

Running head: REDUCING MISSED APPOINTMENTS AT HHHRC

REDUCING MISSED APPOINTMENTS AT THE HAWAI'I HEALTH & HARM  
REDUCTION CENTER (HHRC)

UNIVERSITY OF HAWAI'I AT MĀNOA SCHOOL OF NURSING AND DENTAL  
HYGIENE

A DOCTOR OF NURSING PRACTICE PROJECT SUBMITTED TO THE GRADUATE  
DIVISION OF THE UNIVERSITY OF HAWAI'I AT MĀNOA IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF NURSING PRACTICE

MAY 2022

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**ABSTRACT**

Healthcare appointment attendance rates for members of the homeless population, those with mental health issues, and substance abuse patients is markedly lower than attendance rates among other population groups. This project intended to reduce missed appointments in these groups of patients seen by the HHHRC by sending out appointment reminders via text messages. Results from the 3-month long intervention in 2021 were compared with the same 3-month period from the two prior years. Total appointments made for the 3-month period of October through December steadily rose from 2019 to 2021. The total appointments made for the post-intervention period (October 2021-December 2021) was 1016, representing an approximately 60% increase from the pre-intervention monthly average. Despite the intervention and the increase in total appointments made, the percentage of missed appointments (43%) remained essentially constant compared to the pre-intervention periods (41%). No show appointments accounted for 82% of all missed appointments during the post-intervention period and were also comparable to the pre-intervention periods average (35% versus 32%). For this project appointment reminders alone were not able to lower the rates of missed appointments.

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## **Reducing Missed Appointments at the Hawai`i Health & Harm Reduction Center (HHHRC)**

Providing continued medical care to the homeless, people with substance abuse issues, and mental health problems is challenging. Likewise, providing continued medical care for concurrent chronic medical conditions, like poor wound healing, is another challenge for people in the homeless population. Substance abuse is a common pathway to becoming and remaining homeless (Chamberlain & Johnson, 2013). Mental health problems, such as post-traumatic stress disorder, major depressive disorder, bipolar disorder, and schizophrenia require continued care from a healthcare provider for adequate treatment. A recent study in Sydney found that 71% of homeless people had a previously diagnosed psychiatric issue (Davies & Wood, 2018). As are many of these themes, previous trauma and mental health issues are often intertwined with substance use disorders as people attempt to self-medicate as a negative coping mechanism. As stated by the National Coalition for the Homeless “people who are poor and addicted are clearly at increased risk of homelessness” (2020, para. 5). In combination with other comorbidities (e.g., diabetes, dyslipidemia, hypertension) people suffering with serious mental health problems die 15 to 20 years younger than similarly aged people without mental health issues (Saha, Chant, & McGrath, 2007).

### **Background**

Overcoming barriers to healthcare appointments for the homeless, specifically people with substance abuse issues, and mental health problems requires a critical analysis of social determinants of health (Davies & Wood, 2018). Food insecurity, unavailability of affordable housing, history of trauma/abuse, lack of employment opportunities, and lack of education

opportunities constitute barriers that contribute negatively to a homeless individual's health (Davies & Wood, 2018).

The environment in which homeless people live in is often violent, unsanitary, and exposed to the elements. Weighing heavily on the minds of most homeless are the lower levels of Maslow's Hierarchy of Needs: food, shelter, and personal safety (Rajabiun et al., 2007). Friendships and feelings of accomplishment are luxuries that may not be realized. Seeking help for chronic medical problems, too, often gets overlooked.

Financial and practical constraints contribute greatly to a homeless person's inaccessibility to continued primary care services. Often homeless people are focused on finding food and shelter for the day. This can preempt them to skip a medical appointment if it does not fit in their unpredictable day. Many homeless people cannot afford cell phones, thereby severing important links to healthcare providers and other services. Financial constraints also contribute to difficulties with transportation. Not having a permanent and secure residence means many have all their possessions with them, making it difficult to travel to healthcare facilities.

Stigma is another barrier to care for homeless people. Homeless communities across the nation face backlash from nearby businesses and residents. Petit, et al., conducted a study in Europe and found 30% of the people surveyed had a negative view of homeless people (2019). Another US study reported that although most respondents were compassionate about homelessness, many were conflicted with certain policies allowing panhandling and making encampments in public places (Tsai, Lee, Shen, Southwick, & Pietrzak, 2019).

Per Medical Director and Content Expert Dr. Christina Wang, a missed appointment is an appointment that has been made, and agreed upon, by both patient and provider at the Hawaii

Health and Harm Reduction Center (HHHRC) but was subsequently not attended by the patient. This can mean that the patient canceled the appointment, rescheduled, or was a no show. Barriers to healthcare experienced by homeless people have been well identified and documented in the scientific literature. These barriers directly translate into missed appointments. A review of existing literature has yielded solutions to some of these barriers. The preeminent solution presented in the literature involves providing housing for the homeless (Potter, Wilking, Nevarez, Salinas, & Eisa, 2020). This method is also known as Housing First and has been backed by Presidents George W. Bush, President Obama, and currently by President Biden. Other solutions that involve fewer resources are regular communications between the healthcare organization and the patient in the form of appointment reminders and follow up calls (Corrigan et al., 2017).

**Problem Statement:**

People experiencing homelessness have many barriers to healthcare. These barriers can be internal, such as mental illness or substance abuse. Barriers can also stem from social determinants of health factors such as inadequate social welfare systems, food insecurity, or a lack of affordable housing. Whatever the barriers to care may be, if they are not overcome, they will result in missed appointments for healthcare visits.

HHHRC is an organization that provides healthcare services to many homeless people. This organization faces a missed appointment rate of 41% on average for mental health and substance abuse patients. This high rate of unfulfilled appointments consumes valuable provider hours that could be used to care for patients. More importantly, missed appointments result in delayed or halted progress in health outcomes for patients. This project will focus on mental

illness and substance abuse patients, since they represent the largest number of missed appointments.

HHHRC currently has several interventions in use to reduce the number of missed appointments. (1) Monthly transportation passes for “TheBus”, Oahu’s public bus system, can be granted as well as Lyft rides. Lyft rides, however, are only approved for a select few situations. Since some HHHRC patients do not have a reliable means of communication, it can be difficult to schedule pick-ups with Lyft since the driver has no way of contacting the passenger. (2) Food pantry and hygiene kits that are distributed in the office to patients which can work as an incentive to make the appointments.

An initial 2021 HHHRC Barriers to Care Survey was conducted to collect data on barriers to care for a specific patient base. This survey was designed to be easily completed in five minutes or less. It was comprised of four questions: What are some things that prevent you from going to appointments? Are there any things we can do to help you go to your appointments? Do you have daily access to a cell phone or landline? If you do have access to a phone, would a reminder phone call or text be helpful? Eleven patients were surveyed between June and August 2021, the survey identified several barriers common to most respondents: (1) transportation issues, (2) problems related to substance use and addiction, and (3) struggles of daily living as a homeless person. Almost unanimously the respondents said that a reminder 24 hours prior would be very helpful in assisting the patient to not miss their appointment. A copy of the 2021 Barriers to Care Survey can be viewed in Appendix A.

The PICOT interventions for this quality improvement (QI) DNP doctoral project will be using appointment reminders via text/email and follow-up phone calls. Appointment reminders will include texts/emails 24 hours in advance of appointments. Follow-up phone calls will be



conducted to patients after a missed appointment to re-establish contact and reschedule another appointment.

### **PICOT**

**P:** People with mental health and substance use issues under the care of Hawaii Health & Harm Reduction Center (HHHRC)

**I:** Primary interventions will be pre-appointment reminder text/email messages and after a patient has missed an appointment follow-up phone calls from the author to patient

**C:** Appointment attendance rates pre- and post-text/email reminders and follow-up phone calls

**O:** Reduce the number of missed appointments of mental health and substance abuse patients by 15%

**T:** October 1, 2021-December 31, 2021

### **Purpose and Objectives**

The purpose of this project is to assist HHHRC patients in reducing missed appointments, therefore increasing appointment attendance. This will be achieved by providing appointment reminders and follow-up phone calls. If patients do have a missed appointment, the author will reestablish contact via a follow-up phone call and attempt to reschedule. The objective of this project is to reduce the number of missed appointments of mental health and substance abuse patients by 15%. This would, hopefully, in the future translate into a higher number of patient treatments and better patient health outcomes.

## **Framework**

The framework utilized in this project was the Johns Hopkins Evidence-Based Practice for Nurses and Healthcare Professionals Model (Dang, Dearholt, Bissett, Ascenzi, & Whalen, 2021). This model is widely known for identifying best-practices and quickly implementing them into the healthcare setting. This framework provides step-by-step instructions in the form of 10 worksheets that assisted in the formation of the entire project. The PET Management Guide assisted in the creation of the practice question: “what barriers to healthcare do homeless people encounter?” This question led to the problem statement that many barriers to care exist and they are often not addressed, directly leading to missed appointments. The Johns Hopkins Model has an exceptional Evidence Level and Quality Guide which aided in the literature review.

## **Synthesis of the Evidence**

### **Evidence Search**

The focus of this DNP doctoral project is reducing missed appointments for homeless population groups with mental health or substance abuse conditions. “Missed appointments” was not commonly found in the nomenclature of peer-reviewed, scientific publications. What was highly prevalent is the topic of “barriers to healthcare”, which, in turn directly translated into missed appointments. Therefore, the topic of “overcoming barriers to healthcare for homeless people” was searched on EBSCO using the “Academic Search Complete” database. Advanced search with three Boolean fields was utilized. The first search field included the terms “overcoming barriers OR minimizing barriers OR reducing barriers OR solutions to barriers”. The second search field included the term “health\*” to populate all words that begin with the word “health”. The final search term was “homeless\*”, also with the asterisk to encompass all

words beginning with “homeless”. The expanders “apply related words” and “apply equivalent subjects” were selected. Published dates chosen were January 1, 2006 – July 9, 2021. As of July 9, 2021, this search populated 28 results: 27 unique, one duplicate.

The author broadened the search databases to include “CINAHL with Full Text” and “MEDLINE”. This search garnered 86 reports, for a net total of 114 with both searches combined. There were 46 unique reports out of the total 114, due to many duplicate, triplicate, and even quadruplicate results. In an additional effort for a more robust literature search, the previously mentioned databases were also searched with the fields “appointment reminders” and “homeless\*”. This resulted in eight unique additional reports, for a total of 54 unique reports.

After reviewing these 54 reports, the author devised a rating system that correlated the subject matter of the article to the relevance of this project. This three tier system grouped articles within low-, medium-, and high-relevancy categories. This grouping system was author-subjective but followed a common rubric and provided a structured means of sorting the literature. One key factor taken into consideration is the scope of the HHHRC organization and its capabilities. Many articles offered housing with in-house healthcare to overcome barriers to care. While that concept has shown promise in numerous studies, this solution is not within the scope of the HHHRC organization. In fact, the article would have to address the opposite scenario that involved patients specifically as outpatient (since that is the current model used by the HHHRC). The other main consideration was if the article addressed barriers to continued medical care faced by homeless people.

Low- and medium-relevancy were addressed first. Articles that registered a low-relevancy grade (36) did not address barriers to care for homeless populations and six articles that had medium-relevancy involved homeless populations and addressed barriers to healthcare

but did not offer any solutions to the barriers or the solution was incompatible with the HHHRC organization and their resources (Kaplan et al., 2020; Kushel, 2015; Milaney, 2011; Rogers & Rogers, 2019; Potter et al., 2020; Stanhope & Henwood, 2014). An example of one such article provided housing with on-site providers to establish continuous medical treatment (Kushel, 2015). This solution is beyond HHHRC's current financial capabilities.

Articles with high-relevancy contained the issue of barriers to healthcare for vulnerable populations (homelessness, mental health, and/or substance abuse patients) and solutions to these barriers that could be applicable to an outpatient type setting, such as at the HHHRC. Six articles out of the 54 received the high-relevancy grade (Corrigan et al., 2017; Davies & Wood, 2018; McInnes et al., 2014; Moczygamba et al., 2016; Rabiner & Weiner, 2012; Rajabiun et al., 2007).

## **Synthesis**

The highly-relevant articles included two literature reviews, "*Homeless health care: meeting the challenges of providing primary care*" and "*Health Care for Homeless and Unstably Housed: Overcoming Barriers*" (Davies & Wood, 2018; Rabiner & Weiner, 2012). There were two observational studies: "*Retaining Homeless Veterans in Outpatient Care: A Pilot Study of Mobile Phone Text Message Appointment Reminders*" and "*Getting Me Back on Track": The Role of Outreach Interventions in Engaging and Retaining People Living with HIV/AIDS in Medical Care*" by (McInnes et al., 2014; Rajabiun et al., 2007). One participant survey, "*Homeless patients' perceptions about using cell phones to manage medications and attend appointments*" by Moczygamba et al. (2016). Followed by the only Level I Evidence report out of the six, a randomized-controlled trial by Corrigan et al., "*Using Peer Navigators to Address*

*the Integrated Health Care Needs of Homeless African Americans with Serious Mental Illness”* (2017).

The predominant solutions from these articles regarding overcoming barriers to care were: (1) maintaining regular communication with patients - close, continued contact in the form of text or voice call appointment reminders and follow-up calls to patients (McInnes et al., 2014; Moczygamba et al., 2016; Rabiner & Weiner, 2012; Rajabiun et al., 2007), (2) the use of peer navigators and patient navigators (Corrigan et al., 2017; Rabiner & Weiner, 2012), and (3) incorporating outreach as another facet of an organization’s overall healthcare strategy (Davies & Wood, 2018; Rajabiun et al., 2007).

*Maintaining regular communications* with patients was identified as a key intervention that can boost healthcare outcomes. This position was echoed by five of the six most relevant articles from this literature search. A patient survey of 290 participants revealed that 77% were interested in receiving appointment reminders (Moczygamba et al., 2016). One study regarding HIV patients revealed that regular text messages were linked to increased adherence to pharmacological treatment plans (Amassari et al., 2012, as cited in Rabiner & Weiner, 2012). Rajabiun et al. (2007) reported in their study that occasional check-in calls made patients feel that “someone cared” and helped with appointment attendance. Corrigan et al. (2017) found that weekly calls helped to build rapport between researchers and participants in their study. Most profoundly, in a study on the effect of text message appointment reminders on attendance, McInnes et al. had a 19% reduction in missed appointments post-implementation of reminders (2014).

*Patient navigators* are utilized to assist the patient with questions relating to medical treatments, help with transportation issues to and from appointments, and provide support

throughout treatment. A study of patient navigators found a higher usage of primary care providers and a higher quality of care when using patient navigators (Heller et al., 2004, as cited in Rabiner & Weiner, 2012). Patient navigators were beneficial in assessing eligibility for and helping obtain benefits for homeless people (Rabiner & Weiner, 2012). Peer navigators filled these same roles but also had shared past experiences with what the patient was experiencing. A study about peer navigators working with breast cancer patients found higher rates of cancer care engagement compared to patients without peer navigators (Nguyen et al., 2011, as cited in Corrigan et al., 2017).

*Incorporating outreach* is another integral way of reaching patients like the homeless. Due to the relatively immobile quality of some homeless people, bringing the treatment to them can be an ideal solution to providing care. Aside from the difficulties with transportation, many homeless people forget their scheduled appointments when worrying about other struggles of daily life. “For people who are so disengaged from society that they do not visit drop-in or support services, street outreach is an important avenue for engagement” (Davies & Wood, 2018, p. 233). In the study by Rajabiun et al. (2007) their outreach program recruited people living with HIV/AIDS in their communities and a mixture of strategies such as the patient navigator and regular communications were applied in their healthcare. While they were not physically going out into the community and performing direct patient care, they were involved in the patients’ care every step along the way. This project demonstrated that a long-term partnership between patients, providers, and outreach can result in a higher quality of life (Rajabiun et al., 2007).

## Methods

### Project Design

This is a QI DNP doctoral project with the goal of reducing missed appointments of patients being seen with mental health or substance abuse conditions at HHHRC. *In concordance with terminology used by the HHHRC's electronic health record (EHR) missed appointments will also be referred to as not fulfilled appointments.*

### Participants

The participants in this QI project were the patients being seen by the HHHRC providers for mental health issues and substance abuse conditions. Over 1,000 mental health and substance use patients were scheduled for appointments between October 1, 2021 and December 31, 2021. HHHRC staff involved in this project included the providers, the DNP student (author), and medical assistants and the receptionist.

### Setting

HHHRC is a non-profit organization located in Honolulu, HI that provides services for people with HIV/AIDS, hepatitis, homelessness, substance use, mental illness, and poverty. For people living with HIV/AIDS, they offer case management, counseling, medical care, housing assistance, HIV prophylaxis (PrEP) and HIV post-exposure meds for HIV negative partners. The hepatitis coordinator assists with testing for hepatitis C, provides education, and helps navigate medical treatment options. HHHRC has several divisions that perform outreach services including syringe exchange, wound care, links to community housing solutions, and information on mental health and substance use counseling conducted in the HHHRC office. A mobile medical unit has just begun operating that will enable more complex outreach medical treatments and examinations.

Patients seen in the office are normally on an appointment basis only. The various populations of HHHRC's patients range from high-functioning people who are employed and housed to people living on the streets struggling with mental health and/or substance abuse conditions. Accordingly, the number of missed appointments for these different groups varies drastically. The group seeking assistance with hepatitis resources has a 95% appointment attendance rate, whereas patients seeking mental health and substance abuse counseling hover around 60%. For this reason, this QI project will focus on reducing missed appointments for mental health and substance abuse patients.

### **Intervention**

This is a non-research, QI project. This project is not seeking to answer a new question in clinical practice. The project will attempt to address barriers and reduce missed appointments at the HHHRC for patients seeking mental health and substance use treatment. Missed appointments are equivalent to missed opportunities to treat patients. Reducing these numbers will lead to improved treatment and better patient health outcomes. Previously established interventions for this problem have been supported by evidence in the literature. The interventions that were implemented at the HHHRC included appointment reminders via text or email and follow-up phone calls to those patients who missed appointments in efforts to re-establish contact and reschedule. Interventions were applied to all mental health and substance abuse patients. There was no control group patient population, but a comparison group of the same patient population of HHHRC patients from the periods of October through December in 2019 and 2020 were compared with patients in the intervention period. The intervention period began on October 1, 2021 and continued to December 31, 2021. The appointment reminders and follow-up phone calls were completed by the author and HHHRC front desk staff.



**Appointment Reminders-Texts/Emails**

Reminders were sent from HHHRC's EHR system, "eMedicalPractice", between the hours of 8 am-5 pm Hawaii Standard Time the day before a patient's appointment. This was done by HHHRC front desk staff, medical assistants, and the author with remote access to the HHHRC HER. The HHHRC office is open for appointments every weekday (Monday-Friday) 9 a.m.-5 p.m. with a break for lunch from 12:30-1:30 p.m. All state and national holidays are excluded. The time reminders were sent gave patients a chance to see the reminder for their appointment by the evening before, at the very latest.

The EHR system did not have the capability to automatically generate appointment reminders. For these reminders to be issued, the author reviewed the list of appointments for the next day. The list needed to be reviewed because if there was a cancelation (regardless of if caused by patient or provider) that appointment remained on the schedule but is annotated as "canceled". After reviewing which appointments were still scheduled (not canceled), the front desk staff, medical assistants, or author selected each appointment manually to prompt the EHR to generate the reminders.

**Follow-up Phone Calls**

Every week, either on a Tuesday or Wednesday, the author reviewed all missed appointments from the week prior on the EHR system. This was done by doing a simple search for that timeframe and unchecking the "fulfilled" box – leaving only missed appointments (details found in Appendix B). The author confirmed if the patient had rescheduled or not rescheduled. Those patients that did not reschedule were called (or emailed, if that was their communication preference) from noon-8 p.m. For follow-up phone calls, the author started the

conversation with a script (Appendix C). If the patient was receptive to rescheduling, this was done remotely. Notes were made in the EHR regarding calls made.

### **Data Collection**

Data on missed appointments was obtained through HHHRC's EHR. This EHR software categorizes appointments as fulfilled or not fulfilled. Not fulfilled appointments are further broken down into the following appointment statuses: patient no show, patient canceled, patient rescheduled, doctor cancelled, and doctor rescheduled. This aggregate data was allocated into six categories of interest: total not fulfilled appointments, total fulfilled, total "no show" appointments, total "patient canceled" appointments, total "patient rescheduled" appointments, and grand total number of appointments scheduled (fulfilled and not fulfilled). Since doctor cancelled and rescheduled appointments contributed to the total of not fulfilled appointments but could not be directly attributed to the patient, this number was deducted from the not fulfilled category and total appointments made. Data collection for the intervention period was October 1, 2021 to December 31, 2021. Data from the intervention period was compared with same-periods data from the two years prior: October 1, 2019-December 31, 2019; and October 1, 2020-December 31, 2020. The eMedicalPractice EHR search engine was only capable of conducting fulfilled/not fulfilled appointment reports up to one month at a time. This equated to nine individual month-long queries. Steps on how the queries were conducted are listed in Appendix B.

Aggregate data from the query was downloaded to Microsoft Excel by Dr. Christina Wang then subsequently copied and pasted into a Google Drive spreadsheet for manipulation and storage by Dr. Christina Wang and the author. All patient information was then deleted from the spreadsheets. The "owner" of the Google spreadsheets was the subject matter expert, Dr.

Christina Wang. With the data desensitized, located in “the cloud”, and no files saved to hard drives of individuals’ devices, the risk of confidential patient information being disseminated was eliminated. Dr. Christina Wang and the author have been trained in HIPAA compliance annually.

The aggregate data was then broken down into the six categories mentioned above. Those six categories were counted and incorporated into tables and charts. The tables were organized according to month to enable easier comparison of same-period data.

### **Data Analysis**

Data was processed by the number of missed appointments divided by total appointments scheduled for each month (e.g., not fulfilled appointment data from October 1, 2021 to December 31, 2021 was divided by total appointments scheduled from the same period). This process was followed for each of the nine months of data, from the months of October 1-December 31 for the years 2019, and 2020.

### **Results**

Data collected from this study contains information regarding 2,311 unique appointments over October, November, and December for the years 2019, 2020, and 2021.

**Figure 1**

*Total Appointments for October, November, and December in 2019, 2020, and 2021*

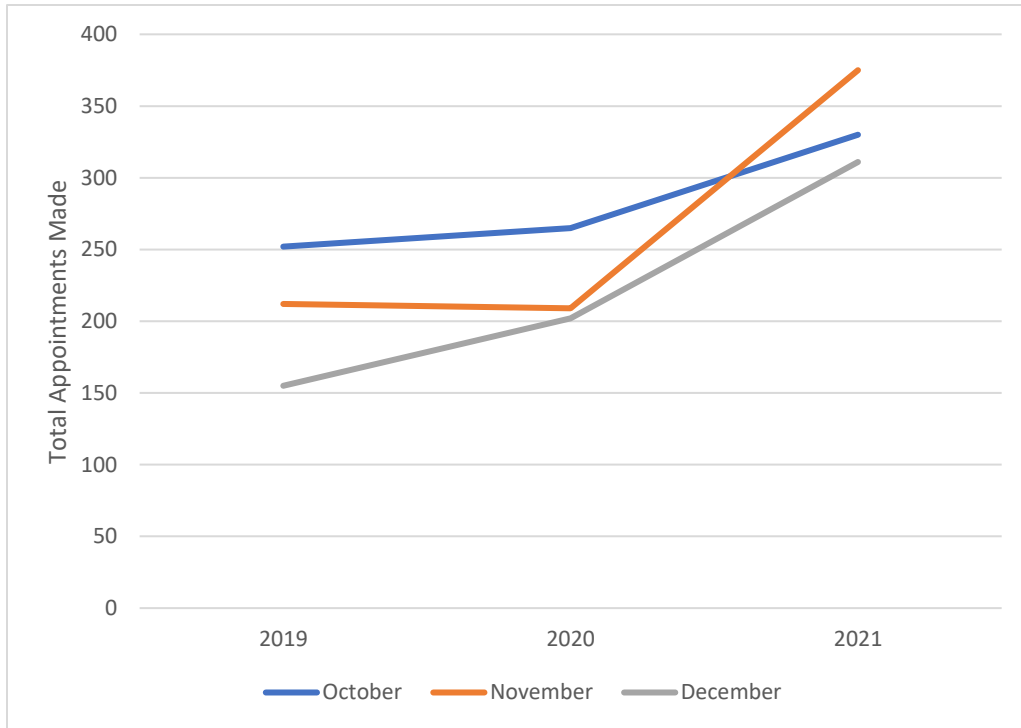


Figure 1 illustrates the trend of increasing numbers of appointments made at HHHRC in the 4<sup>th</sup> calendar quarter across the years of 2019-2021. This trend was evident in all periods (see Figure 1). Total appointments for the month of October rose 31% from 2019-2021. November’s total appointments rose 77% in that same span while December’s numbers doubled from 155 appointments to 311 (200%). Also consistent between the three years was the trend that December had the lowest number of appointments out of the three months (evidenced by the gray line).

**Table 1**

*Appointment Data from the Hawaii Health & Harm Reduction Center*

		<u>Not Fulfilled</u>				<u>Fulfilled</u>	
		<u>No Show</u>	<u>Patient Canceled</u>	<u>Patient Rescheduled</u>	<u>Total Not Fulfilled</u>	<u>Total Fulfilled</u>	<u>Grand Total Appts</u>
<u>Pre-Intervention</u>	2019-Oct	79 (31%)	12 (5%)	13 (5%)	104 (41%)	148 (59%)	252
	2019-Nov	67 (32%)	12 (6%)	7 (3%)	86 (41%)	126 (59%)	212
	2019-Dec	57 (37%)	3 (2%)	15 (10%)	75 (49%)	80 (51%)	155
	2020-Oct	65 (25%)	4 (2%)	23 (9%)	92 (36%)	173 (64%)	265
	2020-Nov	74 (35%)	5 (2%)	10 (5%)	89 (42%)	120 (58%)	209
	2020-Dec	65 (32%)	1 (0%)	11 (5%)	77 (37%)	125 (63%)	202
<u>Pre-Intervention Monthly Total</u>		407	37	79	523	772	1295
<u>Pre-Intervention Monthly Average</u>		68 (32%)	6 (3%)	13 (6%)	87 (41%)	129 (59%)	216
<u>Post-Intervention</u>	2021-Oct	113 (34%)	18 (5%)	9 (3%)	140 (42%)	190 (58%)	330
	2021-Nov	140 (37%)	18 (5%)	14 (4%)	172 (46%)	203 (54%)	375
	2021-Dec	104 (33%)	11 (4%)	10 (3%)	125 (40%)	186 (60%)	311
<u>Post-Intervention Monthly Total</u>		357	47	33	437	579	1016
<u>Post-Intervention Monthly Average</u>		119 (35%)	16 (5%)	11 (3%)	146 (43%)	193 (57%)	339
<u>Grand Total</u>		764 (33%)	84 (4%)	112 (5%)	960 (42%)	1351 (58%)	2311

Note.

*Fulfilled*: are appointments that have been successfully attended by provider and patient.

*Not Fulfilled:* are appointments that were not attended by either provider and/or patient. This category is further divided into five other subcategories.

*No Show:* represents an appointment that was not attended by the patient with no advance warning.

*Patient Canceled:* is an appointment that was not attended by the patient, but advance notice via email or telephone call was given indicating that the patient would not be in attendance.

*Patient Rescheduled:* appointment was canceled and rescheduled for another date instead of original date.

*Two other types of Not Fulfilled appointments, Doctor Canceled and Doctor Rescheduled,* are not listed here because they resulted from the provider's actions. These appointments, ranged from 0-5 per month, have been subtracted from the Total Not Fulfilled and Grand Total Appointments. Doctor Canceled/Rescheduled appointments: October 2019=1, November 2019=3, December 2019=0, October 2020=3, November 2020=5, December 2020=5, October 2021=3, November 2021=1, and December 2021=2.

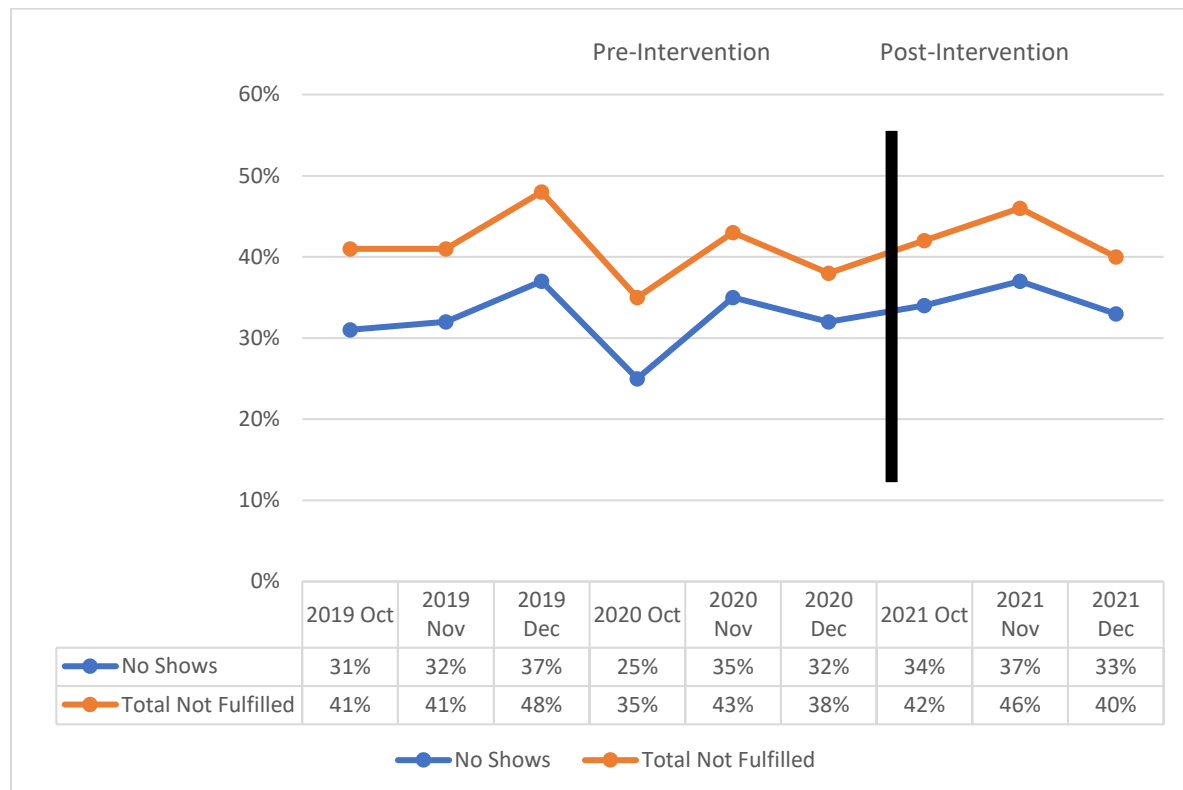
Table 1 is displayed as is the Appointment Data from HHHRC of not fulfilled and fulfilled appointments. The table is further broken down into the pre-intervention period and the post-intervention period. As noted earlier, the number of appointments increased throughout the years 2019-2021. Under the "Grand Total" column the total appointments for the two-year pre-intervention period was 1,295 as compared to 1,016 for the one-year post intervention period. Average monthly appointments were 216 and 339 for the pre- and post-intervention periods, respectively. This represents an approximately 60% increase in average monthly appointments

made. Not fulfilled and fulfilled appointments are listed as n (%) of appointments. All monthly averages were rounded to the nearest whole number.

Two key areas of interest in the not fulfilled category are the no show appointments and total not fulfilled. During the pre-intervention period the estimated monthly average of no-show appointments was 32%. The post-intervention estimated monthly average was 3% higher at 35%. The total estimated monthly average of not fulfilled appointments for the pre-intervention period was 41% and the post-intervention period had slightly increased to 43%.

**Figure 2**

*Monthly Not Fulfilled and No-Show Appointments as a Percentage of Total Appointments*

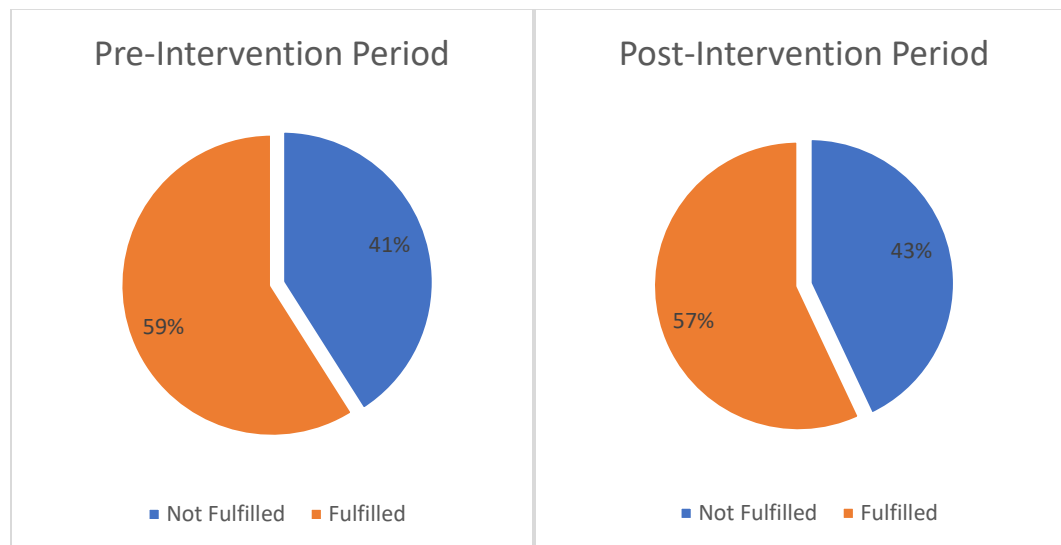


Variability was noted in the pre-intervention period for both no shows and total not fulfilled (see Figure 2). No show appointments ranged from a low of 25% to a high of 37% of

all appointments made in the months of October 2020 and December 2019, respectively. During the same periods, the total not fulfilled appointments ranged from 35% to 48% of all appointments made. Post-intervention variability was less pronounced than the pre-intervention period. Total no show appointments ranged from a low of 33% in December 2021 compared to a high of 37% in November 2021. The not fulfilled data shows a low of 40% in December 2021 and a high of 46% in November 2021. The not fulfilled categories of patient canceled and patient rescheduled amounted to low- to mid-single digit percentages of total appointments. Patient canceled averaged 4% of total appointments made. Patient rescheduled averaged 5% of the total appointments made (see Table 1). No show appointments consistently contributed to the majority of not fulfilled appointments. Throughout the 9 months of data no show appointments averaged 79% of all not fulfilled appointments (see Table 1). The pre-intervention period average was slightly lower than the post-intervention average, 78% versus 82% (see Table 1).

**Figure 3**

*Not Fulfilled Appointments as a Percentage of Total Appointments Pre- & Post-Intervention*





Appointments that were not fulfilled represents a significant number of all appointments made. Figure 3 represents the not fulfilled appointments and fulfilled appointments as a percentage of the total appointments. Overall, not fulfilled appointments as a percentage of total appointments rose from 41% in pre-intervention to 43% during the post-intervention period. These visuals highlight and indicate that approximately half of all appointments made at HHHRC for mental health and substance abuse issues are not fulfilled.

### **Discussion**

The goal of this project was to reduce the high rates of appointments not fulfilled and no show appointments by texting appointment reminders. Unfortunately, this project did not meet the goal of reducing missed appointments by 15%. Conversely, the results of this project revealed that the percentages of appointments not fulfilled and the percentages of no shows either maintained levels from the pre-intervention periods or increased slightly during the post-intervention period.

These results are antithetical to most of the research found in the literature review. For example, as earlier stated McInnes et al reported a reduction in missed appointments after implementing appointment reminders (2014). There are some differences in methods between this project and McInnes' to note. That study used two text reminders (5-days and 2-days prior) and the patient sample size was much smaller, 20. A study by Parikh et al also found that there was a decrease in no show appointments with automated text reminders, however, that study did not focus on the homeless, substance abuse patients, and/or mental health patients (2010).

This project was not alone with its counterintuitive results, however. A study by Henry, Goetz, and Asch determined that automated appointment reminders were not effective in

reducing no shows among the homeless and those with mental health disorders (2012). This was despite being effective in non-homeless patients with no history of mental health conditions or substance abuse issues (Henry, Goetz, & Asch, 2012). Another study by Foyabo regarding medical appointment attendance and text message reminders for homeless people with chronic illnesses had conflicting results (2019). One clinic in the study resulted in a reduction in no show appointments whereas another clinic had an increase (Foyabo, 2019). Projects involving the homeless, substance abuse, and/or mental health conditions can have vastly different outcomes due to the challenges regarding this population.

The impacts of the COVID-19 epidemic are widely felt. Healthcare and routine appointments have been affected, with many people choosing to skip important check-ups and diagnostic tests. Solutions, such as telehealth, have been widely expanded during the pandemic to fill in the coverage gaps and allow for social distancing (Haque, 2021). Many people in the population group covered by this project do not have the resources to utilize telehealth.

During the six months (October – December 2020 and October – December 2021) affected by the pandemic HHHRC was open and was actively seeing patients in-person. This is evidenced by the data mentioned above, with much higher numbers of patients being seen in 2021 than the previous two years. This historical effect of COVID-19 on overall appointments could be due to “pandemic fatigue”, which occurs after people tire of the stress of dealing with the pandemic, strict mask mandates, and restrictions on social gathering (Reicher & Drury, 2021). In the period October 2020 to December 2020 people may have been more concerned about COVID whereas pandemic fatigue may have set in during the period October 2021 through December 2021. Another possible cause of the increased volume in patients is that the pandemic itself is contributing to increased cases of mental health problems such as anxiety and

depression as well as increased substance abuse (Talevi et al, 2020). What is unknown is how the pandemic influenced individual patients' behaviors. Some may have been reluctant to go to appointments for personal reasons, fear of contracting COVID, and/or they had contracted COVID and were unable to attend (Malhotra, Chaudhry, Ozdemir & Finkelstein, 2020) .

The short time span allotted for the intervention and the specific time of year may have had a confounding effect on the results of this project. The three month time-span under observation (October-December) may be more susceptible to missed appointments. There are four federally recognized national and religious holidays during this time span as well as New Year's Eve, which is not federally recognized (United States Office of Personnel Management, 2022). Surrounding these holidays, especially Thanksgiving and Christmas, are some of the busiest travel days of the year (Waldek, 2021). Alaeddini et al reported higher incidence rates of no shows for healthcare appointments in days surrounding holidays (2011). This period is also known to be the least busy time of year for healthcare providers (Bedor, 2018). Conversely, the busiest time of year is from January to March (Bedor, 2018). Conducting the project for a full 12-month period for pre- and post-intervention would have yielded more robust data.

Another factor to take into consideration is the appointment reminder texts may not have been received by the patients in many cases. While making follow-up phone calls it was revealed that around 20% of all numbers called were no longer in service or was a wrong number. Another 40% of calls went straight to voicemail. This could indicate the owner does not accept blocked calls/texts or the phone was turned off or not charged. If the reminders are not received in the first place, this intervention is rendered inconsequential.

An important lesson learned from this project is being able to understand the challenges faced by this population group. Many of these people, the homeless, people with mental health

conditions, or substance use problems are going through many life stressors. In a perfect world they would be at every appointment because they understand that they need help. Obstacles arise often for this group, and they usually have few, if any, resources at their disposal to overcome them. A simple automated text message appointment reminder may help in some clinics (McInnes et al, 2014; Parikh et al, 2010). In other scenarios no show rates may remain unchanged or even increase after this intervention (Henry, Goetz & Asch, 2012; Foyabo, 2019). It may even work with some of these patients one week and not the next. Cell phones frequently get lost or stolen among the patients who are homeless, with mental health conditions, and/or substance abuse. The disparate results among the studies indicate that although this is another tool providers can use, other strategies need to be utilized to get these people care (McInnes et al, 2014; Potter, Wilking, Nevarez, Salinas, & Eisa, 2020). While out of the present scope of the HHHRC, utilizing a Housing First strategy could take patients out of hostile living conditions and give them some stability and security (Potter, Wilking, Nevarez, Salinas, & Eisa, 2020). This could enable them to think about concerns that are higher up on Maslow's Hierarchy of Needs, such as attending non-essential, yet important, healthcare appointments. Continuing community outreach and building rapport with patients is another approach that can lead to higher appointment attendance (Corrigan et al, 2017).

### **Limitations**

There are several limitations of this project that should be acknowledged. The limited duration of, and time of year the project was conducted may have affected the results. Cell phone issues may have prevented the patient from receiving the appointment reminders in the first place. The historical effect of COVID-19 may have had an influence on appointment attendance. Considering the major effects caused by COVID-19 (i.e. lack of employment,

anxiety, pandemic fatigue), the rates of not fulfilled appointments remained similar to pre-COVID rates (rather than increasing).

### **Conclusion**

This project did not result in accomplishing the goal of reducing missed appointments. It did, however, initiate the practice of consistently sending out daily appointment reminders to patients, which has been beneficial to some. It has also brought the issue of missed appointments into the forefront and focus of HHHRC staff. A benchmark of missed appointments has been established. The methods used in this project can be replicated to monitor future missed appointment rates. Moving forward, additional interventions could also be implemented to help reduce missed appointments. Sending two reminders, several days apart, has been successful in other locations (McInnes et al, 2014). Ensuring that contact information is updated at every appointment can help ensure accurate delivery of reminders. Securing food, reliable housing, and transportation for patients can help patients with appointment attendance. A recommendation to have HHHRC's phone number to not appear as a "blocked number" may help to improve communication access and utilization. Reducing the rate of missed appointments would help to better allocate providers' time, lower healthcare costs by efficient use of resources, and meeting health needs for HHHRC patients.

### **DNP Essentials**

This evidence-based quality improvement project met the eight DNP essentials. For details on how these essentials were met please refer to Appendix D.

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**APPENDIX A**

## 2021 Barriers to Care Survey

Direction: This survey is designed to help the patients of Hawaii Health & Harm Reduction Center make it to their office appointments. Patients who respond to this survey will remain confidential and anonymous. No names or pseudonyms will be used.

1. What are some things that prevent you from going to appointments? (Please fill in).
  
  
  
  
  
  
  
  
  
  
2. Are there any things we can do to help you go to your appointments? (Please fill in).
  
  
  
  
  
  
  
  
  
  
3. Do you have daily access to a cell phone or landline? YES NO
  
  
  
  
  
  
  
  
  
  
4. If you do have access to a phone, would a reminder phone call or text be helpful?

**FOR INTERNAL USE ONLY:**

For coding completion of survey in EHR. Search for patient, in patient's chart click "Clinical Summary" tab (top right of screen), click "Add New Encounter", under Encounter Type\* select "Follow Up", under Visit Template Type\* select "SOAP + CPT", check the "Is Non-Billable Encounter" check box and click Save. Back on patient chart under clinical summary, in the encounters tab click "Work on this" under the encounter you just created. Under "Billing Services" scroll all the way down to the "Clinic" section of the billing codes and check the box for "Btcs1-barriers To Care Survey Baseline" box. Scroll back up and click "add all to bill".

**APPENDIX B**

Search Functions on eMedicalPractice EHR ([www.emedpractice.com](http://www.emedpractice.com))

Procedures for searching for missed appointments data on EMR [original search engine]

On the eMedicalPractice electronic medical record, click on the Reports drop down option and click on “Reports”. In the column of options on the left, click on “Appointment Reports” and click on “Appointments Reports”. Unselect the “Full Filled” check box. Specialty Type should be “Internal Medicine”. Run search based on dates of your choice.

Procedures for searching for missed appointments data on EMR [revised search engine]

Total appointments: Select “Show ALL Scheduler”, unselect “scheduler” to clear all, individually select these providers (1. Dr. Christina Wang; 1. John Paul Moses, APRN; Courtney Tanigawa, 1. Courtney E Tanigawa [duplicate in search engine], APRN; 1. Jamie Boling; Angela Gough, DO; 1. Angela Gough, DO [duplicate]), leave Appointment Status selected (so all status types are selected), leave Appointment Type selected (so all appointment types remain selected), for “search by” select date range, just dates in one month increments (e.g., 10-01-2019 to 10-31-2019), ensure “Full Filled” and “Not Full Filled” boxes are selected, begin search by clicking “Run It Now” box.

Results were sorted in excel by “appointment status”. Status types “Patient rescheduled”, “Patient cancelled”, “Doctor rescheduled”, “Doctor cancelled”

“Not fulfilled”, “Deleted”, and blank status: count as no shows

Appointments that were more than one slot were counted as however many time slots allotted (e.g., a new patient might have two 30-minute time slots, that would count as two appointments).

Procedure for notating a patient’s chart for completion of BTC Survey:

For coding completion of survey in EMR. Search for patient, in patient’s chart click “Clinical Summary” tab (top right of screen), click “Add New Encounter”, under Encounter Type\* select “Follow Up”, under Visit Template Type\* select “SOAP + CPT”, check the “Is Non-Billable Encounter” check box and click Save. Back on patient chart under clinical summary, in the encounters tab click “Work on this” under the encounter you just created. Under “Billing Services” scroll all the way down to the “Clinic” section of the billing codes and check the box for “Btcs1-barriers To Care Survey Baseline” box. Scroll back up and click “add all to bill” and save.

Procedure to search for patients with completed surveys:

Reports tab → reports → Services report (on left-hand side of screen) → CPTs Report →  
“BTCS1” → select dates/date range

**APPENDIX C**

## Phone Script for Missed Appointments

If patient answers:

Hi, this is **[YOUR NAME]** with the Hawaii Health and Harm Reduction Center. I noticed that you recently missed an appointment with **[PROVIDER]** on **[DATE OF APPT]**. We would like to reschedule you to assist you with your healthcare needs in the future. Would you like to reschedule your appointment?

If patient is amenable, ask other survey questions:

1. What are some things that prevent you from going to appointments?
2. Asked above...Is there anything we can do that would help get you to your appointment?
3. Do you have reliable access to a cell phone or landline phone?
4. If you do have access to a phone, would a reminder call or text be helpful?

If call goes to voicemail:

Hi, this is **[YOUR NAME]** with the Hawaii Health and Harm Reduction Center. I noticed that you recently missed an appointment with **[PROVIDER]** on **[DATE OF APPT]**. If you would like to reschedule another appointment, please call our front desk at 808-521-2437 or you can use your patient portal to reschedule.

**APPENDIX D**

## DNP Essentials

DNP Essential	Relation to DNP Project
I. Scientific Underpinnings for Practice	This DNP Essential was met by incorporating evidence-based science to communicate appointment reminders to patients with mental health issues and/or substance use disorder to promote adherence to the patient's treatment plan.
II. Organization and Systems Leadership for Quality Improvement and Systems Thinking	This DNP Essential was met by discussing with various departments within HHHRC on current practices and reviewing areas for improvement, such as reducing missed appointments.
III. Clinical Scholarship and Analytical Methods for Evidence-Based Practice	This DNP Essential was met by conducting a thorough literature search on strategies to reduce missed health care appointments for homeless people and people with mental health issues and/or substance use disorders. The search focused on strategies that were within the means and resources that the HHHRC possessed and could undertake.
IV. Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care	The DNP Essential was met by utilizing HHHRC's EHR system to collect patient appointment data, communicate with HHHRC staff, and send appointment reminders to patients.
V. Health Care Policy for Advocacy in Health Care	This DNP Essential was met by reviewing trends in the realm of providing healthcare to the challenging homeless populations and people with mental health issues or substance use disorders in order to deliver better care achieve better health outcomes.
VI. Interprofessional Collaboration for Improving Patient and Population Health Outcomes	This DNP Essential was met by collaborating with the Medical Director, medical assistants, and front desk staff to address the needs of the patients at HHHRC.
VII. Clinical Prevention and Population Health for Improving the Nation's Health	This DNP Essential was met by researching and applying ways of proactively engaging homeless patients to prevent exacerbations or acute medical issues.
VIII. Advanced Nursing Practice	This DNP Essential was met by applying evidence-based practices in a Quality

	Improvement project with HHHRC with the goal of improving health care outcomes to a challenging population group; including the homeless, those with mental health issues, and people with substance use issues.
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