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The Life-Saving Drug That No One Knows About: Naloxone Education and the Health Belief Model

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The Life-Saving Drug That No One Knows About:
Naloxone Education and the Health Belief Model

A Thesis

Presented to

The Faculty and the Honors Program
Of the University of San Diego

By

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Psychological Sciences

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Honors Thesis Approval Page

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Title of Thesis: The Life-Saving Drug that No One Knows About: Naloxone and the Health Belief Model

Accepted by the Honors Program and faculty of the Department of Psychological Sciences, University of San Diego, in partial fulfillment of the requirements for the Degree of Bachelor of Arts. [or other degree]

FACULTY APPROVAL

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Abstract

Naloxone hydrochloride, popularly known by the brand name Narcan, is an emergency treatment used to reverse an overdose on opioid drugs. The CDC reports upwards of 26,000 individuals saved by naloxone between 1996 and 2014 (Centers for Disease Control and Prevention, 2015). Despite this success rate, those outside of the medical field largely remain unaware of what naloxone is or how they can use it in an emergency, leading to needless loss of life. Many studies focusing on naloxone access and education have been unable to offer findings meant to increase the use and ownership of the drug by lay individuals. To help redress this, the current study aims to dissect the potential motivations and deterrents to accessing and acquiring naloxone using the Health Belief Model as a guide. Participants were asked to complete a survey investigating their previous exposure to, general attitudes about, and intent to access and further educate themselves about naloxone. The current study seeks to utilize the motivational framework of the Health Belief Model to better understand the important issue of access to anti-opioid drugs. Relevant findings are intended to aid in the pursuit of an efficient and successful application in the public health domain to increase naloxone possession and decrease deaths caused by opioid drugs.

Keywords: Health Belief Model (HBM), overdose, drugs, naloxone, public health, opioid crisis, motivation, health behavior

Naloxone Education and the Health Belief Model

Naloxone hydrochloride, commonly known by the brand-name Narcan, is an anti-opioid drug used in the treatment of opiate overdose cases. Narcan has the ability to “reverse the effects of opioids, including respiratory depression, sedation, and hypotension” (Endo Pharmaceuticals, 2004). This drug is often used by medical personnel and first responders to resuscitate patients in emergency situations. While Narcan is commonplace in the medical field, awareness is not as wide-spread within the American public.

There are many medications that the general population lacks awareness of without consequence; what makes Narcan any different? It is available in most states without a prescription, meaning that the public has the unique opportunity to play a part in the reversal of opioid overdoses. Furthermore, medical doctors have voiced their support of public access to Narcan and see it as an effective, practical treatment for overdose cases (Behar, Bagnulo, & Coffin, 2018). Despite this opportunity to safely treat and protect members of the community, many Americans remain unaware of how to obtain and administer Narcan.

The lack of knowledge about anti-opioid drugs is particularly concerning in light of the ongoing opioid epidemic in the United States. Starting in 2016, the sale and use of drugs such as heroin, fentanyl, and tramadol began to rise. The next year saw a significant increase in opioid-induced fatalities in 23 states (CDC, 2018). Nearly half the states in the country experienced extreme and dangerous changes due to the heightened availability of opioid drugs, prompting the U.S. Surgeon General to release an official advisory “emphasizing the importance of the overdose-reversing drug naloxone.” While opioid overdoses and related deaths remain at an all-time high, as outlined below, the American public remains largely unaware of what Narcan is and how it could be used to save a life.

The lack of public knowledge regarding Narcan has been demonstrated in both popular and empirical research. A 2018 IBM Watson study boasts knowledge of the drug in nearly 60% of participants, however, the focus should be shifted to the significantly lower figures of those who have purchased the drug and are aware that it does not require a prescription in most states. Roughly 30% of participants were aware that Narcan could be obtained prescription-free at the pharmacy. This figure is a closer approximation of individuals who are informed enough to acquire Narcan. The distinction between awareness of the drug and knowledge of how to get it becomes important when observing the probability of collecting and eventually administering Narcan. An empirical study sponsored by the National Institutes of Health (NIH) also collected similar results. Approximately 65% of participants knew what Narcan/naloxone was, but knowledge of where to acquire the drug was significantly lower (33%) (Kirane, Ketteringham, Bereket, Dima, Basta, Mendoza, & Hansen, 2016). These studies are extremely helpful in identifying the gaps in public education and groups that are most in need of an intervention. While research has also identified a shortage in pharmacist and health provider knowledge about naloxone (See Nielsen, Menon, Larney, Farrell, & Degenhardt, 2016; Kirane et al., 2016), the current study aims to focus on the health behaviors of the general population.

Vulnerable populations and monetary barriers have been a subject of study in many research projects concerning anti-opioid drugs. A 2018 study from the University of Pittsburgh School of Nursing provided Narcan administration training and prescriptions for each participant. All participants in the study were patients at a clinic for the homeless, a population that is “disproportionately affected by opioid overdoses” (Pietrusza, Puskar, Ren, & Mitchell, 2018). The study reported a statistically significant increase in participant knowledge of signs of opioid overdose, how to respond to an overdose, and how to deliver a nasal dosage of Narcan.

While the improvement in education is promising, the researchers also report that only 33% percent of study participants filled the Narcan prescription in the subsequent week. This low fill-rate emphasizes the need to explore the logistical and psychological influences that prevent individuals from acquiring Narcan.

The current study is critical because it addresses and seeks to understand an issue that has been largely ignored thus far in psychological literature. It will not only identify the contributing factors of low levels of naloxone education, but also to provide an understanding of the social influences that shape these contributors. Additionally, this study will culminate in the development of future directions for anti-opioid awareness efforts. The ultimate goal of this study is to increase the health behaviors of possessing and knowing how to use drugs like Narcan to reduce deaths caused by opioid overdose.

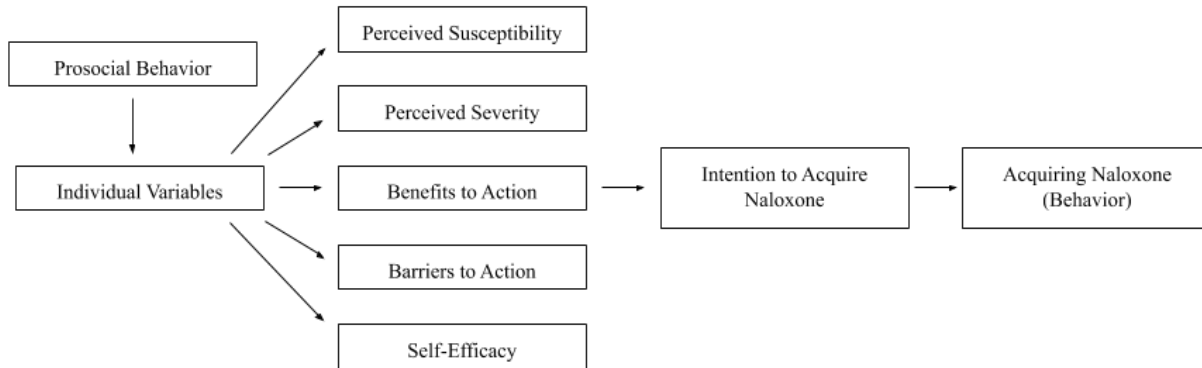
The Health Belief Model (HBM)

The Health Belief Model (HBM) seeks to determine the likelihood of practicing health behaviors through the observation of various psychological dimensions. Rosenstock, Strecher, and Becker break down the HBM into a triad of factors including: relevancy of the health issue, perceived threat, and likelihood of success (Becker, Drachman, & Kirscht, 1974). A comprehensive review of HBM academic literature published in 1984 reconfigures these categories in the now commonly used dimensions of perceived susceptibility, perceived severity, perceived benefits, and perceived barriers. Subsequent alterations of the HBM in later research have also emphasized the role of self-efficacy in determining an individual's health beliefs (Glanz & Bishop, 2010). The four HBM dimensions established in Janz and Becker's decade-spanning meta-analysis in addition to self-efficacy will be used to guide the current research (Figure 1). All of these perceptions converge to motivate or inhibit a person's practiced health

behaviors—including the decision to acquire naloxone. Let us move on to see how these factors can motivate or prevent someone from taking action in this context.

Figure 1

Health Belief Model Conceptualization for Acquiring Naloxone



Perceived Severity

Beliefs about the severity of an opioid is individually variable. Those who perceive this event as having severe consequences on their health, safety, or social life may be more incentivized to take preventative action. However, if an individual does not believe an opioid overdose has severe and adverse consequences, they may not be motivated to proactively prevent an overdose.

Perceived Susceptibility

Some individuals may not take steps to prevent opioid overdoses because they are not addicted to opioid drugs. This perception can also extend to their social circles, such as friends, family members, and neighbors that the individual assumes are unaffected by opioid use.

Perceived Benefits

Perceived benefits to action can assist in motivating a health behavior. These benefits

may be personal, for instance, owning naloxone may be advantageous to an individual's own health and safety. Benefits can also be more broad, including results such as the betterment of society or the protection of a friend or family member. The benefits of the drug itself would also be considered—does it effectively treat the issue? Will it help the person it is given to? Perceived benefits should outweigh perceived barriers in the pursuit of a health behavior.

Perceived Barriers

Additionally, the negative stigmas regarding drug-users, lack of access to a pharmacy, or unstable financial status are all examples of perceived barriers an individual may have. Like opioid addiction, HIV, AIDS, and related conditions carry stigmas that potentially prevent the seeking of medical assistance. A 2018 study applied the concepts of the Health Belief Model and demonstrated that the advantages of taking PrEP (Pre-exposure Prophylaxis) were frequently overpowered by the objective and perceived barriers of participants—preventing their use of the medication (Felsher, 2018). This finding suggests an important influence for perceived barriers over health behaviors that may be associated with a controversial group or idea.

Self-Efficacy

The self-efficacy dimension addresses an individual's confidence in their abilities to successfully perform a health behavior. In terms of this study, self-efficacy includes confidence in the ability to use or access naloxone in addition to general first aid and opioid knowledge.

Applying the HBM to “External” Behaviors

An important question to ask about analyzing the HBM in this context is whether or not it is applicable to a behavior outside of personal consequence. Naloxone ownership has the potential to be more beneficial for others than the individuals who are purchasing the drug themselves. The HBM has been empirically applied to behaviors that concern the health of

others, not just the self. A 2014 randomized controlled trial studied the impact of an HBM-guided educational program upon safety and injury knowledge, HBM factors, and applied behaviors in mothers of young children. In this study, the mother's development was centered around their child, and not them personally. Despite this deviation from traditional HBM studies, there were statistically significant increases in knowledge, perception, and integration into daily life (Cheraghi, Poorolajal, Hazavehi, & Rezapur-Shahkolai, 2014).

Some may speculate that although the mothers in the experiment are taking health-related action to benefit others, they may have different motivations due to their close relationship with their children. However, other HBM studies have been performed that take this same concept and apply it on a broader, less intimate scale. In a 2019 study, Lynch and Jackson examined the influence of the Health Belief Model in the context of local gun control policies. Like naloxone education, this study is in the interest of public health and safety. Researchers found that perceived risk to loved ones influenced the immediate, situational health behaviors. The study also revealed that community attitudes toward the policy was more likely to impact any long term patterns of health behaviors regarding gun control. Thus, community values and helping behaviors are highly indicative of the ultimate executed health behavior.

This concept is problematic due to the varying levels of prosocial behavior among individuals. This research must account for the fact that some people may acquire naloxone due to prosocial motivations, a factor not included in the HBM. This can be remedied by controlling for the influence of prosocial behavior in the assessment. By testing for prosocial behavior, we will be able to detect if this attribute is an important aspect of the individual variables that influence all aspects of the model.

The Current Study

The objective of the current study is to increase the likelihood of obtaining anti-opioid drugs like Narcan for preventative use. This correlational study is designed to determine the strength and importance of various psychosocial mechanisms that influence the acquisition of anti-opioid drugs. The reported salience of these components can assist in the development of future educational interventions to increase knowledge of naloxone and eventually decrease the amount of opioid-related deaths.

Hypothesis

My current hypotheses are based on the aforementioned findings. As a result, it is predicted that those who score highest for the health belief model factors will have higher intent scores. This assumption is based on the increased compliance with health behaviors when factors of the Health Belief Model are salient. Second, it is hypothesized that those who are more educated about naloxone will a) score higher in HBM factors, and b) higher in intent to fulfill the health behavior [acquiring the drug]. This hypothesis is rooted in the presumption that those with more relevant education and awareness have an additional motivating factor to acquire naloxone. Finally, the study predicts that those who score highly in prosocial behavior will a) score higher in HBM factors, and b) higher in intent to fulfill the health behavior. As it is the nature of prosocial behavior to assist others, prosocial behavior should increase perceived benefits to action for the individual. Consequently, this should result in increased HBM measures overall and an increased likelihood to acquire naloxone.

Method

Participants

In order to eventually apply this research for use in the real world, the decision was made to select from the population most commonly affected by opioid overdose. According to a 2017

meta-analysis conducted by the CDC, American individuals between the ages of 25 to 54 experienced the most dramatic increase in opioid overdose death (CDC, 2017). Because this group most frequently suffers from the adverse effects of opioids, it was deduced that increased naloxone possession in the same group would be beneficial. Due to this age group, only surveying fellow college students would not be conducive to accurate results. Therefore, it was decided to target an older group of individuals to sample from and adjusted my distribution accordingly.

Exclusionary factors

For the sake of focusing this study on the knowledge of the general public, health providers and first responders will be excluded from the study. The chance of prior exposure to naloxone education could skew the results if their data were included in the analysis.

Materials

Measures

There is currently an absence of research that has observed naloxone use through the application of the HBM, so a new researcher-generated measure was used in this study. However, there is an abundance of research applying the HBM to other behaviors, so the questionnaire was modeled after empirically tested and validated measures.

The present questionnaire consisted of a short demographic survey, a pre-questionnaire with 5 items, a main section with 31 items, and a final post-questionnaire stage. The pre-questionnaire is designed to measure prior knowledge and experience with naloxone. Although not directly related to the HBM, this exposure measure can indicate our sample's relationship to other empirical data, thus indicating whether or not we had a representative sample.

After the first section is completed, participants are presented with a short informational

paragraph defining some medical terms and products that may appear in the next section. This allows for more wholesome and accurate responses regardless of the possession of prior knowledge about Narcan. The next section is the HBM questionnaire consisting of 6 parts: 5 items for risk susceptibility, 5 items for risk severity, 5 items for benefits to action, 5 items for barriers to action, 5 items for self-efficacy, and 6 items for prosocial behavior. Items to measure each of the HBM factors were researcher-generated, but guided by multiple well-established HBM studies (See Becker, et al., 1974; Champion, 1999; Jones, Jensen, Scherr, Brown, Christy, & Weaver, 2015). An HBM composite score was generated by combining all scores of the 5 individual variable scores for the model. Items 9, 21, and 27 (See Appendix A) were adapted from the Generalized Self-Efficacy Scale (Schwarzer & Jerusalem, 1995). The pro-social behavior section was adapted from the Helping Attitudes Scale (HAS) (Nickell, G., 1998).

In the post-questionnaire, four questions were asked to estimate each participant's intent to acquire the drug, learn more about it, and spread the information. A combination of these four questions made up an “intent” composite score. Intent is essential to this research because it is a reliable predictor of behavior (Sheeran, 2002). A copy of the complete questionnaire is included in the appendices.

Procedure

A recruitment message (Appendix B) and a link to the USD Qualtrics survey was posted on Facebook. A short summary of the purpose of the study was included as part of this message. The message contained a statement that stated that the survey was voluntary and available to those 18 years or older.

Clicking on the survey took participants to the first page of the Qualtrics survey. In order to move into the main part of the questionnaire, participants were required to read and agree to

the departmental informed consent document. If the participant agreed, they were taken to the first section of the questionnaire.

At the end of the study, participants were thanked for their time and provided with links to helpful information if they wanted to learn more about naloxone or the opioid crisis in the US. The duration of the survey was roughly 10 minutes.

Results

Preliminary Analyses

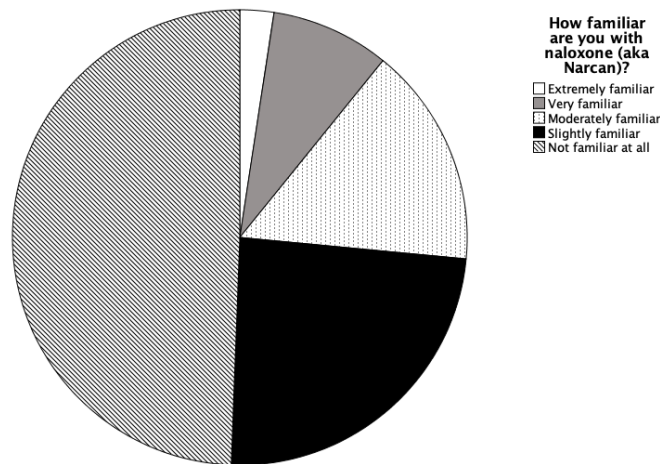
The current research consisted of a sample of 85 participants, two of which were excluded from the final study due to their medically-related occupations. The majority of the participants were female (80%), while male participants only made up 20% of the sample. The racial makeup of the sample included 87% White participants, 1% American Indian or Alaska Native participants, 6% Asian participants, 2% Native Hawaiian or Pacific Islander participants, and 4% designated 'Other' participants.

A vital part of this research involves looking into the participants' familiarity with naloxone before taking the survey. Only 2% of participants claimed to be extremely familiar with the drug prior to participation. In contrast, 49% of participants indicated that they were not at all familiar with the drug. This percentile is slightly higher than the 41% in IBM Watson's study and 35% in Kirane's study that did not know what naloxone was. However, the lower percentage in Kirane's study could be due to the sampled population which resided in an area of high opioid use (2016). A complete representation of familiarity with naloxone is shown in Figure 2. Of those who indicated a minimum of slight familiarity with naloxone, 2% learned about it from personal experience, 7% from a medical professional, 7% through work, 5% through school or an educational program, 31% through media exposure, 2% from a friend, and

8% from other sources. In terms of exposure to the drug, 2% of the sample has been in possession of naloxone at some point in the past, while 96% have never owned it. All participants in the sample answered that they have never had to administer naloxone to someone else. Only 1% of the sample had naloxone administered to them in the past.

Figure 2

Familiarity Rankings for Naloxone



Age Groups

To check for significant differences between age groups, due to the reported age group differences from IBM Watson's 2018 study and Kirane's 2016 study, participants were split into 6 age categories and compared through a one-way ANOVA. Participants ranging from 18 to 65+ years old acted as participants in the current study. The majority of participants fell between 45-54 years old (63%). A series of one-way ANOVAs revealed no significant differences between the age group in all measured variables apart from prosocial behavior, $F(5,70) = 7.403, p = .000$. Post hoc comparisons using the Tukey HSD test revealed that the mean prosocial behavior score for the 18-24 age group ($M = 17.22, SD = 4.09$) score was significantly higher than both the 45-54 ($M = 11.92, SD = 3.09$) and 55-64 age groups ($M = 10.10, SD = 2.51$). These tests also

indicated that the mean prosocial behavior score of the 25-34 age group ($M = 18.50$, $SD = 6.61$) was similarly higher than the means of the 45-54 and 55-64 age groups.

Education

Training and educational exposure have also been linked to heightened awareness and motivations to handle opioid overdoses (Behar, Santos, Wheeler, Rowe, & Coffin 2015). To see if these educational differences had influence over the studied variables, a one-way ANOVA was conducted to compare each educational group. The highest level of education for the participants ranged from High School Graduate to Doctorate Degrees. Participants with four year degrees and professional degrees made up 41% and 36% of the sample, respectively. A one-way ANOVA indicated a significant difference in risk severity between education groups, $F(6,67) = 3.522$, $p = .004$. The mean score for those with a Professional degree ($M = 10.30$, $SD = 3.05$) was significantly lower than those with a 2 year degree ($M = 16.33$, $SD = 3.21$) or a 4 year degree ($M = 12.00$, $SD = 3.10$). To determine any differences in perceived barriers in educational groups, a one way ANOVA was run, $F(6,69) = 2.941$, $p = .013$. A subsequent Tukey HSD test revealed that those with a doctorate ($M = 26.33$, $SD = 5.03$) scored significantly higher than all other educational groups for perceived barriers. There were no other significant differences between educational groups for any other of the measured variables.

Composite Scores

Average scores for each individual variable were calculated. Benefits to Action, Barriers to Action, Self-Efficacy, Risk Susceptibility, and Risk Severity were all scored on a scale ranging from 5 to 35. Scores closer to 5 indicated higher values of the studied variables, while scores closer to 35 indicated a weak motivation. To simplify, scores less than 15 indicated high affinity for the variable, scores between 15 and 25 were medium, and values above 25 were

considered low. On average, the studied sample ranked high in perceived benefits and risk severity, medium for barriers to action and self-efficacy, and low in risk susceptibility. The overall HBM composite score was based on a combination of the five previously mentioned variables and given a score ranging from 30 to 175. The overall HBM composite scores collected had an average of 96 ($M = 96.16$, $SD = 13.04$). This score would fall in the moderate strength for all combined HBM factors. Prosocial behavior was calculated from a sum of 6 questions on a scale of 6 to 42. On average, the participants scored as high in prosocial behavior. Lastly, the intent composite summed the results from the items described in the post-questionnaire. This score was measured on a scale from 4 to 28. The average participant score indicated high levels of intent. Internal consistency was calculated using average inter-item correlations for each variable instead of Cronbach's alpha due to the small number of factors (Table 1).

Table 1

Average Scores for HBM Factors, Prosocial Behavior, and Intent

	M	SD	Average Inter-Item Correlation
Benefits to Action	14.45	4.39	.2883*
Barriers to Action	17.33	4.61	.1429
Self-Efficacy	20.72	4.51	.2086*
Risk Susceptibility	26.09	3.98	.2105*
Risk Severity	11.88	3.57	.0925
Prosocial Behavior	12.68	4.01	.2379*
Intent	14.67	4.24	.4333*

*Note. *Items fall in ideal range between .15 and .50.*

Main Analyses

The relationships between factors of the HBM, Prosocial Behavior, Familiarity, and

Intent to complete the health behavior were evaluated using Pearson correlations to determine the strength and significance of their associations.

Benefits to Action

Multiple results represented in Table 2 demonstrate important relationships for benefits to action. According to the hypotheses, perceived benefits were predicted to have positive significant relationships with familiarity, prosocial behavior, and intent. As shown in the table, perceived benefits to action have a weak, positive correlation with familiarity with naloxone. Understandably, perceived benefits demonstrated a similar relationship in the opposite direction. Higher benefits to action scores were also weakly associated with higher perceptions of risk susceptibility. Additionally, measures of prosocial behavior were weakly correlated with perceived benefits to action. Intent as measured by the survey also held a weak, but positive correlation with benefits to action. Benefits to Action scores were not significantly correlated with self-efficacy or risk severity.

Barriers to Action

The completed Pearson correlations also indicated significant relationships for the barriers to action variable (Table 2). This study hypothesized a significant inverse relationship between perceived barriers and the measured variables. Perceived barriers had a moderately strong negative correlation with naloxone familiarity. As mentioned previously, barriers to action and benefits to action were weakly negatively correlated with one another. Furthermore, self-efficacy also had a weak, but significant negative relationship with perceived barriers. Barriers to action were additionally weakly negatively correlated with beliefs of risk susceptibility. Higher barriers to action scores were also weakly associated with lower estimations of prosocial

behavior and intent to acquire naloxone. There were no significant relationships between perceived barriers and risk severity.

Table 2

P Values for Two-Tailed Pearson Correlations of HBM Factors and Related Variables

Variable	1	2	3	4	5	6	7	8
1. Familiarity	-	.375**	-.537**	.495**	.254*	.114	.149	.226*
2. Benefits to Action	.375**	-	-.415**	.181	.252*	.182	.388**	.350**
3. Barriers to Action	-.537**	-.415**	-	-.323**	-.340**	-.159	-.365**	-.289*
4. Self-Efficacy	.495**	.181	-.323**	-	.235*	.045	.234*	.315**
5. Risk Susceptibility	.254*	.252*	-.340**	.235*	-	-.045	.036	.203
6. Risk Severity	.114	.182	-.159	.045	-.045	-	.479**	.103
7. Prosocial Behavior	.149	.388**	-.365**	.234*	.036	.479**	-	.209
8. Intent	.226*	.350**	-.289*	.315**	.203	.103	.209	-

Note. **. Correlation is significant at the 0.01 level (two-tailed).

*. Correlation is significant at the 0.05 level (two-tailed).

Self-Efficacy

Based on the assumptions of the Health Belief Model, higher efficacy scores were predicted to coincide with higher intent to acquire naloxone. Similar to the two previous variables, the Pearson correlations indicated a moderate positive correlation between self-efficacy and familiarity with naloxone. Self-efficacy also demonstrated a weakly negative

relationship with perceived barriers to action. Self-efficacy also had a significant and weakly positive correlation with risk susceptibility. A Pearson correlation also demonstrated a weak positive correlation with prosocial behavior. Tests additionally identified a significant positive correlation between self-efficacy and intent. Self-efficacy did not demonstrate any significant correlations with benefits to action or risk severity (Table 2).

Risk Susceptibility

It was hypothesized that those who believe that they are more likely to be affected by an opioid overdose would be motivated and thus possess higher intent to purchase a dose of naloxone. A Pearson correlation found a weak positive correlation between risk susceptibility and familiarity with naloxone. Additionally, correlations revealed a weakly positive relationship between risk susceptibility and benefits to action. A Pearson correlation also demonstrated a weak negative correlation between risk susceptibility and perceived barriers to action. Tests also indicated a significant weak positive correlation between risk susceptibility and self-efficacy. Risk susceptibility was not significantly correlated with risk severity, prosocial behavior, or intent (Table 2).

Risk Severity

Following the ideas outlined by the HBM, belief in severe consequences if naloxone was not used would be hypothesized to motivate compliance with the health behavior. A Pearson correlation demonstrated a significant moderate positive correlation between risk severity and prosocial behavior. Risk severity did not demonstrate significant correlations with familiarity, perceived benefits, perceived barriers, risk susceptibility, self-efficacy, or intent (Table 2).

HBM Composite Scores

HBM composite scores were generated by combining the scores of perceived benefits, perceived barriers, self-efficacy, risk severity, and risk susceptibility. Perceived barriers were reverse coded because they are a limiting factor, while the other variables encourage a health behavior. A Pearson correlation found a significant positive correlation between the HBM Composite Score and intent to complete the studied health behavior (Table 3). An additional Pearson correlation found a significant positive correlation between the HBM Composite Score and familiarity with naloxone (Table 3). The HBM Composite was also found to have a strong positive correlation with prosocial behavior (Table 3).

Other Correlations

A Pearson correlation found a significant positive correlation between familiarity and intent scores. Prosocial behavior was found to not have a significant correlation with either intent ($p = .072$) or familiarity ($p = .200$).

Table 3

P Values for Two-Tailed Pearson Correlations of Composite Scores

Variable	HBM Composite	PB Composite	Intent	Familiarity
HBM Composite	1	.507**	.467**	.594**
Prosocial Behavior	.507**	1	.209	.149
Intent	.467**	.209	1	.226*
Familiarity	.594**	.149	.226*	1

Note. **: Correlation is significant at the 0.01 level (two-tailed).

*. Correlation is significant at the 0.05 level (two-tailed).

Discussion

The results of this study revealed several important relationships between the Health Belief Model and naloxone possession. Additional data helped to expand a growing body of

research on the public's understanding and attitudes regarding anti-opioid drugs. Half of the sample was indicated little to no awareness of naloxone and its uses. This value speaks to the significance of unawareness of anti-opioids in the American public. Furthermore, of those who were familiar with naloxone, the majority learned about the drug through exposure to television, movies, and books, while a very small percentage gained their knowledge from a medical professional. As this knowledge is not being acquired through reputable channels, there is the risk of stigma and sensationalization of overdose prevention and anti-opioid drugs. The lack of individuals who learned about naloxone from a medical professional demonstrates a shortage of educational opportunities and interventions that should already be occurring in the healthcare field.

The strongest relationships between the individual factors of the HBM, prosocial behavior, familiarity, and intent were between familiarity and barriers to action, familiarity and self-efficacy, benefits to action and barriers to action, and risk severity and prosocial behavior. Although each of the individual HBM factors demonstrated important relationships, perceived barriers had the most salient relationships with intent, prosocial behavior, and incoming knowledge. These findings are consistent with those of Felsher's (2018) study on patient reluctance of starting on PrEP. It is logical that this relationship would exist for a controversial issue like opioid use which may have more barriers preventing action than more normalized health behaviors. Future attempts to increase naloxone ownership should pay particular attention to minimizing perceived barriers to accessing the drug. Some potential ways of executing this would be through educational programs, financial support, or through social initiatives that seek to minimize the stigma associated with drug use.

The HBM Composite score was significantly correlated in a moderate, positive direction

for prosocial behavior, familiarity with naloxone, and intent to complete the health behavior. This result is important because it supports Hypothesis 1: HBM motivators will be associated with higher intent. Hypothesis 2 was partially supported. Familiarity with naloxone had a moderately strong positive relationship with overall HBM score. However, the results only supported a weak positive relationship between familiarity and intent. Finally, Hypothesis 3 was partially supported. Prosocial behavior displayed a moderately strong positive relationship with total HBM scores but held no significant relationship with intent. Of the four variables compared, the HBM composite held the most and strongest correlations with the other variables. These results support the importance of each of the motivators outlined by the HBM upon multiple factors that encourage the acquisition of naloxone.

Potential Limitations

There were some notable limitations to this research. Primarily, the sample utilized for collecting data was a convenience sample. The participants were mainly white females between the age of 45 and 54. Additionally, many of the participants were local, California residents. California is a state with good Samaritan overdose protection laws, which may influence participants' motivations and behaviors during an overdose situation. As a result of this arrangement, the data may not apply to the larger United States population.

There was also an element of control that was sacrificed by conducting this survey remotely. The Qualtrics survey was open for the period of one week, but participants could take it when and wherever they wanted. Therefore, a controlled environment could not be confirmed for all participants.

This research was also conducted during the Corona Virus pandemic. The heightened stress and focus on a different medical issue may have swayed participant responses. As this

study was also the first of its kind, further replications and adjustments to procedure and surveys are required to fully explore the complicated nature of this issue.

Broader Implications

This exploratory study could potentially help to shape further research on anti-opioid medications, develop programs that operate on these findings, or even help to guide future legislation on the availability and public knowledge of Narcan. By determining which component(s) of the Health Belief Model hold more weight in the topic of Narcan education, we can model future efforts and interventions with these dimensions in mind. A more thorough understanding of the American public's motivations and limitations to education about Narcan can help to mold a more effective approach to address this issue. The ultimate goal of all of this research and increased education is to counteract the amount of deaths caused by opioid overdoses in the United States. A more educated and capable population would be more prepared to aid in the situation of an overdose—saving lives in the process. Of course, ideally, the use of narcotic drugs would be the favorable behavior to correct, but drug addiction is a complex and multifaceted phenomenon; more time and research are needed to address this deeply-rooted issue. In the meantime, however, prevention and education are the best tools we have to fight the opioid epidemic from a psychological perspective.

The positive impact of this research is not only confined to anti-opioid drugs like Narcan. Hopefully, the motivational aspects discerned from the data can assist applied psychologists in the adaptation of programs that help prevent or treat other types of overdoses (or similar behavior). Reaching beyond drug addiction and medical intervention, the factors influencing individual's health behavior can ideally provide clues and guidance for the involvement of the public in other controversial health issues. Furthermore, this study can hopefully contribute to

the growing body of research of the HBM and the operation of its dimensions in various areas of medicine.

In order to ensure the validity and generalizability of these findings, further research is required. This study did not address the potential benefits of combined dimensions of the HBM in the encouragement of Narcan knowledge and possession. Further correlational studies and experiments must be conducted in order to detect any interactions between the dimensions of the HBM. Furthermore, a longitudinal aspect could be added in order to investigate the endurance of intended health behaviors. A copy of the post-test questionnaire could be administered to the participants again six months or one year after initial testing. This will allow us to investigate memory and time as potential barriers to Narcan education.

Ultimately, it is my hope that doctors, pharmaceutical companies, and other health professionals use the findings of this research to tailor their discussion of Narcan with their patients. Their involvement will create a more direct line of communication with patients that has been shown to be associated with an increase in executing a desired health behavior.

Conclusion

Despite the opioid epidemic, many Americans are unaware of how to act in the event of an overdose. Naloxone is a widely available drug that can reverse these effects if delivered in a timely manner. Although naloxone does not require a prescription or specialized medical training, few outside of the medical field own doses of this life-saving medication. An exploratory questionnaire was distributed to discern the relationship of various motivational factors in the acquisition of anti-opioid drugs. Results from this survey demonstrate a prominent lack of knowledge about naloxone. Correlational data supports a positive relationship between the sum of Health Belief Model factors and intent to purchase naloxone. Data also revealed a

significant and positive relationship between the HBM factors and prosocial behavior measures. Positive correlations were also demonstrated between naloxone familiarity and HBM factors. These outcomes support the influential nature of the Health Belief Model in determining actions regarding anti-opioid drugs. Prosocial behavior and previous knowledge also demonstrated important relationships with intent. Moving forward, the Health Belief Model, paired with extra attention to education and encouraging prosocial acts, may be used to formulate a new public health approach to encouraging ownership of naloxone.

Applications: Increasing Naloxone Awareness

A Literature Review of Public Health Initiatives & The War on Drugs in the Context of the Health Belief Model (HBM)

Introduction

With the information from the previous study, we can begin to conceptualize a public health initiative based on the components of the Health Belief Model. To do this, it is vital to have a basic understanding of the historical use and success of public health initiatives in the United States. Previous and current anti-drug movements have relied heavily on scare tactics and seek to achieve complete eradication of drugs. However, through the exploration of the effectiveness of these campaigns in concert with the previous research on the Health Belief Model, it is more feasible to begin promoting a system centered around the HBM to reasonably deal with the country's current issues.

Historical Background

There is undoubtedly controversy and stigma surrounding drugs and drug use in the United States. This climate inevitably impacts any efforts of the American public to promote naloxone ownership and limit the amount of annual deaths by opioid overdose. While there have been various levels of involvement in the control of drugs since the establishment of the United States, the more draconian policies did not begin until Ronald Reagan's presidency. This is what is popularly considered to be the start of the American "War on Drugs". The heightened regulation of substances and related punishments were enforced by a combination of legislation, social movements, and the establishment of governmental departments, such as the Drug Enforcement Administration (DEA) (War on Drugs).

As mentioned previously, American government and society are theoretically aiming for complete abstinence from drug use. This is one of the crucial challenges to promoting the ownership of anti-opioid drugs. Other harm reduction, or what Drucker and Clear refer to as “drug maintenance”, initiatives have experienced similar pushback (1999). Due to this attitude of complete opposition instead of one of assistance and maintenance, the current response to the opioid crisis in the United States is lacking in its success. In order to re-evaluate and correct the approach to this issue through the promotion of naloxone ownership, we must educate ourselves about the successes and failures of past drug campaigns. This can provide insight for the creation of practical and accessible solutions that utilize previously established systems and information to address the opioid crisis from a different perspective. Instead of expecting the American public to say “just say no”, we should prepare them to say “we are ready and able to help”.

Public Health Initiatives

When analyzing the success of past public health initiatives, it is important to acknowledge the role of public service announcements (PSAs) and similar campaign commercials. These ads act as the prominent feature for many past public health initiatives in the United States (Palmgreen & Donohew, 2003). Due to the large audience that these campaigns reach, it is vital to have a thorough understanding of how they operate to influence health behaviors. The popularity of these PSAs is evidenced by the collective memory of famous anti-drug campaigns, such as Partnership for a Drug-Free America’s *This is Your Brain on Drugs* ads, the CDC’s *Tips From a Former Smoker* series, and Michael Jordan’s “Stop it, get some help” PSA, to name a few. Despite their prevalence in American society, these ads have failed to accomplish their purpose.

The American government has acknowledged the ineffectiveness of its previous campaigns against drugs. In a 2006 report from the Government Accountability Office, researchers examined the success of the National Youth Anti-Drug Media Campaign. This \$1.2 billion dollar endeavor proved to be ineffective in discouraging drug use in American youth. The report even addresses the possibility of a “boomerang effect”, meaning that the campaign may have resulted in higher levels of youth involvement with drugs. In 2012, Magura and associates performed a meta-analysis of the GAO report and program itself. This research concluded that the National Youth Anti-Drug Media Campaign failed to accomplish its goals, but hesitated to agree with the presence of a boomerang effect. This begs the question: what exactly has resulted in such failures for these health initiatives? Many of these anti-drug campaign ads have a similarity which is most likely their downfall—an overzealous use of fear.

Fear Appeals

The use of scare-tactics in anti-drug movements is problematic due to the empirical evidence that cites its ineffectiveness. In Keller’s 1999 experimental studies, it was demonstrated that scare tactics were only successful for individuals who already practiced whatever health behavior was being promoted. Alternatively, the research showed that those who did not already practice this behavior had a negative correlation between level of fear and persuasion to complete the behavior. Furthermore, a 2015 meta-analysis of the effectiveness of fear appeals references the Health Belief Model and other psychological theories when claiming support for a more diversified approach to persuasion. At a bare minimum, researchers suggest that appeals to fear should operate in tandem with efficacy-reinforcement in order to be effective (Tannenbaum, Hepler, Zimmerman, Saul, Jacobs, Wilson, & Albarracín, 2015). However, despite the

overwhelming amount of evidence demonstrating the failures of scare tactics, they are still used in many drug prevention campaigns; including those for naloxone.

Current Media Approaches to Naloxone Promotion

When searching the phrase “naloxone PSA” on YouTube, a total of 51 videos populate—a small number considering YouTube’s illustrious library of content . Searching the phrase “Narcan PSA” produces significantly more results, but both searches yield the same top five videos. We can use these clips to gain insight to the current approach to naloxone public service announcements and their effectiveness. To demonstrate this, short descriptions of each video will be provided along with an analysis of their use of scare tactics as well as utilization of the HBM factors to encourage naloxone ownership.

Video 1: Nasal Narcan PSA, Stoughton Police

The most popular video, with 74,000 views, opens with ominous music and text overlaid on a black screen with the prior year’s drug-related death toll in Massachusetts. This is a telling indicator for the remaining content of the video. Examples of scare tactics used in the video include a hysterically crying mother, loud police sirens, and images of graveyards, drugs, and needles. The PSA makes an appeal to risk susceptibility by demonstrating a mother dealing with the aftermath of her son’s overdose. By using a familiar relationship between a parent and child, the video creates a more generalizable message. The video primarily focuses on portraying risk severity associated with opioid overdose. The subject of the video is shown to be unconscious and unresponsive with blue lips and bloodshot eyes. The previously mentioned fear imagery also operates as a reminder of risk severity. Benefits to action are not as obvious within the PSA. The primary benefit to the mother calling 911 is the arrival of emergency services, while the benefit to their arrival is the resuscitation of the patient. Barriers to action are also not highly apparent in

the video. Self-efficacy in regards to intervening during an overdose is not reinforced because the only individuals interacting with the overdose-reversal drug are the first responders. In summary, this PSA relies mostly on scare tactics stereotypically associated with campaigns against drugs. While risk severity is communicated through the video, there is no demonstration of how to use naloxone as a bystanding citizen. The video does provide a website and phone number for obtaining Narcan, but this is only at the end of the four minute PSA.

Video 2: Good Samaritan PSA (Heroin Overdose/Narcan), Drug Free Manatee

The second most-viewed naloxone PSA takes a slightly different approach to the concept of opioid overdoses. While it portrayed the consequences of an overdose in a similar manner to the first video, this PSA primarily focuses on the Good Samaritan Laws in Florida. Despite its differing orientation, scare tactics are still employed frequently in the 30 second ad. Images of a used needle, yelling voices, and statistics about overdose deaths are utilized to make the audience aware of the negative consequences of drug use. While it is not clear what the relationship is between the man who alerted authorities and the woman who overdosed, it can be inferred that they are friends, or at least acquaintances. This familiar social connection may prompt the audience to think about friends that may be susceptible to an opioid overdose. Like the first PSA, this video emphasizes risk severity. The unconscious woman with blue lips, an audibly racing heartbeat, medical equipment, and flashing lights of emergency vehicles reinforce the danger of the situation. Barriers to action are demonstrated in this video via the argument the friends have over whether or not to call the police. Concerns about being cited for drug possession can be an influential barrier to taking action during an overdose. This ad takes a more direct approach to benefits to action by having the police officer tell the man that called 911 that this action saved the woman's life. Self-efficacy is promoted by showing the man playing an active role in the

situation. However, there is no emphasis on self-efficacy specifically related to naloxone, because there is no on or off-camera references to the use of an overdose-reversal drug. Overall, this PSA is helpful in educating Floridian citizens about the legal protections they are afforded when intervening with an overdose. While this is a step in the right direction, the PSA fails to recognize the ability for citizens to administer naloxone; a health behavior that could potentially save a life while emergency services are transported to the scene.

Video 3: PSA: Naloxone : 30, Maryland Department of Health and Mental Hygiene

The third video focuses on a stereotypical drug user: a gloomy teen with smudged makeup wearing all dark clothes. While there are fewer scare tactics present in the PSA, the parent's whispered discussion and the daughter's collapse to the ground call attention to the danger associated with opioids. Similar to the first video, this PSA utilizes the parent-child relationship to increase perception of risk susceptibility. Furthermore, the voice-over indicates that prescription opioids can also cause addiction; while some individuals may not feel susceptible to recreational drugs, taking prescribed medication is a common experience that many can relate to. Risk severity is portrayed through the daughter's loss of consciousness to signify the overdose. This PSA works to actively reduce barriers to action by demonstrating that it is possible to have overdose-reversal drugs in the household and by working to dismiss the harmful stigma surrounding drug use. The daughter's return to consciousness after her mother administers naloxone is a clear marker of benefits to action. Self-efficacy is a prominently featured issue in this PSA. The parents' quick responses, knowledge and ownership of the drug, and successful administration all operate as a successful model for the audience. This PSA is successful in appealing to all aspects of the Health Belief Model. It could be further improved by

demonstrating how to assemble and administer doses of naloxone and using costumes or actors that do not fit the stereotypical category of “drug user”.

Video 4: Narcan Administration PSA, Whitestown Fire Department

The fourth video takes an instructional approach to naloxone and drug overdoses. The local chief of the fire department speaks about naloxone, opioid addiction, and overdose during the PSA. Scare tactics are limited to mentions of possible death as a result of opioid overdose as well as the imagery of an unconscious victim with drugs, a needle, a home-made tourniquet, and vomit. Like the Good Samaritan PSA, risk susceptibility is communicated through the common relationship of friendship. The friends that find the overdose victim could easily be anyone. One barrier mentioned in the PSA is naloxone’s inability to “cure” addiction. As the drug is not a complete solution, but simply an aid in the direction of rehabilitation, individuals may find themselves more reluctant to acquire it. Additionally, the ER doctor speaking in the video states that naloxone and other anti-opioids will not counteract the effects of other types of drugs. The PSA does manage to counteract some of the negative associations of drug use by referring to addiction as a disease, not an intentional or destructive choice. In terms of benefits to action, the Fire Chief repeatedly references the usefulness and effectiveness of naloxone. Arguably, self-efficacy is the main focus of this PSA. The reenactment demonstrates the friends following first-aid protocol, calling 911, administering a dose of Narcan, and moving the man to a recovery position. The PSA also includes discussion of the three types of naloxone kits that can be purchased at a pharmacy—including assembly and administration instructions. This video is a prime example of what more anti-drug PSAs should look like: information- and efficacy-focused without unnecessary scare tactics. That being said, the video only has 1,360 views (as of

November 9, 2020). Despite the positive attributes of this PSA, it is not reaching a large enough audience to have a thorough impact on American society.

Video 5: PSA: Naloxone : 15, Maryland Department of Health and Mental Hygiene

This public service announcement is an abridged version of Video 3. All points mentioned for the full version still apply to this video (see above).

Naloxone PSAs: Debrief

As demonstrated above, many of the currently available PSAs for naloxone are overly reliant on scare tactics. The ads demonstrate the usefulness of the drug, but this can easily be lost within the overt death and fear-related messages. The PSAs that were successful in most fronts, such as the Whitestown Fire Department PSA, were lacking in their outreach capabilities. Future development of naloxone PSAs should use appeals to the HBM as opposed to falling back onto the traditional methods used by anti-drug campaigns.

Shifting to a HBM-Based Approach

Looking back to our Health Belief Model, we can see that a fear-based approach only really addresses the perceived severity element. This is problematic because the questionnaire data as well as a growing body of research indicates that all five factors are relevant in the determination of a health behavior. As seen for the issue of anti-opioid knowledge and ownership, barriers to action are especially significant. Due to this significance, barriers to action should be given specific attention, but all of the other factors must be addressed as well. As further research is conducted, the proposed plan can be altered by putting emphasis on any of the five factors of the HBM based on a community's needs and relevant trends.

Perceived Susceptibility

In terms of increasing the American public's perceived susceptibility to opioid overdose, there are a variety of possible approaches to take. One possible tactic would involve the increased awareness of "average" people who develop drug addictions. What many fail to recognize is that there are several types of opioid drugs that are legally prescribed by a medical professional. Therefore, it is entirely feasible that an addiction could develop over the course of recovery from a surgery or other common medical issue. What is essential about increasing perceived susceptibility is getting Americans away from the mindset that addiction only happens to a specific "other" group of people. It is a common issue that no one is automatically excluded from. Furthermore, the publication of rates of addiction, opioid use, opioid overdose, and opioid-related fatalities could be utilized to promote ownership of naloxone by appealing to individuals who are more likely to be influenced by data and numbers.

Perceived Severity

To increase the perceived severity of opioid addiction, we can take a modified approach to current anti-drug campaigns. However, instead of using scare-tactics to threaten individuals into acquiring naloxone, these campaigns can appeal to severity through the use of a different approach. Kingsbury's 2015 study on heavy drinking intentions explored the impact on behavior when individuals are presented with a health gain or loss or, alternatively, a social gain or loss. Researchers found that those presented with social loss or health gains drank the smallest amount of alcohol (Kingsbury, Gibbons, & Gerrard, 2015). We can apply this concept of appealing to social consequences and health benefits in future PSAs for naloxone. For example, ads could present the social consequences of not having naloxone on hand or by emphasizing the health-related advantages or being prepared for an opioid overdose. This is a more empirically-

supported method than relying on historically ineffective fear tactics to address naloxone ownership.

Benefits to Action

Increased understanding of benefits to action can be promoted through PSAs, medical interactions, and social discourse. This could involve sharing personal stories of gratitude and recovery to demonstrate how someone's life was turned around after they were given a dose of naloxone. Additionally, figures demonstrating the number of lives saved by naloxone could provide concrete evidence of its success rate. PSAs could also present naloxone ownership as an opportunity to assist a friend, family member, or neighbor and bring peace of mind for the individual who owns it.

Barriers to Action

There are multiple dimensions that must be considered in order to reduce barriers to action in the United States. Four substantial barriers at the forefront of this issue are social stigma, pharmaceutical knowledge, legal barriers, and monetary barriers. Social stigma is a significant issue ingrained within the American societal cognition. It is difficult to address this issue in its entirety due to its overarching presence, but there are steps we can take to reframe the societal approach to drug overdose. PSAs should actively make an effort to not demonize drug users or paint them in any subhuman context. The lack of pharmaceutical and medical professionals that are well-versed in anti-opioids and overdose prevention also presents a major complication. As of 2016, Australia legalized the sale of naloxone from pharmacies without a prescription. Despite naloxone being theoretically available to anyone who asks for it, there were many complications that prevented this from being the case. In a survey of nearly 600 Australian pharmacies, the majority of reporting pharmacists expressed reluctance in their ability to provide

education about the drug and similarly did not feel capable of identifying customers who needed naloxone. Most alarmingly, only 41% of participating pharmacists expressed a willingness to provide naloxone over the counter (Nielsen, Menon, Larney, Farrell, & Degenhardt, 2016). This indicates that more than half of all pharmacies would turn someone away that asked for a legal drug. This creates barriers which are typically uncontrollable for the average citizen. As Australian regulations and social climate as addressed in the study are comparable to the United States, we can apply the same conclusions to our own society. Furthermore, states that lack legalized ownership of naloxone and Good Samaritan laws also act as barriers to action. Through increasing education about naloxone in all fields, hopefully state and federal governments will recognize the advantages to legalizing naloxone throughout the country. Lastly, monetary barriers may also limit individuals from obtaining the drug. Many organizations have made efforts to counteract this barrier by providing free or discounted overdose kits (which include naloxone) to drug-users, their friends, and families (National Harm Reduction Coalition). Continuing support of such programs will be essential to reducing barriers to action.

Self-Efficacy

Finally, self-efficacy must also be addressed in order to increase awareness of naloxone. PSAs and workshops instructing individuals where and how to access naloxone could serve to increase the American public's confidence in being able to bring the drug into their household or place of work. Other programs and flyers could also be designed to demonstrate how to assemble and administer the drug during an emergency situation. Having these discussions and instructions integrated into traditional first aid training could also allow individuals to safely practice giving naloxone under the guidance of a trained professional.

Conclusion

The United States' historical relationship with drugs is one built upon fear and misunderstanding. This complicated connection eventually led to the creation of public health initiatives designed to decrease drug use that frequently utilized threats of extreme loss and danger. However, this method of dissuading the American public has not been effective and has left them overwhelmingly underprepared. The promotion of naloxone ownership to counteract some of the negative consequences of the opioid epidemic should follow a Health Belief Model framework in order to successfully appeal to and protect the American people. This approach will involve acknowledgment of the influence of perceived severity, perceived susceptibility, barriers to action, benefits to action, and self-efficacy. A shift to public health initiatives modeled on these five factors will provide a new and empirically-backed approach to a long-existing issue.

References

- Becker, M. H., Drachman, R. H., & Kirscht, J. P. (1974). A new approach to explaining sick-role behavior in low-income populations. *American Journal of Public Health, 64* (3), 205-216, doi:10.2105/ajph.64.3.205
- Behar, E., Bagnulo, R., & Coffin, P. O. (2018). Acceptability and feasibility of naloxone prescribing in primary care settings: A systematic review. *Preventive medicine, 114*, 79–87. doi:10.1016/j.ypmed.2018.06.005
- Behar, E., Santos, G. M., Wheeler, E., Rowe, C., & Coffin, P. O. (2015). Brief overdose education is sufficient for naloxone distribution to opioid users. *Drug and Alcohol Dependence, 148*, 209-212, doi:10.1016/j.drugalcdep.2014.12.009
- Bryan, B. (2015, December 16). *Good Samaritan PSA (Heroin Overdose / Narcan)* [Video]. Youtube. <https://www.youtube.com/watch?v=13aHoeSFdL4>
- Centers for Disease Control and Prevention. (2018). Drug overdose deaths. Retrieved from <https://www.cdc.gov/drugoverdose/data/statedeaths.html>
- Centers for Disease Control and Prevention. (2015). Opioid overdose prevention programs providing naloxone to laypersons—United States. *Morbidity and Mortality Weekly Report, 64*(23), 631-635. Retrieved from https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6423a2.htm?s_cid=mm6423a2_e
- Centers for Disease Control and Prevention. (2017). QuickStats: Rates of drug overdose deaths involving heroin, by selected age groups—United States, 2006–2015. *Morbidity and Mortality Weekly Report, 2017b*;65(52):1497. Retrieved from <https://www.cdc.gov/mmwr/volumes/65/wr/mm6552a12.htm>

Centers for Disease Control and Prevention. (2020). *Tips from former smokers*. Retrieved from <https://www.cdc.gov/tobacco/campaign/tips/index.html>

Champion, V. L. (1999). Revised susceptibility benefits and barriers scale for mammography screening. *Res Nursing Health*, 22(4), 341-348

Cheraghi, P., Poorolajal, J., Hazavehi, S. M. M., & Rezapur-Shahkolai, F. (2014). Effect of educating mothers on injury prevention among children aged <5 years using the Health Belief Model: A randomized controlled trial. *Public Health*, 128(9), 825–830. doi:10.1016/j.puhe.2014.06.017

Drucker, E., & Clear, A. (1999). Harm reduction in the home of the war on drugs: Methadone and needle exchange in the USA. *Drug and Alcohol Review*, 18(1), 103–112. doi:10.1080/09595239996824

Endo Pharmaceuticals Inc. (2004, April 19). *Narcan*. Drugs at FDA. https://www.accessdata.fda.gov/drugsatfda_docs/label/2002/016636s052s054lbl.pdf

Felsher, M., Szep, Z., Krakower, D., Martinez-Donate, A., Tran, N., & Roth, A. M. (2018). 'I don't need PrEP right now': A qualitative exploration of the barriers to PrEP care engagement through the application of the Health Belief Model. *AIDS Education and Prevention*, 30(5), 369–381. doi:10.1521/aeap.2018.30.5.369

Glanz, K. & Bishop, D.B. (2010). The role of behavioral science theory in the development and implementation of public health interventions. *Annual Review of Public Health*. 2012;21:299–418. doi:10.1146/annurev.publhealth.012809.103604.

IBM Watson Health (2018, June). Health poll: Opioid antidotes. Retrieved from <https://www.ibm.com/downloads/cas/DBEKMXXY>

- Janz, N. K., & Becker, M. H. (1984). The health belief model: A decade later. *Health Education Quarterly, 11*(1), 1–47. doi:10.1177/109019818401100101
- Jones, C. L., Jensen, J. D., Scherr, C. L., Brown, N. R., Christy, K., & Weaver, J. (2015). The Health Belief Model as an explanatory framework in communication research: exploring parallel, serial, and moderated mediation. *Health communication, 30*(6), 566–576. doi:10.1080/10410236.2013.873363
- Keller, P. A. (1999). Converting the unconverted: The effect of inclination and opportunity to discount health-related fear appeals. *Journal of Applied Psychology, 84*(3), 403–415. doi:10.1037/0021-9010.84.3.403
- Kingsbury, J. H., Gibbons, X. G., & Gerrard, M. (2015). The effects of social and health consequence framing on heavy drinking intentions among college students. *British Journal of Health Psychology, 20*(1), 212–220. doi:10.1111/bjhp.12100
- Kirane, H., Ketteringham, M., Bereket, S., Dima, R., Basta, A., Mendoza, S., & Hansen, H. (2016). Awareness and attitudes toward intranasal naloxone rescue for opioid overdose prevention. *Journal of Substance Abuse Treatment, 69*, 44–49. doi:10.1016/j.jsat.2016.07.005
- Lefcourt, P. (Writer) & Arthur, K. (Director). (1987, May 26). *Cracked up* [Television broadcast]. ABC Television.
- Lynch, K. R., & Jackson, D. B. (2019). Ready to pull the trigger? Adapting the health belief model to assess the implementation of domestic violence gun policy at the community level. *Psychology of Violence, 9*(1), 67–77.

Magura, S. (2012). Failure of intervention or failure of evaluation: A meta-evaluation of the National Youth Anti-Drug Media Campaign Evaluation. *Substance Use & Misuse*, 47(13–14), 1414–1420. doi:10.3109/10826084.2012.705706

Maryland Department of Health and Mental Hygiene. [MarylandPublicTV]. (2017, January 27). *PSA: Naloxone :15* [Video]. Youtube. <https://www.youtube.com/watch?v=BB2lvIdGxxg>

Maryland Department of Health and Mental Hygiene. [MarylandPublicTV]. (2017, January 27). *PSA: Naloxone :30* [Video]. Youtube. <https://www.youtube.com/watch?v=ncE0AWi1KaM>

National Harm Reduction Coalition. (2020, October 02). Together We Can End the Overdose Crisis. Retrieved from <https://harmreduction.org/our-work/overdose-prevention/>

Nickell, G.(1998). The Helping Attitudes Scale. Paper presented at 106th Annual Convention of the American Psychological Association at San Francisco, August, 1998.

Nielsen, S., Menon, N., Larney, S., Farrell, M., & Degenhardt, L. (2016). Community pharmacist knowledge, attitudes and confidence regarding naloxone for overdose reversal. *Addiction*, 111(12), 2177–2186. doi:10.1111/add.13517

Office of the Surgeon General. (2015, April 5). *U.S. Surgeon General's advisory on Naloxone and opioid overdose*. U.S. Department of Health and Human Services. Retrieved from <https://www.hhs.gov/surgeongeneral/priorities/opioids-and-addiction/naloxone-advisory/index.html>

Palmgreen, P., & Donohew, L. (2003). CHAPTER 2: Effective Mass Media Strategies for Drug Abuse Prevention Campaigns. In *Handbook of Drug Abuse Prevention: Theory, Science, & Practice* (pp. 27–43). Springer Nature / Books.

Partnership to End Addiction. (2020). *Our mission & history*. Retrieved from

<https://drugfree.org/article/our-history/>

Pietrusza, L. M., Puskar, K. R., Ren, D., & Mitchell, A. M. (2018). Evaluation of an opiate overdose educational intervention and naloxone prescribing program in homeless adults who use opiates. *Journal of Addictions Nursing, 29*(3), 188–195.

doi:10.1097/JAN.0000000000000235

Sheeran, P. (2002). Intention-behavior relations: a conceptual and empirical review. *European Review of Social Psychology, 12*(1), 1-36, doi:10.1080/14792772143000003

Schwarzer, R., & Jerusalem, M. (1995). Generalized self-efficacy scale. In J. Weinman, S. Wright, & M. Johnston, *Measures in health psychology: A user's portfolio*, 35-37

Stoughton Police. (2014, March 14). *Nasal Narcan PSA* [Video]. Youtube.

<https://www.youtube.com/watch?v=JviPUbYPISc&t=18s>

Tannenbaum, M. B., Hepler, J., Zimmerman, R. S., Saul, L., Jacobs, S., Wilson, K., & Albarracín, D. (2015). Appealing to fear: A meta-analysis of fear appeal effectiveness and theories. *Psychological bulletin, 141*(6), 1178–1204. doi:10.1037/a0039729

War on Drugs. (n.d.). *Britannica Online*.

Whitestown Fire Department. (2018, January 10). *Narcan Administration PSA* [Video].

Youtube. <https://www.youtube.com/watch?v=ncE0AWi1KaM>

Appendix A

Questionnaire

Demographic Information

Age: 18-24 25-34 35-44 45-54 55-64 65+

Gender: Female Male Other:_____ Prefer not to say

Career/Job Title: _____

Race/Ethnicity: Asian/Pacific Islander Black or African American Hispanic or Latino
Native American/American Indian White/Caucasian Other Prefer not to say

Highest Education Level: Less than High School High School Graduate Some college
2 year Degree 4 year Degree Doctorate Other

Health Insurance Status (as of today): Insured Uninsured Prefer not to say

Part 1: Pre-Questionnaire

How familiar are you with naloxone (aka Narcan)?

- Extremely familiar
- Very familiar
- Moderately familiar
- Slightly familiar
- Not familiar at all

Continue to the next question unless you answered “Not familiar at all”. If you were not familiar at all, skip to Part 2 of the survey.

Where did you learn about naloxone? (Select one or more answers below)

- Personal experience
- A medical professional
- Through work
- Through school/educational program
- Through media exposure (Television, movies, books, songs, etc.)
- A friend
- Other:_____

Have you ever been in possession of naloxone?

Yes No Maybe

Have you ever administered naloxone to someone else?

Yes No Maybe

Has anyone ever administered naloxone to you?

Yes No Maybe

Some helpful information for answering the next section!

Naloxone/Narcan: “a drug administered by injection or as a nasal spray to reverse the effects of opioids especially in the emergency treatment of opioid overdose”

Opioids: “a natural, semisynthetic, or synthetic substance that typically produces narcotic effects (such as sedation, pain relief, slowed breathing, and euphoria)”

- Examples of opioids include morphine, heroin, oxycodone, hydrocodone, fentanyl, and methadone

Part 2

Please rate the following questions with the scores provided by the scale below:

Strongly Agree	Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree	Disagree Strongly
(1)	(2)	(3)	(4)	(5)	(6)	(7)

1. When the public is educated about a health issue, they are more able to help address it.
2. I know what to do if someone overdoses on opioids
3. I believe drug use is a major inhibitor to good health.
4. I know where to acquire naloxone
5. When given the opportunity, I enjoy aiding others who are in need.
6. My chances of a drug overdose are low.
7. Giving aid to the poor is the right thing to do.
8. Having access to an anti-opioid drug would let me help others in the event of an emergency.
9. I can usually handle whatever comes my way.
10. It is generally easy for opioid drugs to be managed and taken safely.
11. If I buy naloxone, people will think that I take drugs.
12. If the person in front of me in the check-out line at a store was a few cents short, I would pay the difference.
13. Drug overdoses in my community are rare.
14. If more people had naloxone, the negative effects of the opioid epidemic could be greatly reduced.
15. I expect others to step in and help during an overdose before me.
16. A dose of naloxone will not be helpful for someone experiencing an overdose.
17. It is not my responsibility to help opioid addicts
18. I try to offer my help with any activities my community or school groups are carrying out.
19. Someone in my neighborhood/community will likely overdose on opioids
20. I believe naloxone will contribute to continued opioid addiction

- 21. I am confident that I could deal efficiently with an opioid overdose.
- 22. The opioid crisis is over-exaggerated.
- 23. I know how to obtain preventative doses of anti-opioid drugs
- 24. I dislike giving directions to strangers who are lost.
- 25. I can easily imagine a family member overdosing on opioids.
- 26. I believe naloxone would help the person it is given to.
- 27. Remaining calm in the event of witnessing a drug overdose will be challenging for me.
(reverse code)
- 28. A drug overdose significantly impacts a person’s life
- 29. \$45 is too much to pay for naloxone.
- 30. Helping people does more harm than good because they come to rely on others and not themselves. (reverse code)
- 31. I will likely overdose on opioids in my lifetime.

(Part 3) End of survey

How interested would you be in learning more about Narcan?

Extremely Interested	Interested	Somewhat Interested	Neutral	Somewhat Uninterested	Uninterested	Extremely Uninterested
(1)	(2)	(3)	(4)	(5)	(6)	(7)

How important do you think it is for the general public to be aware of Narcan?

Extremely Important	Important	Somewhat Important	Neutral	Somewhat Unimportant	Unimportant	Not at all Important
(1)	(2)	(3)	(4)	(5)	(6)	(7)

How likely are you to share the information you learned today?

Extremely Likely	Likely	Somewhat Likely	Neutral	Somewhat Unlikely	Unlikely	Extremely Unlikely
(1)	(2)	(3)	(4)	(5)	(6)	(7)

How likely are you to obtain Narcan after taking this survey?

Extremely Likely	Likely	Somewhat Likely	Neutral	Somewhat Unlikely	Unlikely	Extremely Unlikely
(1)	(2)	(3)	(4)	(5)	(6)	(7)

Here are some helpful weblinks if you wish to learn more!

How to Get Naloxone without a prescription

<https://www.goodrx.com/blog/heres-how-to-get-naloxone-the-opioid-overdose-antidote-without-a-prescription/>

Identifying an Overdose and Instructions on How to Administer Anti-Opioids

<https://drugfree.org/article/overdose-response-treatment/>

About the Opioid Epidemic in the US

<https://www.cdc.gov/injury/features/prescription-drug-overdose/index.html>

Appendix B

Recruitment Message

A Psychological Approach to Public Health Models

My name is Sarah Tilford and I am working on my Honors Thesis in the Department of Psychological Sciences at the University of San Diego. I am collaborating with my professor, Dr. Rebekah Wanic, on a study about anti-opioid drugs. We are interested in learning more about what motivates members of the general public to purchase, learn about, and use these medications.

The study involves a short questionnaire and should take roughly 5-10 minutes of your time. If you are interested in participating, please click the link below! All responses will remain anonymous.

If you have any questions, please feel free to contact me: stilford@sandiego.edu

Thank you so much! Your assistance in this study is greatly appreciated.