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Evaluation of a Drowning Prevention Campaign in a Vietnamese American Community

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Evaluation of a Drowning Prevention Campaign in a Vietnamese American Community

Cover Page Footnote

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Abstract

To address Washington State's high pediatric fatal drowning rates in Asian children, especially Vietnamese, we conducted and evaluated a community water safety campaign for Vietnamese American families. Working with community groups, parks departments and public health, we disseminated three messages (*learn to swim, swim with a lifeguard, and wear a life jacket*) in Vietnamese media and at events, increased access to free/low cost swim lessons and availability of lifeguarded settings and life jackets in the community. Parents completed 168 pre- and 230 post-intervention self-administered, bilingual surveys. Significantly more post-intervention compared to pre-intervention respondents had heard water safety advice in the previous year, (OR 8.75 (5.07, 15.09)) and had used lifeguarded sites at lakes and rivers (OR 2.3 (1.04,5.08)). The campaign also increased community assets: availability of low-cost family swim lessons, free lessons at beaches, low cost life jacket sales, life jacket loan kiosks in multiple languages, and more Asian, including Vietnamese, lifeguards.

Keywords: drowning, drowning prevention, water safety, social marketing, health disparities

Introduction

Fatal drowning rates vary among different races and ethnicities of United States children less than 18 years. In 2017, African Americans had the highest adjusted unintentional drowning rates per 100,000 persons (1.29) and Asian Americans, the lowest (1.07) (Gilchrist & Parker, 2014). In the Western United States from 2013-2017, Asians had the second highest drowning rate among 5-9 year olds, 10-14 year olds and 15-19 year olds (Centers for Disease Control, 2020).

Centers for Disease Control data shows that in Washington State, drowning is the second major cause of unintentional injury related death from birth to 19 years. From 2013-2017, Asians had the second highest fatal drowning rates among 5-9 year olds, 10-14 year olds and highest among 15-19 year olds. These rates are greater than the overall crude fatal drowning rate for each of those age groups (Centers for Disease Control, 2019; 2020). A Child Death Review (CDR) report identified that in Washington state between 1999 to 2003, Asian/Pacific Island children had the highest rates of drowning deaths of children less than 18 years (3.1 per 100,000), double that of white children (1.5) (Quan, Pilkey, Gomez & Bennett, 2011; Washington State Department of Health, 2004). In contrast, national drowning rates during the same time period for children less than 18 were lowest among Asian/Pacific Island children (1.2 per 100,000), compared to rates of 2.15 for African American, 1.93 for Native American and 1.31 for white children (Centers for Disease Control, 2019). During this time period, several local, high

profile open water swimming-related drownings in Washington involved local Vietnamese American school-aged children.

Our goal was to develop and conduct a community based drowning prevention campaign based on our local experience with drownings among Vietnamese American children. At that time, the few studies addressing drowning and its prevention among Asian immigrants were surveys of behaviors and attitudes of Asian New Zealanders (McCool et al., 2008; Moran, 2008). The only study of Asian Americans reported they lacked experience, safety principles and practical competencies around water activities compared to white peers, even when controlling for socioeconomic status (Allen et al., 2007). No studies had specifically addressed drowning risks and prevention amongst Vietnamese immigrants. Since the Asian American population represents multiple ethnic and cultural groups from wide ranging locales, specific cultural and linguistic approaches were needed for drowning prevention in this ethnic group.

First, in 2005, we conducted focus groups of local Vietnamese American teens and parents to understand their skills, behaviors and beliefs around swimming, life jacket use and drowning risk. We published our findings that participants did not take part in water sports, were unaware of the risks and lacked water safety and swimming skills (Quan, Crispin, Bennett & Gomez, 2006). Based on these findings, we developed a drowning prevention campaign whose objectives were to increase awareness of drowning and drowning prevention, increase safe behaviors around water and facilitate acquisition of water safety skills. The purpose of this study was to describe the development, components and evaluation of a drowning prevention campaign for a previously untargeted diverse minority community.

Method

Setting:

Vietnamese American communities of Seattle area

In the 2000 U.S. Census, Washington State had the third largest number of Vietnamese people nationally (50,687). Of these, 74% were foreign born and 89% spoke another language besides English at home (U.S. Census Bureau, 2010). In the Seattle area, Vietnamese was one of the top four non-English languages spoken. Vietnamese residents numbered 11,943 making them the third largest group of Asians (17%) with the highest number of linguistically isolated households (49%). Vietnamese Americans lived primarily in the Central and South Seattle districts, which had the largest numbers of non-whites, the highest injury rates leading to hospitalization, and the lowest socioeconomic status in the Seattle area.

Campaign Development

To develop the campaign, PRECEDE-PROCEED was used as a framework. (Green & Kreuter, 2005; Kotler et al., 2002; Lefebvre & Rochlin, 1997). It provides a robust structure for assessing health needs and assets by addressing predisposing, enabling, and reinforcing factors. Key constructs we used included the following: Social assessment of how families recreated around water and their concerns; epidemiological assessment using the CDR data and report; educational and ecological assessment using the CDR data and focus group report to identify predisposing, reinforcing and enabling factors; and community assessment and meetings with community leaders to identify administrative issues. These findings were then used to develop the resources, messaging and focus areas for the campaign (Table 1).

Principles of Social Marketing, which takes traditional marketing strategies and applies them to achieving social good, including health behavior change (Kotler et al., 2002; Lefebvre & Rochlin, 1997), were also used and included: *Audience segmentation* – we narrowed our focus to Vietnamese families in the Seattle area; *use of formative research in message development* – we used findings from our focus groups with Vietnamese parents and teens; *development of specific communication channels* – we communicated using Vietnamese specific media and events; *tailored messaging* – we developed culturally specific and unique education materials, photos and posters based on focus group input; *incorporation and promotion of a tangible object or service* – we promoted and facilitated use of life guarded swim areas, free lifejackets and low cost/free swim lessons and family swim periods at local pools; and *easy access and development of an appealing location for the product or service* – we provided translated resources with culturally tailored visuals and messages at water locations, events and venues with large numbers of Vietnamese families.

To identify participants, community assets, culturally and linguistically appropriate strategies and ideas for how to present the drowning problem to the community, we met with community leaders, liaisons and other collaborators such as public health and parks and recreation. At their recommendation, we prioritized families at Vietnamese language schools, Head Start programs that primarily serve Asian children (Head Start is a Federal program for low-income preschool children), church and temples' family groups, and the Têt festival venues. Community representatives, including Vietnamese Professionals Society, three Vietnamese Language Schools, Denise Louie Head Start, Seattle Parks and Recreation, Lynnwood Parks, Washington State Parks, Injury Prevention Division of Public Health Seattle & King County, and the Injury Free Coalition for Kids of Seattle, also participated in the evaluation process.

We chose three key drowning prevention messages for the campaign: *learn to swim*, *swim with a lifeguard* and *wear a lifejacket*. Selection was guided by the state's CDR of drowning deaths, focus groups (Quan et al., 2006) and an assessment of community assets such as lifeguarded swim areas.

Learn to Swim was chosen because teen focus group participants reported lack of swim skills but asked to start lessons immediately. Parents in focus groups reported swimming was not a recreational activity in Vietnam; they lacked swim skills and did not own swimsuits. Moreover, parents believed children should not learn to swim until nearly 8 years of age although they were aware that white children learned earlier (Quan et al., 2006).

Swim with a Lifeguard was chosen because focus groups of parents and teens reported they could not swim and lacked water rescue skills and knowledge of local waters. Parents did not enter the water when supervising children and did not supervise children who had learned to swim or were "old enough". Both parents and teenagers stated that peer pressure caused Vietnamese teenagers to swim with white peers despite lacking skills (Quan et al., 2006).

Wear a Lifejacket was chosen because the community stated they recreated around open water settings, i.e. lakes and rivers, and avoided swimming pools.

These messages were disseminated by posters and handouts (printed in Vietnamese and English), in oral presentations at small (classes or church meetings) and at large public functions such as the Têt festival, and via a multimedia campaign (see Table 1).

Process Measures That Were Tracked

To increase community awareness:

- Held seven informational presentations at churches, temples, language schools, and a Head Start Preschool program.
- Developed posters illustrating the three messages in Vietnamese, which were disseminated to more than 200 community stores, clinics, and organizations that catered to Vietnamese families.
- Published an Op Ed article written by a board member of the Vietnamese Professionals Society in the three Vietnamese newspapers.
- Developed a bilingual brochure with Seattle Parks on how to access free and low cost swim lessons and life jackets as well as the location of local lifeguarded public pools and beaches.
- Provided information booths at four community health fairs.

To develop, expand, and promote use of free and low-cost swimming opportunities and lessons:

- Hosted three free Vietnamese family water safety and swim sessions at lifeguarded public pools with Vietnamese interpreters, attended by 25, 46, and 140 persons.
- Worked with Seattle Parks and Recreation to translate the letters sent to Seattle school families, which promoted use of free swim lesson vouchers for third and fourth graders.

To increase availability and use of lifeguarded sites:

- Worked with Washington State Parks to reinstate lifeguarding at two popular local parks; Seattle Parks reinstated lifeguards at two beaches.
- Seattle Parks and Recreation worked to increase numbers of Asian American adolescents trained to be swim aids or lifeguards.

To increase lifejacket use:

- Increased the number of lifejacket loaner boards at city swim beaches, added visuals of Asian children and parents borrowing lifejackets; and translated instructions on their use into Vietnamese.
- Posted a banner promoting lifejackets featuring Asian American children at all eight Seattle indoor public pools.

Table 1

Campaign elements incorporating Predisposing, Enabling and Reinforcing factors

<u>Predisposing factors</u> ^a	<u>Enabling factors</u> ^b	<u>Reinforcing factors</u> ^c
Learn to Swim		
Parents see drowning as fate	Promote free and low cost swim lessons	Participation in dominant culture water activities
Never perceived a need to know how to swim	Translate information about free lessons into Vietnamese	Tailored posters with photos of Vietnamese families at community locations
Swim lessons needed later	Provide free family swims	Visuals/messaging/media in Vietnamese newspapers
Interested in water safety	Recruit Vietnamese Asian swim aids Provide brochure/ education sessions promoting free/low cost swim lessons	

<u>Predisposing factors</u> ^a	<u>Enabling factors</u> ^b	<u>Reinforcing factors</u> ^c
Life Jacket		
Life jacket is not necessary except in a boat	Promote free life jacket loan at all pools and beaches	Posters/handouts/media reinforce benefits and modeling by Vietnamese families
Expensive	Translate life jacket loaner board instructions and provide visual instructions	Life jacket fashion shows for teens
Bulky	Provide life jacket education program and low cost sale at Head Start schools	Free life jacket drawings at events
	Provide brochure/education session promoting free/low cost life jackets	
LifeGuard		
Parents/teens lack swim skills	Promote life guarded beaches/pools	Parents more assured for child's safety
Parents want to keep kids safe	Recruit Vietnamese/Asian lifeguards	Posters/handouts/media reinforce benefits
Parents do not go in the water to supervise	Provide brochure and education session promoting lifeguarded pools and beaches	
Believe that older children need less supervision		
Recognize peer pressure among teens		

^a Predisposing factors: Includes knowledge, attitudes, beliefs, personal preferences, existing skills and self-efficacy towards the desired behavior

^b Enabling factors: Includes skills or physical factors such as availability and accessibility of resources or services that help motivate desired behavior

^c Reinforcing factors: Includes factors that reward or reinforce the desired behavior including social support, economic rewards, and social norms

Campaign Evaluation

We evaluated the campaign with a pre and post written survey completed by a convenience sample of parents and addressing assessment of community assets and process measures. This study was approved by Seattle Children's Institutional Review Board.

The survey was anonymous, self-administered, available in Vietnamese or English, and took approximately five minutes to complete. Fifteen questions were developed based on content from the focus groups, translated into Vietnamese by a professional translation service and checked with back translation to assure accuracy. Questions and survey design were reviewed by Vietnamese community members, leaders, and faculty experts from Seattle Children's Research Institute. (See Appendix 1 for the survey.)

The survey was distributed to Vietnamese parents at Têt festivals, Vietnamese language schools, Head Start, churches, temples, and community centers in the Seattle area. Incentives included whistles for children of parents who completed the surveys and a small stipend for language schools who coordinated dissemination and collection of surveys. Pre-intervention surveys were conducted between December 2006 and March 2007, post intervention surveys between November 2007 and April 2008.

Demographic questions included sex and age of the parent, number and ages of children in the household and primary language spoken at home. Three questions addressed the key messages: "Had their child 1)... had swim lessons (ever or since the previous June)?; 2)... swum in a lifeguarded area?; and 3)... worn a lifejacket? To determine campaign exposure, questions included "Had they heard water safety advice in the past 6 months? If so, where?" (Open-ended format).

We evaluated three community assets before and after the campaign and again in 2019: number of Seattle and State Parks with lifeguards, number of parks with translated lifejacket loaner boards (i.e. in Vietnamese as well as English), and percent of Asian American lifeguards at Seattle Parks beaches and pools.

Data Analysis

We used descriptive statistics and calculated frequency distributions. Statistical analysis was performed using a Pearson's chi-square test, odds ratios (OR) and 95% Confidence Intervals (CI). STATA version 11.0 was used to generate statistics and perform the analysis.

Results

Survey Results

Pre- and post-intervention questionnaires were answered by 168 and 230 respondents, respectively, most of whom were female, had 1-8 children, and spoke Vietnamese at home (see Table 2).

Table 2
Characteristics of surveyed parents

Characteristics of Surveyed Parents	PRE, Total N = 168		POST, Total N = 230	
	Mean (SD) or Percentage	Number of Responses	Mean (SD) or Percentage	Number of Responses
Mean Age in years (SD)	41.1 (9.1)	123	42.7 (10.5)	196
Male	27%	45/166	38%	87/227
Mean Number of Children (SD)	2.2 (1.1)	137	2.2 (1.1)	160
Language at home				
Vietnamese only	57%	92	61%	137
English only	8%	13	10%	22
Vietnamese/English	35%	57	29%	67
Survey completed in Vietnamese	46%	75/163	73%	170/230

Compared to participants from the pre-intervention survey, parents answering the post-intervention survey were significantly more likely to recall having heard water safety advice in the prior year (84% vs 37%, OR 8.75 (95% CI 5.07,15.09), at local sites (40% vs. 0%), in the media (31% vs. 21%) or at schools (8% vs. 2%). Additionally, they were more likely to report attending lifeguarded sites at lakes/rivers (84% vs. 70%, OR 2.3 (95% CI 1.04,5.08). (See Table 3.)

Community assets results: Comparing 2006 to 2009, Asian Americans comprised 10% (8/81) of lifeguards at Seattle beaches versus 7% (6/81) with one Vietnamese; 11% (15/136) versus 17% (28/163) at Seattle Parks swimming pools, five of whom were Vietnamese. These changes were not statistically significant. However, in 2019, Asian Americans comprised 21.7% (74/341) of lifeguards at Seattle parks; at one facility, 25.4% (14/55) were Vietnamese. The number of lifeguarded Seattle Park sites has remained the same. King County Parks' lifeguarded sites increased from zero to two but subsequently decreased to one. The number of translated lifejacket loaner boards in Seattle has increased from one to ten total.

Table 3
Results of parents' pre and post intervention surveys

Survey Question	PRE, Total N = 168		POST, Total N = 230		Odds Ratio and 95% Confidence Intervals
	Percentage	Number of Responses	Percentage	Number of Responses	
Child wore a life jacket at lake or river	36%	27/74	50%	69/137	1.76 (0.98,3.11)
Ever enrolled children in swim lessons	52%	76/147	55%	120/219	1.13 (0.74,1.72)
Ensured lifeguard					
In Pool	77%	72/93	67%	96/143	0.59 (0.33,1.08)
In River/Lake*	70%	42/60	84%	75/89	2.3 (1.04,5.08)
Saw/heard water safety information**	37%	48/129	84%	140/167	8.75 (5.07,15.09)

*p=.01, **p=.001

Discussion

This is one of few community drowning prevention programs evaluated, and the first to focus on Vietnamese Americans (Bennett et al., 1999; Wallis et al., 2015; Moran, 2017). High drowning rates and local experience with drownings of Vietnamese American children prompted the development of a drowning prevention campaign in the Vietnamese American community. Guided by an evaluation of their reported beliefs and behaviors around water, the campaign used a social marketing approach, linguistically and culturally tailored for this community. To increase open water safety awareness, water skills of Vietnamese youth (swimming lessons), and safe behaviors in both parents and children (use of life jackets and life guarded sites), three campaign messages were delivered with educational and experiential interventions. Pre- and post-intervention evaluations

showed the campaign increased community members' awareness and significantly increased their use of lifeguarded open water sites but not swimming lessons for children or use of lifejackets. Importantly, community assets increased, including numbers of available swim sessions, Asian lifeguards, and access to low cost swim lessons and life jackets.

The reported increased use of lifeguarded sites at open water but not pools may reflect that lifeguarded lake and river sites were lower cost and also preferred over pools. The lack of swimming lessons may reflect the numerous barriers stated by the focus groups, including cost, antipathy towards indoor pools and reluctance for early initiation of swim lessons. (Quan et al., 2006). However, the free swimming pool sessions for Vietnamese families generated interest amongst families who were keen for their continuance. A focus on socially organized sessions may be a way to encourage families from diverse communities to learn skills.

Limitations

This study's limitations were multiple. Different pre- and post-intervention groups were convenience samples. However, the post-intervention group was larger, due to our increasing access to the Vietnamese speaking community and differed only in that respondents were more likely to complete the survey in Vietnamese. Our written survey was biased toward literate groups. Parents' reported behaviors were not validated (Hatfield, et al., 2006). While observations would have been a stronger study design, we were limited by the inability to determine specific Asian type by observation. Parents surveyed may not have been representative of the Vietnamese community; however, we surveyed parents at multiple community venues based on community advisor recommendations. We attempted to survey a control group in Portland, Oregon but could not find a community liaison in time for the pre-intervention phase. Importantly, our methods and experience may not be generalizable to non-Vietnamese Asian communities. Lastly, this campaign was conducted ten years ago. However, a recent review of injury disparities research between 2007 and 2017 showed few studies addressed prevention and very few addressed Asian groups. It stated, "public health prevention campaigns to address the disparity identified are urgently needed to fill the gaps." (Moore et al., 2019).

Although higher rates of drowning amongst minority children are well documented, they are poorly understood. (Gilchrist & Parker, 2014). Racial groups' drowning risk varies by setting; the highest rates of nonfatal US drownings typically occur in children of racial/ethnic minorities in natural waterways. (Felton et al., 2015). The Vietnamese Americans' drowning risks, absent recreational swimming experience and water competence, have been similarly reported by Asian New Zealand beachgoers; more Asian New Zealanders reported their

children had poor swim ability and saw themselves as high risk in five water scenarios presented to them than non-Asians. (Stanley & Moran, 2017; Moran & Wilcox, 2013). Moran concluded, “Immigrants are quickly adapting to the aquatic lifestyle of their newly-adopted country but, these same immigrants may lack the safety skills and knowledge to minimize the risk of harm” (Moran & Wilcox, 2013, p.144).

Fear of drowning is an identified deterrent to recreational aquatic involvement and an explanation for low swim skills among low income African Americans (Pharr et al., 2018). Drowning fear was also reported by Asian New Zealand students (Moran, 2010). The drownings of several local Vietnamese youth could have contributed to Vietnamese American families’ avoidance of swim lessons.

Additional risk contributors in low income and diverse neighborhoods include lack of access to swimming pools and swim lessons and social exclusivity (Hastings et al., 2006). Thus, we promoted swim lessons primarily in pool settings. However, the antipathy towards unfamiliar, cold and expensive indoor pool settings and preference for free open water sites reported by parents in focus groups, along with this campaign’s failure to increase swim lesson participation, suggest the need for other approaches. These might include a socially supportive experience and swim/water safety sessions in open water.

Challenges reaching the Vietnamese community included identification of Vietnamese community liaisons. Hatfield reported success in addressing this inhibiting factor by using community health educators (Hatfield et al, 2006). Implementation of the current campaign was time limited. Key elements to working with the Vietnamese community identified in this study were language, community liaisons and nontraditional venues for outreach, tailored messaging and emphasis on family. Bilingual skills were critical to working with the community and its leaders.

This campaign increased community assets for Vietnamese and other diverse groups in the area. Several agencies made substantial policy and programmatic changes, for example Head Start continues to provide water safety education for its immigrant and refugee preschool families. Since exclusively Vietnamese swim sessions required external funding sources after the campaign, Seattle Parks and Recreation started low-cost family swim lessons for all parent and school age child pairs. They now offer scholarship applications in Vietnamese. Seattle Parks and Recreation has standardized their dissemination of key messages: *Learn to swim*, *Swim in a lifeguarded area*, and *Wear a lifejacket*. Developing and recruiting diverse youth as lifeguards and swim aids, they have doubled the percentage of Asian lifeguards at their facilities. They continue to provide lifeguard

staffing at nine beach sites and have expanded free swim lessons at lifeguarded beaches. They have also increased low cost lifejacket sales and numbers of life jacket loan kiosks with standardized information in eight languages, including Vietnamese. Head Start, Seattle Children's Hospital and several community groups continue to provide water safety information and low cost lifejackets to families.

Conclusion

A unique community drowning prevention campaign for Vietnamese Americans driven by local data and community focus groups addressed barriers and promoted swimming lessons and water safe behaviors, including use of life guarded sites and lifejackets. Evaluation showed the campaign increased drowning prevention awareness and some safe behaviors, specifically use of lifeguarded sites. Importantly, it improved community water safety assets such as access to swim lessons, lifejackets and lifeguarded sites that continue a decade after for the entire community.

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