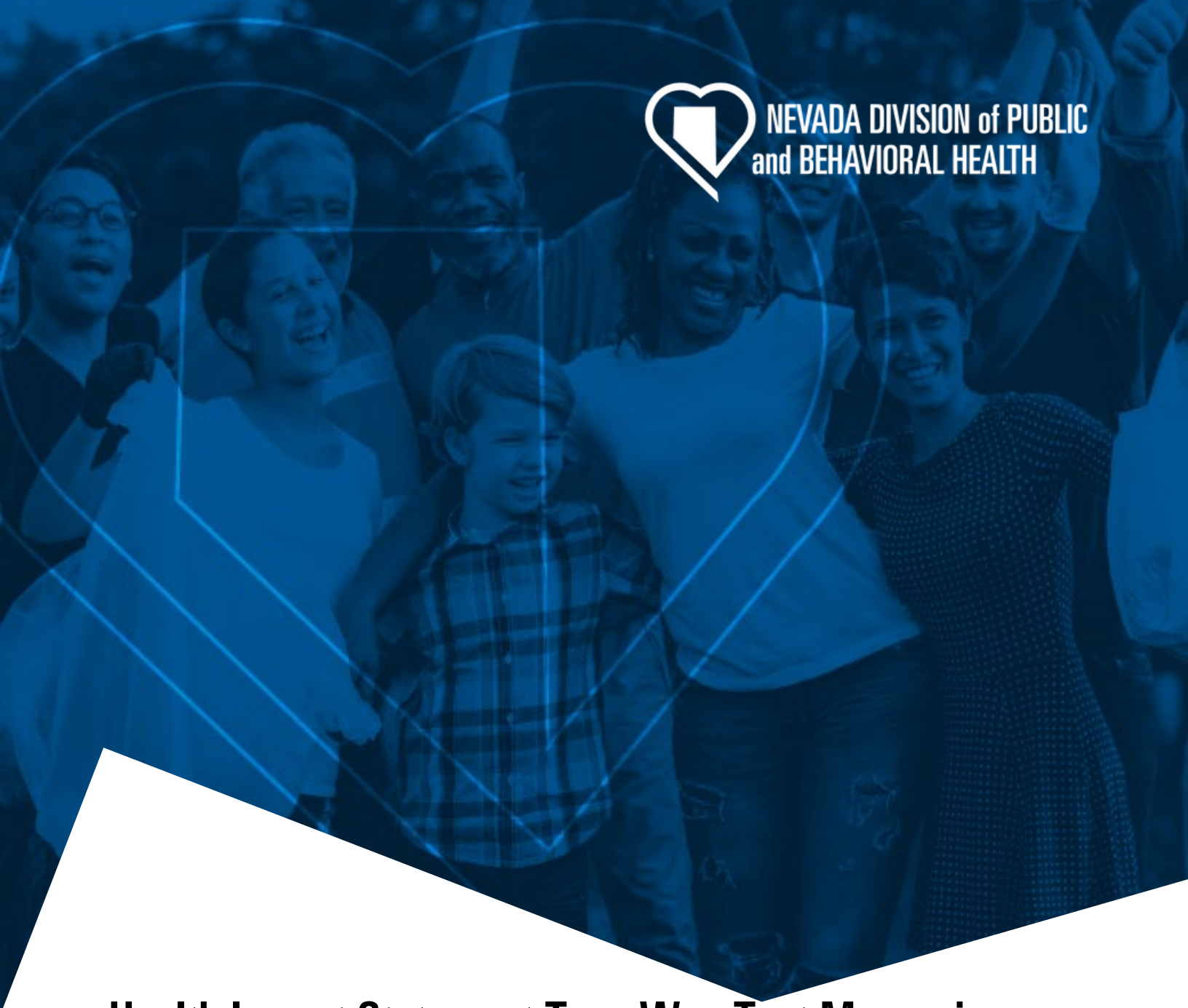

Health Impact Statement Two-Way Text Messaging Program (TWTM)

DIVISION OF PUBLIC AND BEHAVIORAL HEALTH

DEPARTMENT OF HEALTH AND HUMAN SERVICES

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Problem

Mobile health (mHealth) strategies, such as text message reminders, could be a low-cost and effective way to improve blood pressure management due to its broad reach. Cell phone and smartphone use is widespread, with text messaging even more prevalent. It is estimated that 81 percent of Americans and 71 percent of low-income Americans own smartphones (Pew Research Center, 2019). For several diseases and health topics, Short Message Services (SMS) has been demonstrated to be an effective health communication and health management data-tracking tool (de Jongh et al., 2012). SMS interventions focused on blood pressure management were most effective in studies featuring two-way communication with patient-tailored content guided by evidence-based hypertension management practices (Vargas et al., 2017). This intervention aims to explore and test the effectiveness of two-way text messaging (TWTM) compared with the usual care method in hypertension management among low-income adults. The priority populations are those who are under or uninsured and diagnosed with hypertension and/or hyperlipidemia in Washoe County, Nevada. These populations can be especially inaccessible due to barriers associated with low-income, such as transportation to and from medical appointments, high cost of care, and lack of insurance coverage. There is also a large Spanish-speaking community, therefore, the text message system has English and Spanish capabilities.

Intervention

AHN worked with multiple primary care facilities and their own internal cardiovascular care coordination program to identify a list of patients diagnosed with hypertension using the Electronic Health Record (EHR). The eligible patients were contacted by a Community Health Worker (CHW) to gauge interest for participation in the intervention. The CHW then set up an appointment with interested patients to collect informed consent. Pretest surveys were administered to participants to collect: 1) blood pressure measurement, 2) medication adherence, 3) number of visits with Primary Care Provider (PCP) over the last three (3) months, and 4) knowledge and attitude on healthy lifestyle. The Morisky Medication-Taking Adherence Scale-MMAS (4-item) was used to collect data on medication adherence. Morisky scale has an advantage over self-reported data since it has been validated in several studies and has a higher degree of concordance with pharmacy fill data or electronic monitoring devices (Van De Steeg et al., 2008; Fernandez et al., 2008; Cohen et al., 2009). An external evaluator, Center for Program Evaluation (CPE) at the University of Nevada, Reno (UNR) conducted data evaluation and analysis, including coding manual messages sent by the CHW and received from the participants in the intervention group. AHN sent automated text messages to the intervention group on appointment reminders, medication adherence, and healthy lifestyle tips, which were sent weekly or on an as-needed basis in the case of appointment reminders. In the comparison group, participants received only standard care coordination through AHN. At month 12 of the intervention, the CHW set up an appointment with both comparison and intervention participants to administer a post-survey to collect data on blood pressure measurements, medication adherence, number of PCP visits over the last three (3) months, and healthy lifestyle. Each year, at least one (1) provider, one (1) CHW, and the Program Manager at AHN will be asked to participate in an interview to provide barriers and facilitators of program implementation.

Health Impact

There were 5,020 text messages in six (6) categories sent to or received by the intervention group in this analysis. Outbound texts were more common than inbound texts. The majority of outbound texts included Nutrition and Physical Activity tips. Other message categories included conversations about doctor's appointments and referrals, billing, and AHN services. After controlling for pre-systolic blood pressure, there was no difference in post-systolic blood pressure between the two groups. There was no difference in the number of days participants ate five (5) or more servings fruit and vegetables. Likewise, there was not a significant difference in the number of days exercised for 30 minutes or more. Adherence to prescribed medication was found to be similar between the two groups, with both showing a slight increase with medication adherence overall.

The TWTM implementation is reliant upon technology and technological expertise. This technology predicate led to unforeseen challenges not addressable by a public health workforce. The engineering process for this intervention had many software system roadblocks and structural limitations which delayed participant enrollment and took the system offline for approximately one (1) year. Once these issues were resolved, capacity and ability to gauge the interests of participants, improved. While nutrition tips were the most desired texts, AHN began excluding all medication reminders as participants did not find value in these reminders. The respondents used a Likert scale to indicate their perception of each item. The four level Likert scale ranged from not at all useful to somewhat useful. Fifty-five percent of respondents in the intervention group ranked their satisfaction with SMS as "very useful." Forty-five per-cent and 41.7%, respectively, viewed the messages and their frequency as quite useful.

Additional components of the TWTM system could be utilized in future iterations, including reminders regarding the availability and benefits of lifestyle change programs, stress management, healthy recipes, mental health and wellbeing, symptom management, etc. This program could also be expanded to more target populations, such as those with diabetes or other chronic diseases, as well as incorporating this function as part of a Diabetes Self-Management Education and Support (DSMES) course or a Healthy Heart Ambassador Blood Pressure Self-Management (HHA-BPSM) course for blood pressure prompts.

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