) completed two national probability surveys within the United States, the first ($n = 1050$) conducted at the end of March 2020 and the second ($n = 840$) completed with the same individuals in July 2020, assessed adoption of preventative mitigation behaviors as recommended by public health authorities. Findings included that younger individuals with lower income and less education were more likely to discount the seriousness of the pandemic based on conspiracy theories.

The Li et al. (2020) study used survey respondents from Amazon Mechanical Turk to present a different picture of individuals adopting preventive behaviors than the Romer and Hall Jamison (2020) study. Neither study included homeless shelter participants, which would suggest there may be a benefit in smaller geographical surveys to target interventions in smaller communities.

Social Determinants of Health. Henwood et al. (2020) conducted a phone survey ($n = 532$) in public supported housing in downtown Los Angeles during a shelter–in–place order. The average age of the survey participants was 56 years old, 73% were male, and 61% were African American. Survey results indicated that tenants with shared bathroom facilities had lower social distancing behaviors, and tenants with a mental health diagnosis experienced less hand washing and a lack of hygiene items.

Brand-Bateman et al. (2021) conducted virtual focus groups through Zoom with thirty-six participants in five urban and rural Alabama communities. Descriptive analysis of each of the five communities reflected a greater than 30% poverty rate. The number of residents without a high school diploma was 20% or greater, and the African American population was 75% or greater. The focus groups discussed their community's challenges in adhering to guidelines recommended by the CDC in mitigating COVID-19 by preventative behaviors. The focus group

found themes of apathy in that younger community members were not worried about COVID -19, social distancing was challenged due to crowded conditions and essential jobs, and information was believed to have mixed messages. Three focus groups identified a lack of masks and hand sanitizers as barriers to implementing NPIs (Brand-Bateman et al., 2021).

Chillag and Lee (2020) analyzed disparities in rural health and their effect on adhering to COVID-19 mitigation efforts. Employment deemed essential can be primarily in low-wage occupations that do not allow for work from home, safe distancing, or staying home from work if ill. Hand hygiene can be hampered by insufficient water and plumbing infrastructure, especially in the southern area of the U.S. and on tribal lands.

Melamed et al. (2020) pointed to the barriers to COVID-19 mitigation strategies faced by individuals with substance abuse disorders. Physical distancing is limited when obtaining substances and intoxication, and these issues often result in neglect of personal hygiene. This issue related to substance abuse also includes a lack of adequate health care. An individual's need to use substances may outweigh the adoption of behaviors that seek to decrease the transmission of COVID-19 (Melamed et al., 2020).

The American Public Health Association (APHA, 2021) also recognizes that the three core functions of public health assessment, policy development, and assurance are strained. Approximately 29 million people are still uninsured. In 2019, health care spending represented 17.7% of the nation's gross domestic product. Chronic disease results in 7 in 10 deaths, and many chronic diseases are preventable or treatable with primary health care. Ninety percent of health care dollars are spent on treating disease, while 3 cents of each health care dollar is spent on prevention. The U.S. spends more on health care but ranks 28th out of 36 countries in

longevity, reflecting population-based health disparities (American Public Health Association, 2021).

What is Not Known About the Problem

Barriers to Implementing SARS-CoV-2 Mitigation Interventions

Some early survey studies and consensus articles identified barriers to behaviors, such as apathy and sources of information on social media, and recognized the need to include social determinants of health in determining barriers that may result from overcrowding, is working in a job preventing mitigation strategies, lack masks, sanitizers, and water (APHA, 2021: Brand-Bateman et al., 2021; Chillag and Lee, 2020; Henwood et al., 2020; Li et al., 2020; Melamed et al., 2020; Romer & Hall Jamison, 2020). The pandemic has endured globally for two years with the development of variants that continue transmission of the virus. The CDC (2021) issued a call for action through its *Science Agenda for COVID-19* to identify evidence-based interventions for interrupting disease progression in vulnerable populations such as those in emergency shelter settings. A needs assessment survey focused on PEH will provide important information on a community's health.

Survey Tools for Identifying Barriers in SARS-CoV-2 Transmission

The literature provided three survey tools to assess the adoption of preventative behaviors in individuals to mitigate SARS-CoV-2 transmission.

COVID-19 Preventative Behaviors Index (CPBI). Breakwell et al. (2021) describe a cross-sectional survey study on the "development, validation, and psychometric properties of the COVID-19 Preventative Behaviors Index" (CPBI) by testing the survey in the United Kingdom with 470 individuals recruited from an online platform called Prolific (p.77). The CPBI focuses on self-reporting of intent in engaging in behaviors to avoid exposure. The behaviors fell into

four categories and questioned whether individuals in the sample population attempted to inform COVID-19 information (Breakwell et al., 2021, p.79). The four categories measured social distancing, self-isolation, hygiene, virus testing, tracking, and remaining informed (Breakwell et al., 2021, p. 83). Concurrent validity ($p < 0.001$) of the CPBI was tested by measuring confirmatory factor analysis against two other measures, the COVID-19 Own Risk Appraisal Scale (CORAS) (Spearman's $p = 0.21$, N =470) and the Fear of COVID-19 Scale (0.27).

Clean and Contain Measure. Toussaint et al. (2020) developed the Clean and Contain measure based on CDC recommendations for preventing infectious diseases. The questionnaire consists of five items assessing cleaning behaviors and four items assessing containing behaviors. Alpha coefficients for both scales were reported at > .83 for study 1 (N = 97), and > .84 for studies 2 (N = 24) and 3 (N = 527). Factor loadings were statistically significant at < 0.001 (p. 619).

Questionnaire to Assess Preventative Practices Against COVID-19 Pandemic in the General Population. Agarwal et al. (2021) sought to develop and validate a tool that evaluated preventive practices and barriers against COVID-19 using a cross-sectional study of 108 individuals in New Delhi, India, in July 2020 (p.2). The questionnaire for assessing preventative practices consisted of two parts. Part A was an 18-item questionnaire to evaluate the preventive approach, and Part B was a 19 - item questionnaire that asked why the preventative practice was not used. The questionnaire was developed using literature reviews, focused group discussions, in-depth interviews, expert opinions, pilot testing, and a cross-sectional survey (Agarwal et al., 2021, p. 2).

Theoretical Framework

The theoretical framework for this practice project is the Johns Hopkins Evidence-Based Practice Model (JHEBP). The model provides a structured and systematic process in which to examine current research and a wide range of knowledge, clinician, patient, and stakeholder influences to inform on ways to meet the needs of this identified vulnerable population through evidence-based practice (EBP) (Dang et al., 2022). The JHEBP decision tree was used to guide the project in determining if an inquiry was needed. The investigation started with the topic of the use and barriers of PNPIs in the emergency shelter population to determine what was currently known and what gaps exist in knowledge. The inquiry was formed as a background question since it is a broad best practice question that produces a wide range of evidence for review. Background questions do not include a comparison (Dang et al., p. 88). This led to the development of the PICO question and the modification of a survey tool to provide data analysis of the use and barriers experienced by this population. A literature review was completed to identify the practices and barriers experienced by PEH in emergency shelters in adopting EBP mitigation interventions to decrease transmission of COVID-19 as it relates to implementing personal NPIs.

The intervention in the JHEBPM can have an assessment approach (Dang et al., 2022, p. 88). This project was designed to use a survey tool to gather data to measure the current practice and barriers experienced by residents of an emergency shelter in adhering to CDC guidelines using PNPIs. The outcome measure is the completion of the survey and data analysis for structure measures of care in this project and the availability of resources in implementing PNPIs.

Summary of the Review of Related Literature

Evidence-based practice interventions in the form of NPIs exist to prevent the transmission of COVID-19 exist. Information on the practice and barriers to using NPIs in an emergency shelter setting is limited, and few articles identified specific vulnerable populations and mitigation factors. The importance of the social determinants of health as a barrier to adopting preventive behaviors is increasing as surveys are being published. This survey project aims to identify mitigation practices and obstacles in preventing the transmission of COVID-19 and its variants in two local emergency shelters.

The following steps in the Johns Hopkins Evidence-Based Model for Nursing (2022) have asked if recent, relevant, high-quality evidence exists and it does concern mitigating COVID-19 but not for the homeless population (Dang et al.). A quality improvement project was implemented to identify issues specific to the homeless.

Chapter 3 - Methodology

This project sought to identify practices and barriers experienced by people experiencing homelessness (PEH) in two emergency shelters in Northwestern Pennsylvania. There are established benefits of a survey project. A completed survey project can provide quantifiable unbiased information and assess a respondent's needs while giving insight into a respondent's background. This information can assist in targeted local health interventions for current use and any future waves of occurrence caused by variants of the SARS-CoV-2 virus. Chapter 3 will review the design of the project, the setting and sample, and the data collection and analysis strategies.

Research Design

This project was a nonexperimental cross-sectional survey to collect self-reported data from adult PEH in two emergency shelters in Northwestern, Pa, on the practice and barriers to using personal NPIs.

Setting

The setting was at two different emergency shelters in Northwestern, Pa. Both emergency shelters are located within a city and shelter #1 has 56 beds, and Shelter #2 has 43 beds for a total of 99 shelter beds within these two facilities. The survey was conducted in a natural setting, and no attempts were made during data collection to manipulate, change, or control the study setting environment.

Sample

Recruitment occurred during a scheduled mealtime over two days at each shelter. A convenience sample included those present in the emergency shelter on the day of the survey.

The inclusion criteria included adult individuals aged 18 and older residing at one of the two identified emergency shelters on the data collection date. Participants were required to speak and read the English language. Data collection excluded those under 18, unable to read or speak English, as interpreters were not available for this data collection period.

Both shelters experience varying occupancy rates, which can be affected by the weather. The sample size was determined on the data collection date to reflect the number of individuals present who are adults aged 18 and over who read and speak English.

Ethical Considerations

Application for review was made to the Edinboro University IRB. (See Appendix A for IRB review letter). As part of the informed consent process, potential survey participants were advised that they could freely participate in the survey and could discontinue the survey at any time or for any reason. The completion of the survey inferred consent. No interventions associated with this survey project; therefore, this project posed minimal to no risk to participants. Each survey was anonymous.

Instrumentation

The survey tool chosen was the *Questionnaire to Assess Preventative Practices Against the COVID-19 Pandemic in the General Population*, as it questioned practices and barriers to adopting preventative practices.

The instrument included a demographics form and the survey tool. The survey tool by Agarwal et al. (2021) is a two-part Likert-type questionnaire. Permission to use and modify the survey was obtained (See Appendix B). The survey tool was modified to facilitate its use in an emergency shelter setting in the United States. Modification of the questionnaire may impact the reliability and validity of the survey. The survey can be found in Appendix C.

Demographics

The demographics form included items that reflect the Social Determinants of Health. The CDC (2021, March 10) notes that the Healthy People 2030 outlines five critical areas of Social Determinants of Health (SDOH): Healthcare access and quality; Education access and quality; Social community and context; Economic stability; Neighborhood and the built environment. These factors influence aspects of morbidity and mortality, and vulnerability.

Section A of the questionnaire

The first Section, section A, has 18 items related to preventative practices. Questions are presented on a 5-point Likert scale, and a minimum of 1 is assigned to a maximum of 5. The distance between the options is equal. Options associated with better compliance with recommended preventive behaviors give higher points (Agarwal et al., 2121, p.7). (See modifications to the questionnaire in Appendix D).

Reliability and Validity. Reliability and validity are two essential criteria in assessing data quality using specific measurement tools such as the Likert questionnaire used in this project. An instrument's reliability measures the targeted attribute by consistency and accuracy. Three key reliability aspects are stability, the extent to which similar results are obtained on two separate occasions, internal consistency, and equivalence (Polit & Tatano-Beck, 2021, p.320). Agarwal et al. (2021) report a Cronbach's alpha coefficient of 0.82 for section A of the questionnaire, reflecting a higher internal consistency. Qualitative and quantitative methods determined content validity using a content validity ratio (CVR) of 0.81.

Section B of the questionnaire

Section B related to why preventative practices are not implemented. Different options were given for not following preventive practices. Agarwal et al. (2021) identified the different

options through a literature review, focus group discussions, and interviews. Section B of the questionnaire included an option to allow the participant to specify a reason as to why the behavior was not being adopted. This questionnaire section was not scored and was analyzed qualitatively (Agarwal et al., 2021, p.7).

Data Collection

Data were collected on two separate days during a predetermined identified mealtime at each site. A staff member at each facility introduced the investigator on the day of survey collection, and the investigator was present for the entire data collection period.

On the day of survey collection, informed consent was read, explaining the purpose and objectives of the project. Potential participants were invited to participate, and participants were notified that consent will be the completion of the survey. An envelope was provided with the survey. Upon completing the survey, participants placed the survey in the envelope and sealed it. The sealed envelope was returned to the investigator. The approximate time to complete the survey was less than 15 minutes. Envelopes were not unsealed at the shelters.

Data Analysis

A demographic analysis of the survey participants is provided in Chapter 4. Descriptive statistics using means, standard deviations, frequencies, and percentages analyzed the practices and barriers to adopting preventative behaviors for the SARS-CoV-2 virus transmission.

Each item in Section A was analyzed to determine the frequency and averages of the Likert scale results. For Section A, each question response was rated: 1 —rarely (less than 10% of the time), 2 – occasionally (approximately 25% of the time), 3 – commonly (approximately 50% of the time), 4 – mostly (approximately 75% of the time), and 5 – always (more than 90% of the time).

Two items were reversed scored. Item 6 used (5) Never, (4) Once, (3) Twice, (2) Three times, and (1) More than three times. Item 11 used (5) Strongly agree, (4) Agree, (3) Cannot say, (2) Disagree, and (1) Strongly disagree. These items were recorded for consistency with the primary Likert scale.

Section B was grouped according to themes to identify barriers to preventative practices. Themes were reported according to the frequency with that they appeared.

Summary of Methodology

Polit and Tatano-Beck (2021) share that needs assessments almost always involve the development of recommendations. Researchers conducting needs assessments usually judge priorities based on their results (considering costs and feasibility). They may also advise how the most highly prioritized needs can be addressed (p.236). It is essential to recognize that while convenience sampling is the weakest form of sampling, it is also the most commonly used sample method for most disciplines (Polit & Tatano-Beck, 2021, p. 263). This was the method of sampling used in this project.

Chapter 4 - Results and Discussion

Chapter 4 will focus on the implementation and results of the study. A description of the sample and demographics will be presented, and preventative practices and reasons for not doing preventive practices will be explored.

Sample

Data were collected at two homeless shelters in Northwestern Pennsylvania. In mid-March 2022, each shelter was visited twice during mealtimes. Each shelter determined the mealtimes, and at the time of the data collection, both shelters opened meal services regardless of living at the shelter. Both visits to Shelter A were for the breakfast meal, and visits to Shelter B occurred during one lunch and one dinner meal. See Table 2 for the details of each visit.

Table 2

Return and Completion Rates for Sample

Shelter	Surveys Distributed	Surveys Retuned	Surveys Completed
Shelter A - Breakfast	47	15 (32%)	12 (80%)
Shelter A - Breakfast	63	6 (10%)	6 (100%)
Shelter A - Lunch	20	15 (75%)	15 (100%)
Shelter A - Dinner	12	4 (33%)	4 (100%)
	142	40 (28%)	37 (93%)

There was no process to ensure that no duplicate surveys were completed. However, the directions at the second visit to each shelter asked if anyone had previously completed the survey and not to complete it again. The overall response rate for the surveys was 28%, and this is not far from the 2021 benchmark for survey responses of 33% (Lindemann, 2021). As a result, the sample size was deemed acceptable.

Demographics

Age, gender, race/ethnicity, and marital status were collected. Additional demographics included education, employment, health-related items, and internet access.

Age

A total of 29 (78%) participants completed this Item. The average age was 47.6, with a median of 49, and the age range was from 18-70 years.

Gender that you identify with

The participants were given two choices: male and female. All participants completed this Item. Males accounted for 68% (n=25) and 32% (n=12) were female.

Race/Ethnicity

Four choices were possible for this Item, including white/non-Hispanic, black/non-Hispanic, Hispanic, and other. Thirty-six (36) participants completed this Item. One participant chose both white/non-Hispanic and black/non-Hispanic. Both choices were included in the results. Table 3 provides the data for Race/Ethnicity

Table 3

Race/Ethnicity

Race/Ethnicity	n (%)
White/non-Hispanic	21 (58.3%)
Black/non-Hispanic	12 (33.3%)
Hispanic	0 (0%)
Other	4 (11%)

Marital Status

Participants were asked to identify whether they were single, married, divorced/separated. One participant marked all three options; this survey was not counted. One

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participant wrote in "widowed," which was recoded into the divorced/separated category since the participant was once married.

Table 4

Marital Status

Marital Status	n (%)
Single	27 (75%)
Married	2 (6%)
Divorced/Separated	7 (19%)

Education

All participants completed this Item. Over half (54.1%) had a high school diploma, and approximately one-third (32.4%) did not complete high school. Three (8.1%) indicated that they had completed an undergraduate degree, and one each selected a graduate degree (2.7%) and post-graduate degree (2.7%).

Employment

All participants completed this Item. Approximately 40% indicated they were not employed; 24.3% were disabled. Part-time was selected by 16.2%, retired by 10.8%, and full-time by 8.1%.

How would you describe your health?

This Item included a 4-point Likert scale with values attached: excellent (4), very good (3), fair (2), and poor (1). All participants completed this Item. Twelve (32%) of the respondents felt they were in excellent or very good health, and twenty-four (64.8%) felt they were in fair or poor health. One participant indicated that they were between very good and fair; this was coded

as 2.5. The average score for the sample's description of their health was 2.67, with a median of 3. This indicates that the participants generally viewed their health as fair/poor.

Health insurance/Family Doctor

One participant did not complete the health insurance item, and all participants completed the family doctor item. Table 4 provides the results for both of these items.

Table 5

Health Insurance/Family Doctor

	Health Insurance	Family Doctor
Yes	32 (89%)	22 (59%)
No	4 (11%)	15 (41%)

COVID-19 Vaccination

All participants completed this Item. Two-thirds of the participants (n = 25) were vaccinated; 12 (33%) were not.

Access to the internet

All participants completed this Item. Internet was available to 62% ($n = 23$) of the participants.

Part A: Preventative Practices Against COVID-19

The second section of the survey asked participants about preventative practices they used against COVID-19. Each of the seven items used a Likert scale for responses. The responses were Always (more than 90% of the time); Mostly (approximately 75% of the time); Commonly (approximately 50% of the time); Occasionally (approximately 25% of the time), and Rarely (less than 10% of the time). See Table 6 for the descriptive results.

Table 6

Descriptive Responses to Items in Part A: Preventative Practices Against COVID- 19

Items	Always (5) (>90%)	Mostly (4) (~75%)	Commonly (3) (~50%)	Occasionally (2) (~25%)	Rarely (1) (<10%)
Wash/Sanitize Hands	13 (35%)	11 (30%)	7 (19%)	3 (8%)	2 (5%)
Cover face	20 (56%)	14 (39%)	1 (3%)	1 (3%)	0 (0%)
Six feet	7 (19%)	16 (44%)	5 (14%)	5 (14%)	3 (8%)
Masks outside	7 (19%)	11 (31%)	5 (14%)	6 (17%)	7 (19%)
Sanitize personal items	8 (22%)	10 (27%)	6 (16%)	4 (11%)	9 (24%)
Follow recommendations*	9 (24%)	16 (43%)	6 (16%)	3 (8%)	3 (8%)
Contact/Keep away	22 (60%)	5 (14%)	4 (11%)	3 (8%)	3 (8%)

* Full question: How often do you follow recommendations regarding the COVID-19 pandemic (wearing a mask, social distancing, hand washing, sanitizing personal items)

These responses were also coded from 5 (Always) to 1 (Rarely) to allow ranking of the

practices. Overall, Items 2 (How often do you cover your face with a tissue or bent elbow while

coughing or sneezing?) and 7 (If you come in contact with COVID-19 confirmed or suspected

person, do you keep yourself away from others?) ranked the highest. Items 4 (How often do you

wear masks while going outside?) and 5 (How often do you sanitize your personal items?)

ranked the lowest. See Table 7 for the full rankings

Table 7

Ranking of Preventative Practices

Items	Average
Cover face	4.47
Contact/Keep away	4.08
Wash/Sanitize Hands	3.83
Follow recommendations	3.68
Six feet	3.53
Masks outside	3.14

Part B: Preventative Practices Against COVID- 19

The third section of the survey asked participants to choose reasons why they did not

follow the recommendations. The responses to each item started with a not applicable choice,

and the remaining options differed based on the item's content.

What are the reasons for not washing/sanitizing hands for at least 20 seconds?

All participants ($n = 37$) completed this item. Approximately 60% chose not applicable,

indicating that they washed their hands as recommended. Table 8 presents the responses to the

other options. The participants were directed to choose all that apply, so the overall total may

not be 100%. The most common responses focused on lack of time and the wrong idea that

frequent handwashing does not prevent COVID-19 spread.

Table 8

What are the reasons for not washing/sanitizing hands for at least 20 seconds?

Items	Number Responding
I did not know that washing hands prevents the spread of COVID	3 (8.1%)
Frequent handwashing will not prevent COVID infection	6 (16.2%)
It leads to waste of water and resources	3 (8.1%)
Difficult to change the habit	4 (10.8%)
No availability or a shortage of water or sanitizer	3 (8.1%)
Lack of time	8 (21.6%)
Too much trouble to sanitize hands that often	2 (5.4%)

What is/are the reason (s) for not coughing/sneezing into tissue / bent elbow?

This item was not analyzed due to an error in the responses to the survey. In typing the survey, the responses for Item 1 were copied to Item 2, and the responses did not fit the item's content.

What is/are the reasons that you do not maintain a minimum of six feet when you are in a crowded area?

One participant was missing data for this Item ($n = 36$). Approximately 42% chose not applicable, indicating that they abide by this recommendation. Table 9 presents the responses to the other options. The participants were directed to choose all that apply, so the overall total may not be 100%. The most common responses included lack of space and overcrowding. One participant stated, "sometimes difficult (shelter)," reflecting the lack of space. Almost 14% said they did not know that a minimum of six feet should be maintained.

Table 9

What is/are the reasons that you do not maintain a minimum of six feet when you are in a crowded area?

Items	Number Responding
I did not know that a minimum of six feet should be maintained	5 (13.9%)
Keeping six feet apart will not prevent COVID-19	3 (8.3%)
Lack of space	10 (27.8%)
Difficulty trying to talk	4 (11.1%)
Overcrowding	6 (16.7%)
Other reasons	6 (16.7%)

What is/are the reasons that you do not wear a mask?

One participant was missing data for this Item ($n = 36$). Approximately 47% chose not applicable, indicating that they abide by this recommendation Table 10 presents the responses to the other options. The participants were directed to choose all that apply, so the overall total may not be 100%. The most common response was, "I am tired of wearing masks." Comments

included "can't see," "when I am eating, or my glasses fog up," "never have one when I need it," and "Eating or smoking."

Table 10

What is/are the reasons that you do not wear a mask?

Items	Number Responding
I do not know when I should wear a mask	2 (5.6%)
I cannot afford to buy masks	2 (5.6%)
The virus will not affect me	2 (5.6%)
I am tired of wearing masks	10 (27.8%)
I am vaccinated	3 (8.3%)
Other reasons	7 (19.4%)

What is the reason for not cleaning personal items (for example, purses, wallets, and mobile phones)?

One participant was missing data for this Item ($n = 36$). Approximately 51% chose not applicable, indicating that they abide by this recommendation   Table 11 presents the responses to the other options. The participants were directed to choose all that apply, so the overall total may not be 100%. The most common response was "other." Comments included "don't have personal items," "don't have time," "never have," "I really just use my phone for internet or calls, no purse (anymore)," "access to sanitizing products," and "waste of energy."

Table 11

What is the reason for not cleaning personal items (for example, purses, wallets, and mobile phones)?

Items	Number Responding
I don't know that I should clean these items	7 (20%)
Not useful to clean them	4 (11.4%)

Not needed to clean them	4 (11.4%)
Too tired to clean them	2 (5.7%)
Using sanitizer on personal items will damage them	1 (2.9%)
Other reasons	9 (25.7%)

What are the reasons that you DO NOT follow recommendations regarding the COVID-19 pandemic?

Data were missing for two participants. (*n* = 35). Approximately 68% chose not applicable, indicating that they abide do follow recommendations. Table 12 presents the responses to the other options. The participants were directed to choose all that apply, so the overall total may not be 100%. The most common response was, "It is my right to make my own decisions regarding my health."

Table 12

What are the reasons that you DO NOT follow recommendations regarding the COVID-19 pandemic?

Items	Number Responding
I don't know about recommendations	3 (8.6%)
The recommendations are not effective	1 (2.9%)
It is my right to make my own decisions regarding my health	9 (25.7%)
The virus will not affect me	3 (8.6%)
I never get sick	3 (8.6%)
Other reasons	3 (8.6%)

If you come into contact with a person with confirmed or suspected COVID-19 and cannot keep away from them, what is the reason?

Data were missing for seven participants. (*n* = 30). Participants were presented with two choices. Approximately 83% chose "This does not apply to me," while 17% indicated that they

did not know they were supposed to stay away from a person with confirmed or suspected COVID-19.

Discussion of Results

Well-researched evidence-based practice guidelines from the CDC (2019), WHO (n.d.), and the APIC (n.d.) recommend a multi-layered approach to prevent disease transmission of COVID-19. The interventions are behavioral responses in the form of personal NPIs (mask-wearing, hand washing, covering coughs and sneezes, social distancing when sick, and cleaning personal items) as tools in this multi-layered approach. Breakwell et al. (2021), Toussaint et al. (2020), and Agarwal et al. (2021) affirm that preventative behaviors slow the transmission of COVID-19. A discussion of the current study outcomes and comparisons to the literature search is provided.

It is important to note that of the studies reviewed in the literature search, the study from Henwood et al. (2020) was focused on individuals who lived in public supported housing and the remainder were of various populations.

Behavior Responses (Personal NPIs)

The cross-sectional survey completed in the U.S. through Amazon Turk by Li et al. (2020) found that washing hands, covering the mouth when coughing and sneezing, and social distancing was more commonly implemented than wearing a face mask, staying home, or cleaning commonly touched surfaces. Respondents who were older, female, and non-white were associated with adopting preventative behaviors. Romer and Hall Jamison's (2020) national surveys also found that younger individuals with lower income and education were more likely to discount the need for personal NPIs. Brand – Bateman et al. (2021) completed three focus groups that identified a lack of face masks and hand sanitizers as a barrier.

The median age of respondents in this study was 49 years old, with 68% identifying as male and 58.3% as White/non-Hispanic, and over half completed high school. The top three preventative behaviors were using a face covering (4.47/5), social distancing (4.08/5), and washing/sanitizing hands (3.83/5). While similarities were found with the Li et al. (2020) study on hand washing and social distancing, a stark difference was in the use of face masks. This may be due to the requirement that individuals in the emergency shelter buildings must wear a mask for entrance. It is notable that in the current study, the use of face coverings outside was less frequent (3.14/5). The most common reason that face coverings were not worn was that the individual was "tired of wearing masks." Other less common reasons were "not being able to see," "glasses fogging up," not having a mask, or "eating or smoking." A lack of face coverings, hand sanitizer, or water for hand washing was not identified as a barrier in the current study.

A lack of supplies was listed as a barrier by 8.1% of respondents in the current study. The most common handwashing barrier was lack of time (21.6%). Two combined responses of "not being aware that washing hands prevents COVID" and "frequent hand washing will not prevent COVID" accounted for a combined total of 24.3% of respondents. This could indicate an opportunity for targeted education to increase handwashing behaviors.

Sanitizing personal items had a variety of responses, with the majority (27%) indicating that they "mostly" sanitized personal items. This was followed by "always" from 22% of respondents, and 16% indicated they "commonly" did. In the remainder, 35% indicated that they "occasionally" or "rarely" did. Li et al. (2020) found that respondents were less likely to sanitize items, possibly due to the time it took to perform this. Reasons from current survey participants indicated a variety of reasons that personal items were not cleaned. The most frequent reason (25.7%) was indicated as "other reasons," and no indication was given. The second most

common answer (20%) was not knowing that these items should be cleaned. The following most common reasons were "not useful to clean them" (11.4%) and not needing to clean them (11.4%). These results show an opportunity for targeted education.

Internet Use as a Source of Information

Romer and Hall Jamison (2020) completed two national surveys with 890 respondents and found that younger individuals, those with lower income and education, were more likely to discount the seriousness of the pandemic based on conspiracy theories. Li et al. (2020) study was on Amazon Turk, a crowd-sourcing platform requiring internet access. Iwundu et al. (2020) noted that lack of internet access could contribute to decreased access to trusted health information. In the current study, only 62% of respondents had internet access.

A question was included for reasons that recommendations regarding the COVID-19 pandemic were not followed. Thirty-five individuals responded, as two individuals did not answer. Almost 68% of respondents reported following recommendations. Reasons ranged from nine individuals (25.7%) reporting that it was their choice whether to follow recommendations and an average of three individuals (8.6%) for each of the following statements, "they never get sick, the virus will not affect me," "I don't know about recommendations." This represents over a quarter of respondents who may benefit from additional education on COVID-19 precautions.

In addition to internet sources, other sources of information can include medical professionals, shelter staff, newspapers, television, friends, and family. Of survey respondents, 89% reported having health insurance, and 59% reported having a family doctor. Information from trusted health professionals can guide adopting personal behaviors to prevent disease transmission. Less than 60% report having a family doctor, and of those who did, it is unknown

whether their family doctor's office saw these individuals during the pandemic when many offices were doing telehealth visits.

Social Determinants of Health

A literature search in March 2021 revealed four studies that reviewed the impact of social determinants of health in aggregates for African Americans, those with mental illness, developmental disabilities, substance use disorder, and those in supportive housing.

Henwood et al. (2020) also noted that tenants who indicated a mental health diagnosis experienced less hand washing and a lack of supplies. No specific question was included in the current survey for the respondent to indicate whether they had a mental health or substance abuse disorder. A general question of the respondent's perception of their health was asked, with 64.8% responding that they felt their health was fair to poor. The previous discussion reported that people experiencing homelessness (PEH) have a higher incidence of chronic mental and physical conditions and substance abuse disorders. This study indicated that wearing a face mask and washing or sanitizing hands were the top three practices reported in the survey. When barriers were discussed, a lack of water or sanitizer was listed as a barrier by a small number of respondents, 8.1%.

Chilling and Lee (2020) analyzed disparities in rural areas citing challenges due to insufficient water and plumbing structure. No respondent in the current study indicated a barrier due to insufficient plumbing infrastructure.

Henwood et al. (2020) conducted a phone survey in public-supported housing in Los Angles that was completed during the shelter-in-place order. The average respondents were 56 years old, 73% male, and 61% African American. The challenge for this group was social distancing due to shared bathroom facilities. While 42% of respondents in this study indicated

that they followed this recommendation, the most common barriers to social distancing were lack of space (27.8%) and overcrowding (16.7%). A surprising outcome is that 14% of respondents indicated that they did not know that a minimum of six feet should be maintained. Difficulty talking was listed by 11.1% of respondents as a reason that social distancing was not followed. A common theme for individuals who utilize shelter services is the difficulty of maintaining social distancing.

Brand-Bateman et al. (2021) completed virtual focus groups with participants in rural and urban Alabama communities where the African – American population is 75% or greater and a poverty rate greater than 30%. Barriers focused on themes of apathy in younger community members, lack of space for social distancing due to crowded conditions and essential jobs, information believed to be mixed messages, and lack of masks and hand sanitizers. In the current study, twice as many respondents self-reported as white compared to black.

One-third (32.4%) of survey respondents indicated that they did not have a high school diploma, over half (54.1%) indicated that they had a high school diploma, and three (8.1%) indicated an undergraduate degree. Odoh et al. (2019) bring to light challenges when there is a vulnerability and a lack of health literacy to determine the healthiest behaviors.

Limitations

The first limitation was not being able to ensure that duplicate surveys were not handed in. There is no sign-in required at mealtimes at either shelter. Verbal instructions were given by the researcher asking respondents to only complete one survey. During the second data collection day, some potential respondents volunteered that they had already completed a survey the previous day. There was no compensation available for filling out the survey. Individual bags with face masks, hand sanitizer, and disinfectant wipes were handed out to potential

participants at their arrival for the meal. These were given to everyone who entered whether they filled out a survey, if they had completed a survey the day before, and if they asked for additional supplies.

The second potential limitation was that some potential respondents did not seem comfortable participating. Completed surveys were more frequently returned from more people that were white than people of color. The data collector observed that whole tables of potential survey respondents did not open the envelopes to look at the survey. During one of the survey days, a potential survey participant stated to the student, "you academics don't ever get anything right." Despite being introduced as an emergency department nurse, it is indeterminate whether potential survey participants viewed the data collector as a nurse seeking to improve the health status of a vulnerable population. This could indicate a need for an opportunity to develop a therapeutic trusting relationship before data collection.

The third was limitations to participation due to poor eyesight or potential untreated mental illness or substance abuse. Some potential respondents stated they would only participate if money was offered and asked the data collector if they knew of other studies that provided monetary compensation. Others appeared to be hearing voices or responding to auditory hallucinations. Two minor verbal altercations occurred at one shelter, resulting in the participants being asked to leave the shelter.

The use of focus groups or other qualitative methods of data collection could provide increased participation. Using a focus group or interview style of questioning could lay the groundwork for developing a therapeutic relationship that would support participation in a future study.

Decreasing the number of questions to focus on 2-3 barriers identified in the survey may also provide in-depth information to focus education on. This would also provide a better understanding of an individual's health literacy level, education level, and whether an individual was experiencing the effects of substances or auditory or visual hallucinations. An observation of the participants' behavior over a period of time may also provide data to support the survey responses.

Summary

This survey study provided a brief glimpse into the local experience of people experiencing homelessness in the data collector's local community. While reaching 28% of survey results is close to Lindemann's 2021 recommendation, there is an opportunity to implement targeted education and collect data from the group. While findings may not be generalizable to all PEH and homeless shelters, it does provide valuable information to develop targeted interventions at the community level. As cases rise and decrease and the pandemic becomes more endemic, the need for adopting personal NPIs will fluctuate.

Chapter 5 - Summary, Conclusions, and Recommendations

Summary of Findings

The start of the COVID-19 pandemic saw the implementation of shelter-in-place orders as well as the interruption of much-needed social support for various vulnerable populations. As information became available on how disease transmission of COVID-19 occurs, evidence-based mitigation interventions were recommended by public health authorities such as the CDC (2019), the WHO (n.d.), and the APIC (n.d.). These interventions were mask-wearing, hand washing, social distancing, cleaning personal items, and coughing in a tissue or an elbow.

While evidence was collected on the effectiveness of these interventions, and many were in positions to share their thoughts on these recommended interventions through the news or social media, specific vulnerable populations were identified where the data was unknown. One of these identified populations is people experiencing homelessness (PEH) in emergency shelters.

Various characteristics of this population contribute to potential additional stressors in adopting mitigation interventions. The population is already at risk for chronic physical, behavioral, and substance abuse conditions. The social determinants of health impact this population, as evidenced by an SVI index of 0.6194 and a CCVI index of 0.92 and 0.93. This reflects a slightly higher than average population density, median household income under 21,008 a year, and barriers to housing and transportation (CDC, 2018; Surgo Ventures, n.d.; United States Census Bureau, 2021)

This project was completed to answer the following question:

Among homeless adults in emergency shelters (P), what are the practices and barriers (I) to adopting CDC-recommended non-pharmaceutical (personal NPIs) while maintaining COVID-19 precautions (O)?

Most of those in the sample covered their face with a tissue or bent elbow while sneezing or coughing. The most common barriers to covering their face was changing a habit or lack of time. The majority of those surveyed kept away from anyone with confirmed COVID-19; the primary reason for not avoiding contact was they did not know of the COVID-19 diagnosis. Approximately two-thirds of the sample indicated that they followed the CDC recommendations, washed their hands and maintained social distancing. Those who did not follow the recommendations felt it was their own decision to make. Those who did not wash their hands indicted that either it was difficult to change a habit and it would not prevent the spread of COVID-19. Those who did not maintain the social distancing noted overcrowding and lack of space. Approximately half of the sample wore masks and sanitized personal items. Those who did not wear mask indicated that they were tired of the practice. Reasons for not sanitizing included a lack of knowledge that it was required and that sanitizing was not needed.

Implications for Nursing

Understanding the practice of protective health behaviors to prevent disease and the practice of these behaviors can direct interventions. The data from a specific local community can focus on interventions. While small sample sizes cannot be generalizable to large populations, there is a benefit in allowing for the focus of targeted interventions on specific areas of need where they could provide the most benefit. will you discuss the plan the shelters have to use your information to help their clients? A Power Point presentation of the results of the study can be shared with the leadership of the two shelters. This provides an opportunity to direct

education to members of the community who are receiving services at the shelters. One direction can be using group health teaching provided by nursing students, healthcare volunteers, and public health workers at emergency shelters.

Since this project was started, there are a variety of COVID-19 toolkits available to provide the necessary information to specific audiences. Agencies such as the CDC (2022, April 11), the US Food and Drug Administration (n.d.), the Center for Medicare and Medicaid Services (2022, July 20), and the US Department of Health and Human Services are a few of the many resources available. The CDC recommends that shelters access messaging and communication from credible sources, posting signs at entrances and strategically on personal NPIs, and keeping staff and clients updated of changes. Communication can be through hotlines, automated text messages, and websites. Identifying potential language, cultural and disability barriers will aid in addressing communication problems (CDC, 2022).

Information can focus on current community transmission, personal NPI uses, when to seek assistance from a family doctor, and when to seek ED assistance. The results mirror the stated need from the CDC Science Agenda, specifically Objective 3. Objective 3 seeks to enhance communication, which was identified in the survey results. The CDC (2020, November 12) stresses the need for engagement with different audiences, especially those without access to internet services or disproportionately affected by vulnerabilities. A community or public health nurse can provide timely information with clear messages that meet PEH's health literacy needs. This can encourage the adoption of protective behaviors.

Recommendations for Further Research

This study provides recommendations for further research. During the data collection period, surveys were dispersed and collected surveys while dressed in casual clothes and the

investigator was introduced as an emergency department nurse. One verbal comment from someone utilizing shelter services was, "you academics do not understand anything!". A group of African American males was sitting at a table and stated they were not interested in participating. Pecoraro (2021) notes that minority populations of color continue to experience wariness in the healthcare system. Populations with mental illness and substance abuse disorder may avoid seeking the healthcare system based on previous encounters.

As an unfamiliar face in the shelter, the researcher was not accepted as part of the shelter community. As a result, some roadblocks were encountered. There was a time constraint associated with the distribution of the surveys during lunch time. There was only one hour allotted for the individuals to eat; adding the completion of the survey interrupted the usual activity. that time.

Future research is needed and can be directed towards focus groups and/or qualitative studies where there is an opportunity for individuals to provide data and build upon answers that identify barriers. Some potential participants expressed having difficulty reading due to poor eyesight or lack of corrective lenses, and focus groups or qualitative studies would address these concerns.

Summary

The CDC has identified a need for ongoing data is specific vulnerable populations, like those experiencing homelessness. COVID-19 has not been eradicated, as evidenced by continuing cases in late Spring 2022. While a portion of respondents reported being vaccinated, adherence to receiving booster doses has yet to be seen. This allows for ongoing education and recommendations to implement behavior responses for personal NPI use when community transmission is high. Those who experience homelessness already shoulder additional health

concerns and co-morbidities and are disadvantaged in keeping themselves safe. Ongoing studies can allow for interventions to be changed depending on levels in the community, seasons, and the needs of the individuals.

This survey project aimed to identify the practices and barriers that people experiencing homelessness have in adopting evidence-based recommendations to prevent the transmission of COVID-19.

The results supported the need for additional health teaching on evidence-based recommendations to interrupt disease transmission of COVID-19 and the benefits of adopting or maintaining preventative behaviors in moderate to high community transmission. The focus can be less on providing supplies and more on developing education for when new variants emerge and cause increased disease transmission.

The NAEH (n.d.) stresses that "health and homelessness are inextricably linked. Health problems can cause a person's homelessness as well as be exacerbated by the experience". Romer and Jamison (2020) highlight the need for individuals to be engaged in adopting preventative behaviors. While committing to a consistent message may be challenging as the pandemic becomes endemic, health teaching by nurses can be part of the solution to the problem.

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Appendix A: IRB Review Letter

Appendix B: Permission to Use/Modify Instrument

COVID-19 Practices and Barriers Survey Tool for Use in Emergency Shelters

*PLEASE <u>DO NOT</u> PUT YOUR NAME ON THE SURVEY

☐ Retired

Age: _____

Gender that you identify with:
☐ Male
☐ Female

Race/Ethnicity:
☐ White, non–Hispanic
☐ Black, non-Hispanic
☐ Hispanic
☐ Other

How would you describe your health?
☐ Excellent
☐ Very good
☐ Fair
☐ Poor

Marital Status:
☐ Single
☐ Married
☐ Divorced or separated

Health insurance
☐ Yes
☐ No

Education:
☐ Less than high school
☐ High school diploma
☐ Undergraduate degree
☐ Graduate degree
☐ Post graduate degree

I have a family doctor
☐ Yes
☐ No

I have been vaccinated for COVID-19
☐ Yes
☐ No

Employment:
☐ Full-time
☐ Part-time
☐ Not employed
☐ Disabled

I have access to the internet
☐ Yes
☐ No

Part A: Preventive practices against COVID-19

1. How often do you wash/sanitize your hands with soap and water/ alcohol-based sanitizer for at least 20 seconds?

   ☐ Always (more than 90% of the time)
   ☐ Mostly (approximately 75% of the time)
   ☐ Commonly (approximately 50% of the time)
   ☐ Occasionally (approximately 25% of the time)
   ☐ Rarely (less than 10% of the time)

2. How often do you cover your face with a tissue or bent elbow while coughing or sneezing?

   ☐ Always (more than 90% of the time)
   ☐ Mostly (approximately 75% of the time)
   ☐ Commonly (approximately 50% of the time)
   ☐ Occasionally (approximately 25% of the time)
   ☐ Rarely (less than 10% of the time)

3. How often do you maintain a minimum of six feet when you are in a crowded area?

   ☐ Always (more than 90% of the time)
   ☐ Mostly (approximately 75% of the time)
   ☐ Commonly (approximately 50% of the time)
   ☐ Occasionally (approximately 25% of the time)
   ☐ Rarely (less than 10% of the time)

4. How often do you wear masks while going outside?
   ☐ Always (more than 90% of the time)
   ☐ Mostly (approximately 75% of the time)
   ☐ Commonly (approximately 50% of the time)
   ☐ Occasionally (approximately 25% of the time)
   ☐ Rarely (less than 10% of the time)

5. How often do you sanitize your personal items (purse, mobile phone, etc.)?

☐ Always (more than 90% of the time)
☐ Mostly (approximately 75% of the time)
☐ Commonly (approximately 50% of the time)
☐ Occasionally (approximately 25% of the time)
☐ Rarely (less than 10% of the time)

6. How often do you follow recommendations regarding the COVID-19 pandemic?
☐ Always (more than 90% of the time)
☐ Mostly (approximately 75% of the time)
☐ Commonly (approximately 50% of the time)
☐ Occasionally (approximately 25% of the time)
☐ Rarely (less than 10% of the time)

7. If you come in contact with COVID-19 confirmed or suspected person, do you keep yourself away from others?

☐ Always (more than 90% of the time)
☐ Mostly (approximately 75% of the time)
☐ Commonly (approximately 50% of the time)
☐ Occasionally (approximately 25% of the time)
☐ Rarely (less than 10% of the time)

Section B: Reasons for not doing preventative practices against COVID-19

1. What are the reasons for not washing/sanitizing hands for at least 20 seconds? (CHOOSE ALL THAT APPLY.)
☐ Not applicable
☐ I did not know that washing hands prevents the spread of COVID
☐ Frequent handwashing will not prevent COVID infection
☐ It leads to waste of water and resources
☐ Difficult to change the habit
☐ No availability or a shortage of water or sanitizer
☐ Lack of time
☐ Too much trouble to sanitize hands that often

2. What is/are the reason (s) for not coughing/sneezing into tissue / bent elbow? (CHOOSE ALL THAT APPLY.)

- ☐ Not applicable
- ☐ I did not know that washing hands prevents the spread of COVID
- ☐ Frequent handwashing will not prevent COVID infection
- ☐ It leads to waste of water and resources
- ☐ Difficult to change the habit
- ☐ No availability or a shortage of water or sanitizer
- ☐ Lack of time
- ☐ Too much trouble to sanitize hands that often

3. What is/are the reasons that you do not maintain a minimum of six feet when you are in a crowded area? (CHOOSE ALL THAT APPLY.)

- ☐ Not applicable
- ☐ I did not know that a minimum of six feet should be maintained
- ☐ Keeping six feet apart will not prevent COVID-19
- ☐ Lack of space
- ☐ Difficulty trying to talk
- ☐ Overcrowding
- ☐ Other reasons _____

4. What is/are the reasons that you do not wear a mask? (CHOOSE ALL THAT APPLY.)

- ☐ Not applicable
- ☐ I do not know when I should wear a mask
- ☐ I cannot afford to buy masks
- ☐ The virus will not affect me
- ☐ I am tired of wearing masks
- ☐ I am vaccinated
- ☐ Other reasons _____

5. What is the reason for not cleaning personal items (for example, purse, wallet, mobile phone)? (CHOOSE ALL THAT APPLY.)

- ☐ Not applicable
- ☐ I don't know that I should clean these items
- ☐ Not useful to clean them
- ☐ Not needed to clean them
- ☐ Too tired to clean them
- ☐ Using sanitizer on personal items will damage them
- ☐ Other reasons _____

6. What are the reasons that you DO NOT follow recommendations regarding the COVID-19 pandemic? (CHOOSE ALL THAT APPLY.)

- ☐ Not applicable
- ☐ I don't know about recommendations
- ☐ The recommendations are not effective
- ☐ It is my right to make my own decisions regarding my health
- ☐ The virus will not affect me
- ☐ I never get sick
- ☐ Other reasons _____

7. If you come into contact with a person with confirmed or suspected COVID-19 and cannot keep away from them, what is the reason?

- ☐ This does not apply to me
- ☐ I did not know I was supposed to stay away from a person with confirmed or suspected COVID-19.

Thank you for your time in completing this survey.

Appendix D-Modifications made to Survey

Appendix D – Approval Letters from Emergency Shelters

 Community of Caring

Date: July 27, 2021

Re: Community of Caring – Letter of Support

Dear Colleen Acri,

As an authorized representative of Community of Caring, this letter confirms that I allow you access to conduct study-related activities at the listed site(s), as outlined below.

- **Research Site(s):** 245 East 8th St. Erie, Pa. 16503

- **Study Purpose:** The study aims to identify practices and barriers in adopting CDC recommendations to prevent and mitigate the SARS-CoV-2 virus in two emergency shelters in Erie, Pennsylvania.

- **Study Activities:** The study activity is for the principal investigator, Colleen Acri, to distribute and collect a paper survey questionnaire to adult (aged 18 and over) residents of the shelter who are interested in participating after a signed consent is obtained.

- **The site (s) Support:**

  ➢ The study site agrees to provide a table for the principal investigator to distribute the paper questionnaire to interested residents during a time - period to complete the questionnaire, such as a mealtime.

  ➢ To post an information flyer (provided by the principal investigator) one week before the date of the study that includes information on the principal investigator, the date that the principal investigator will be distributing the questionnaire, the aim, and the purpose of the questionnaire.

- **Data Management:** The information collected includes a numbered 2-section paper questionnaire to identify practices and barriers in adopting health behaviors, questions related to demographic information, and an informed consent form. The questionnaire and informed consent will be distributed and collected by the principal investigator and placed in a locked box to ensure confidentiality.

I understand that this site's participation will only occur during the study's active Edinboro University Institutional Review Board period. All study-related activities must cease if

"He hath shown thee...what is good, and what does the Lord require of thee but to do justly and to love mercy and walk humbly with thy God?"
—Micah 6:8

[On organizational letterhead]

Date:

Re: Letter of Support for Erie City Mission

Dear Colleen Acri,

As an authorized representative of Erie City Mission, this letter confirms that I allow you access to conduct study-related activities at the listed site(s), as outlined below.

- **Research Site(s):** 1017 French St. Erie, Pa. 16501

- **Study Purpose:** The study aims to identify practices and barriers in adopting CDC recommendations for the prevention and mitigation of the SARS-CoV-2 virus in two emergency shelters in Erie, Pennsylvania.

- **Study Activities:** The study activity is for the principal investigator, Colleen Acri, to distribute and collect a paper survey questionnaire to adult (aged 18 and over) residents of the shelter who are interested in participating after a signed consent is obtained.

- **The site (s) Support:**

  ➢ The study site agrees to provide a table for the principal investigator to distribute the paper questionnaire to interested residents during a time - period to complete the questionnaire, such as a mealtime.

  ➢ To post an information flyer (provided by the principal investigator) one week before the date of the study that includes information on the principal investigator, the date that the principal investigator will be distributing the questionnaire, the aim, and the purpose of the questionnaire.

- **Data Management:** The information collected includes a numbered 2-section paper questionnaire to identify practices and barriers in adopting health behaviors, questions that relate to demographic information, and an informed consent form. The questionnaire and informed consent will be distributed and collected by the principal investigator and placed in a locked box to ensure confidentiality.

I understand that this site's participation will only occur during the study's active Edinboro University Institutional Review Board period. All study-related activities must cease if

IRB approval expires or is suspended. I understand that participation will be voluntary; The Erie City Mission's clients will not be penalized or rewarded for their participation.

If I have any concerns related to this project, I will contact Colleen Acri, the principal investigator. At (814) 490–3666 or at cacri@edinboro.edu. For concerns regarding IRB policy or human subject welfare, I may contact Edinboro University IRB at irb-chair@edinboro.edu.

Regards,

[Signature of Research Site Authorized Representative]

[Date Letter Signed]

Signature	Date Signed

[Full Name of Research Site Authorized Representative]

[Job Title of Research Site *Authorized Representative]*

Full Name	Job Title