EVIDENCE-BASED EDUCATION TO ENHANCE SWIM SCHOOL STAFF KNOWLEDGE REGARDING DROWNING TERMINOLOGY

by

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GRADUATE COLLEGE

As members of the DNP Project Committee, we certify that we have read the DNP project prepared by Amber Shereen Trujillo, titled Evidence-Based Education to Enhance Swim School Staff Knowledge Regarding Drowning Terminology, and recommend that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.

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Final approval and acceptance of this DNP project are contingent upon the candidate's submission of the final copies of the DNP project to the Graduate College.

I hereby certify that I have read this DNP project prepared under my direction and recommend that it be accepted as fulfilling the DNP project requirement.

Shawn Patrick Gallagher _____ Date: Nov 15, 2024
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LAND ACKNOWLEDGEMENT

We respectfully acknowledge the University of Arizona is on the land and territories of Indigenous peoples. Today, Arizona is home to 22 federally recognized tribes, with Tucson being home to the O'odham and the Yaqui. Committed to diversity and inclusion, the University strives to build sustainable relationships with sovereign Native Nations and Indigenous communities through education offerings, partnerships, and community service.

DEDICATION

I want to dedicate this project to my incredible Husband, who has supported me every step of the way for the past three years. He encouraged me and supported me when I needed it. He listened to me talk endlessly about this project, my classes, and clinicals, yet he never complained. He never once doubted me, even when I was doubting myself. I would not be the person I am today without him, and I will forever be grateful for him. I would also like to dedicate this project to my beautiful daughter. Her smiles, laughter, and silliness were exactly what I needed during this program. I strive to be the best pediatric nurse practitioner because of her and her soon-to-be little brother, who will join the family in a few short months.

TABLE OF CONTENTS

TABLE OF CONTENTS – Continued

TABLE OF CONTENTS – Continued

LIST OF FIGURES

LIST OF TABLES

ABSTRACT

Purpose. The purpose of this project is to educate staff at Hubbard Family Swim School regarding correct drowning terminology, how to discuss caregiver concerns regarding dry drowning, what symptoms to look out for after a drowning event, and to evaluate their perceived comfort level with discussing drowning terminology with caregivers of swimmers at Hubbard Family Swim School.

Background. The World Health Organization and The World Congress of Drowning revised the definition of drowning in 2002. Despite this, studies have shown that over 25 different definitions of drowning are still being used in the literature and medical community. Another study showed that peer-reviewed articles from 2010 to 2016 discussing drowning used non-accepted terminology regarding drowning. This indicates that education is still needed to discuss correct drowning terminology. Many cases of alleged dry drowning are reported every year, although each case has been found to be due to an underlying medical diagnosis.

Methods. This quality improvement project consisted of conducting an in-person educational session for a single group of swim school staff members. The participants underwent a pretest and posttest questionnaire to evaluate the effectiveness of the presentation. A convenience sample was used to recruit participants for this project. Participants were sent an email with information regarding the project along with the disclosure form and then given the choice to participate.

Results. A total of seven eligible participants participated in this project. All seven participants completed the pretest, educational session, and posttest. The scores showed increased participant knowledge between the pretest and posttest surveys for the knowledge-based questions. The

average score on the pretest survey was 17.14%. For the posttest survey, all seven participants scored 5/5 (100%) on the five knowledge-based questions. This data was analyzed, and the results were considered statistically significant.

Conclusion. This project was highly effective since there was a statistically significant increase in the knowledge-based questions. The posttest survey showed increased participants' comfort, familiarity, and knowledge of dry drowning, drowning terminology, and signs and symptoms to look out for after a drowning event.

INTRODUCTION

The term dry drowning has become popular over the last decade and has caused much fear even though it is not accepted (Szpilman et al., 2018). Caregivers have heard of news stories discussing the term and become fearful that their child will suddenly die days or weeks after swimming without any symptoms, but what these caregivers may not be aware of is that dry drowning is not a medically accepted term and that the news stories of kids dying of "dry drowning" were ultimately found to have passed away from another illness, utterly unrelated to the child being in water days earlier (Schmidt et al., 2019). This is why educating others on the proper terminology that should be used in drowning situations is essential. The literature shows that an audio-visual presentation helps adults to learn and retain information.

Background Knowledge and Significance

In the United States, drowning is the leading cause of death for children between the ages of 1-4 and the second leading cause of death for those between the ages of 5-14 years of age (CDC, 2022). Between 2019 and 2023, there was an average of 358 fatal drownings and 6,500 hospital visits for nonfatal drownings per year for individuals under the age of 15 (CPSC, 2024). Nonfatal drowning can cause brain damage or other long-term health conditions. Several factors can increase the number of drowning incidents. Some risk factors include being unable to swim, missing or broken pool fencing, lack of supervision, not wearing a life jacket, or a pre-existing health condition like epilepsy (CDC, 2022).

When it comes to drowning, there are several terms that are used. According to the World Health Organization (WHO), “Drowning is the process of experiencing respiratory impairment from submersion/immersion in liquid. Outcomes are classified as death,

morbidity and no morbidity." (WHO, 2023). In other words, drowning is classified as fatal drowning, nonfatal drowning with deficits, or nonfatal drowning without deficits. Terms such as dry drowning, secondary drowning, delayed drowning, or silent drowning should not be used (Denny et al., 2019).

The WHO and The World Congress of Drowning revised the definition of drowning in 2002. Despite this, studies have shown that over 25 definitions of drowning are still being used in the literature and medical community (Kiakalayeh et al., 2023). Another study showed that peer-reviewed articles from 2010 to 2016 discussing drowning used non-accepted terminology regarding drowning. This indicates that education is still needed in terms of correct drowning terminology.

The terms "dry drowning" or "secondary drowning" receive media attention almost every summer. Misinformation typically spreads and causes caregivers fear (Szpilman et al., 2018). Caregivers are then worried when their child swallows pool water or coughs after swimming and get concerned about dry drowning, even though dry drowning is not an actual medical term. These caregivers will then take their child to the emergency room or to a doctor to be evaluated for dry drowning days after swimming, leading to unnecessary emergency room visits and medical costs. Medical professionals agree that drowning can continue once the person has already left the water. However, studies show that the patients who drowned and required medical evaluation would either continue to improve or decompensate within 8 hours following a submersion, not days later (Schmidt et al., 2019). Many cases of alleged dry drowning are reported every year, although each case has been found to be due to an

underlying medical diagnosis. For example, in 2017, the media spread the story of a 4-year-old boy who allegedly died from dry drowning after being briefly submerged in water days before he passed away. After the autopsy, it was determined that this boy did not die from drowning but instead died from myocarditis entirely unrelated to the water submersion incident (Szpilman et al., 2018). The media never released articles correcting the cause of death of this child.

Local Problem

A Hubbard Family Swim School nurse in the Phoenix Metro area vocalized concerns regarding caregiver fears regarding dry drowning. Caregivers are nervous and scared after hearing incidents of dry drowning in the news, and these caregivers become increasingly worried that their child will die of dry drowning days or even weeks after swimming lessons or swimming in any body of water. She vocalized concerns about the misinformation regarding the term and lack of knowledge of the definition of drowning. She states that the swim school staff receives questions from caregivers regarding the term. She would like to educate the staff so they are better equipped to address caregiver fears and concerns. Currently, the staff answers the caregiver's concerns to the best of their ability. Still, this nurse brought up the need for an evidence-based presentation regarding the term dry drowning for the swim school staff so that they can confidently answer caregiver fears regarding the term.

Intended Improvement

Project Purpose

The purpose of this quality improvement project is to educate participating staff supervisors at Hubbard Family Swim School regarding correct drowning terminology, how to

discuss caregiver concerns regarding the term dry drowning, what symptoms to look out for after a drowning event, and to evaluate their perceived comfort level with discussing drowning terminology with caregivers of swimmers at Hubbard Family Swim School.

Project Question

Will an educational intervention on drowning terminology and dry drowning for swim school staff supervisors increase their knowledge of drowning terminology and dry drowning and increase their perceived comfort level in discussing these terms with caregivers of children who take swim lessons at Hubbard Family Swim School?

Project Objectives

The specific objectives for this QI project are:

1. Pre-presentation survey
    - Perceived knowledge of dry drowning
    - Perceived comfort level of discussing dry drowning with parents/caregivers
    - Knowledge of drowning terminology
    - Knowledge of drowning symptoms once a person has left the water
2. Educate- PowerPoint presentation
3. Post-presentation survey
    - Perceived knowledge of dry drowning
    - Perceived comfort level of discussing dry drowning with parents/caregivers

- Knowledge of drowning terminology
- Knowledge of drowning symptoms once a person has left the water

Theoretical Framework

The Adult Learning Theory (ALT) is the theoretical framework guiding this QI project. This theory helped to guide the project by directing the type of education that will be provided. It helped to give a framework for changing the style of education when teaching adults versus children. Since this QI project is intended for adults, it guided the project by ensuring the style and type of education are appropriate for the audience. The ALT helped guide the development of this QI project to conduct a learning experience that will increase adults' knowledge of dry drowning.

Adult Learning Theory

ALT was developed by Malcolm Knowles in 1968. He realized that one massive gap in adult education was that the same approaches used to teach children were also used for adult education, even though adults and children learn very differently. He wanted to create a systemic change in the education of adults, so he developed six key concepts of adult learning and called it andragogy (Feder, 2024). These six key concepts are need to know, experience, self-concept, readiness, problem orientation, and intrinsic motivation. These six key concepts are discussed in greater detail below.

Figure 1

Theoretical Framework: Adult Learning Theory

Need to Know

Adults want to know the purpose of what they are learning. They want to ensure that what they are learning is relevant to them. Adults engage better when they perceive that what they are being educated on is relevant to them, has a purpose, and will personally benefit them (Ottow, 2023). This project will use this concept by starting the educational presentation by explaining why the information presented is relevant to them.

Experience

Adults each come with their unique ideas and experiences. These experiences help to guide how an adult learns. If the new educational material presented to an adult is tied to their past experience, they are more likely to be motivated to learn the material presented (Ottow,

2023). This will be applied to this QI project by asking the audience about their experience with “dry drowning” and whether they have heard the term before. Have they been asked about it before? Or what have they heard about it in the past?

Self-Concept

Adults want to have autonomy with their learning. As people age, they switch from a dependent learning style to an independent one. They no longer learn best from sitting in a classroom and being taught what their instructor wants them to know. Instead, they want control over their learning and typically thrive on self-direction (Feder, 2024). This QI project will consist of a brief in-person educational session along with a handout for the participants (Appendix D), that way if they are auditory learners, they can hear the material, and then they have the option to learn more or refresh their memory independently with the handout that they will be given.

Readiness

Adult learners are more inclined to participate in a learning experience when they perceive relevance to their situation. Adults are less inclined to learn material that does not directly correlate to a problem. For example, adults are more willing to learn when they are ready to learn because they can see that the material they are learning directly correlates to improving their job performance (Ottow, 2023). Since this presentation will be given in a work environment, participants will be informed how the information directly correlates to their jobs.

Problem Orientation

Adult learners are more motivated to learn new material when it directly correlates to a problem they are currently facing or have faced in the past. To help adults engage in the

learning material, they should be educated on how this education will help them address a problem they have faced, are facing, or will face (Ottow, 2023). This QI project will ensure that the audience knows how this information solves a problem they either have faced or will face by giving scenarios of questions parents might ask them so that they will have the evidence-based knowledge to answer parental questions.

Intrinsic Motivation

One of the leading forces for adult learning is internal motivation. Adults learn best when they are internally motivated versus externally motivated. This internal motivation is often driven by personal or professional development (Feder, 2024). This presentation will directly correlate with their job performance, which will ideally bring about internal motivation to learn the material being presented.

Literature Synthesis

Evidence Search

An extensive literature review was conducted for this QI project to explore the current knowledge regarding dry drowning and secondary drowning. The databases used for the literature search consisted of PubMed, Google Scholar, and Cumulative Index of Nursing and Allied Health Literature (CINAHL). In each of the databases, filters were applied to the search. The filters included were published in the last 5 years in English and full-text. Terms utilized in the search were dry drowning, secondary drowning, drowning terms, and visual education. Various formations of these terms were used in the search with each database.

Comprehensive Appraisal of Evidence

Three main themes were discovered during the literature review. These themes were: 1. Drowning terminology is vastly misused, 2. "dry drowning" or "secondary drowning" is extremely rare, and 3. The use of visual aids in education is beneficial.

Drowning Terminology Misuse

The World Congress of Drowning and the World Health Origination (WHO) revised the definition of drowning in 2002. The definition of drowning is “the process of experiencing respiratory impairment from submersion/immersion in liquid” (Denny et al., 2019). This term has been further divided into two main terms: 1. Fatal drowning: a drowning event with a fatal outcome. 2. Nonfatal drowning: a drowning event where respiratory impairment was stopped before death occurred (Chandy & Richards, 2024). The WHO has proposed to divide the definition of Nonfatal drowning further into three categories: mild impairment, moderate impairment, and severe impairment (Chandy & Richards, 2024).

Accepted terms for a drowning incident are fatal drowning and nonfatal drowning. Terms like dry drowning, secondary drowning, wet drowning, near drowning, and delayed drowning are all terms that are still commonly used but are no longer accepted terms. A literature review by Kiakalayeh et al., (2023) found 25 definitions of drowning incidents. This indicates a lack of consensus on the definition and terminology regarding drowning. This can create confusion when so many definitions are used, especially since these terms are no longer accepted. It has been over 20 years since the universal acceptance of the term drowning. Despite this, a study conducted in 2017 found that 32% of peer-reviewed articles published from 2010 to 2016 discussing drowning used non-accepted terminology referring to drowning

events; this included articles in the medical community (Schmidt et al., 2019).

These non-accepted terminologies for drowning lead to confusion. For example, dry drowning can mean something different to different people. Studies conducted using the term dry drowning have used it to mean two different things. One of the ways that people have used the term dry drowning is when someone was in the water and then, several hours or days later, died. A second type of incident people have used the term dry drowning is when someone is drowning and their larynx spasms due to it and closes up, allowing no air or water to enter the lungs (Schmidt et al., 2019). Even with just this one term, dry drowning, people perceive the term differently, which can lead to confusion. This is just one example of how unaccepted drowning terminology is misused and can lead to confusion. This is why it is essential for people only to use the accepted terms regarding drowning.

"Dry Drowning" or "Secondary Drowning"

Throughout the years, many news articles have been released regarding incidents of dry drowning. One of the more significant news stories regarding dry drowning occurred in 2017. It was regarding a 4-year-old boy who suddenly died a week after swimming. He was taken to the emergency room, where the doctor told the parents that he died from dry drowning. After the autopsy occurred, it was discovered that he had died from myocarditis, a heart condition utterly unrelated to his being in a pool the week before (Schmidt et al., 2019). This article went viral and caused panic among many parents/caregivers. There have been several similar stories as this incorrect term continues to be used. Even though these stories keep occurring in the news, each case has ultimately been given a different diagnosis attributed to an underlying medical condition (Stern & Thompson, 2022). These stories have caused parents to take their child to

the emergency room days or weeks after swimming in a pool or splashing in a bathtub because their child was coughing and be so worried that their child was experiencing dry drowning only to discover that the child instead had a viral respiratory illness, completely unrelated to the water exposure. A children's emergency room doctor in Texas stated, "There has never been a published case where a patient was initially asymptomatic and later deteriorated or died" (Connelly, 2017). This same doctor does agree that people can still die from drowning after leaving the water but that most would have symptoms within 4 to 6 hours of the incident. It has also been shown that those who do end up having respiratory issues 4 to 6 hours later typically experienced drowning, where they had to be pulled out of the water and experienced some level of coughing or trouble breathing immediately after being pulled out of the water (Stern & Thompson, 2022).

Medical professionals agree that drowning can continue once the person has already left the water. However, studies show that the patients who drowned and required medical evaluation would either continue to improve or decompensate within 8 hours following a submersion, not days later (Schmidt et al., 2019). Similarly, a study conducted by Cohen et al. (2019) that was conducted over 12 years showed that children who presented to the emergency room following a drowning incident would demonstrate symptoms within 6 hours of the drowning incident. This study showed that children with normal oxygen saturation, clear respiratory auscultation, and no signs of respiratory distress within 6 hours were safely discharged home, and no readmissions occurred (Cohen, 2019).

Use of Visual Aids

The use of visual aids has been around for a long time. Visual aids have been used to help learners who are more visual learners. Visual aids include pictures, graphs, videos, PowerPoint presentations, and many others. Visual aids help with comprehension, recall, and adherence (Lee & Nathan-Roberts, 2021). Incorporating visual aids in one's learning increased adherence to the change by as much as 23% compared to teaching that did not include visual aids (Lee & Nathan-Roberts, 2021). Visual aids have also been shown to affect one's comprehension and recall drastically. Studies show that the combined use of verbal instruction along with visual aids helps learners' comprehension and recall. Two studies showed that subjects who received visual aids and spoken material had a recall level averaging around 85% versus a 14.2% recall for those who just received spoken education (Lee & Nathan-Roberts, 2021). The use of visual aids has also been shown to be beneficial in individuals with low literacy levels.

Significant health literacy and comprehension increases were found in low-literacy individuals presented with visual aids in the educational material (Mbanda et al., 2021).

Weaknesses, Gaps, and Limitations of Evidence

Several gaps and limitations were noticed while conducting the literature synthesis portion of this DNP project. The main gap noticed is that further research is needed on the misuse of drowning terminology. The studies that have been conducted demonstrate that there are quite a few providers who misuse drowning terminology. Still, research has yet to be conducted as to why providers are not using the correct terminology for drowning despite the uniform terms for drowning being established 20 years ago. Another gap in the literature is that

studies were not found regarding education for correct drowning terminology. Articles discussed that drowning terminology is misused, but educational material was not found. Lastly, a weakness in the literature is that there have been few recent studies regarding this topic. Most studies were conducted in 2017-2020 after the surge of the term dry drowning in media; more recent research needs to be conducted to determine if things have changed in the last four years.

METHODS

Project Design

The purpose of this quality improvement project was to educate participating staff supervisors at Hubbard Family Swim School regarding correct drowning terminology, how to discuss caregiver concerns regarding the term dry drowning, what symptoms to look out for after a drowning event, and to evaluate their perceived comfort level with discussing drowning terminology with caregivers of swimmers at Hubbard Family Swim School. This was accomplished by conducting a brief visual and verbal in-person presentation to local swim school staff members. This QI project was presented to a single group of participants who underwent a pretest and posttest questionnaire to evaluate the effectiveness of the presentation.

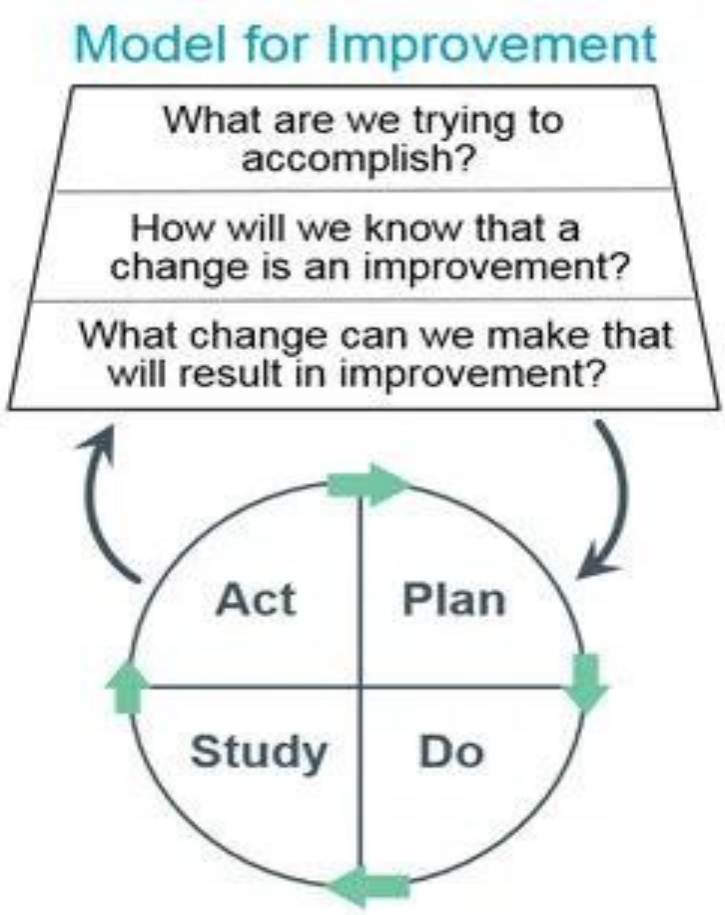
Model for Implementation

Associates developed the Model for Improvement (MFI) in Process Improvement, which was later adopted by the Institute for Healthcare Improvement (IHI). This model was developed to accelerate improvement. This model is quite versatile and can be used with other change models to help accelerate changes for improvement. The model for improvement consists of two main parts. Part 1 consists of three fundamental questions, and part 2 consists of

the Plan, do, study, act cycle (IHI, n.d). The three questions that part 1 consists of can be used in any order. The three questions are: What are we trying to accomplish? How will we know the change is an improvement? And What change can we make that will result in improvement? This QI project aimed to increase knowledge regarding the term "dry drowning" and the correct terminology for drowning by conducting an educational presentation. This project was then evaluated for effectiveness and improvement of knowledge by comparing pretest and posttest surveys.

Figure 2

Model for Improvement



Part two of the Model for Improvement uses the plan-do-study-act cycle. This part of the MFI is used to determine the effectiveness and sustainability of the change. The first stage is Plan, which focuses on developing an action plan based on the three questions from part 1. The second stage is Do, which focuses on the change's implementation and data collection. The third stage is the study, which focuses on analyzing and examining the data collected from the change to determine if the goals were met and if any changes were needed. The fourth and final stage is the act; this stage focuses on making any necessary changes determined in the third stage and then planning for future tests as needed (IHI, n.d).

Setting and Stakeholders

The setting for this QI project was a local swim school in the Metro Phoenix, Arizona, area. This swim school focuses on teaching children between the ages of 8 weeks to 13 years of age on swim safety and swimming skills. This swim school has over 25 years of experience teaching children how to swim.

The stakeholders consist of the owners, managers, supervisors, office staff, swim instructors, caregivers, clients of the swim school, and other staff at the swim school. The owners, organizational leadership, and support staff interact with the child's caregiver while they are present during swim lessons. They are ideally situated to inform and reinforce content regarding dry drowning. The swim school staff are the subject matter experts, and clients, including caregivers and children, are the ultimate constituents. The input from the swim school nurse is vital to this QI project to ensure the material presented in the presentation is relevant for the swim school staff.

Planning the Intervention

The Registered Nurse at Hubbard Family Swim School obtained permission to conduct this quality improvement. The current literature was reviewed to help guide the Plan and intervention for this quality improvement project. The intervention for this quality improvement was a 10-15 minute face-to-face educational teaching session where the DNP student educated participating staff at the swim school regarding correct drowning terminology and how to discuss caregiver concerns regarding the term dry drowning. A presentation developed by the DNP student from the current literature was utilized to conduct the presentation. The presentation consisted of education regarding non-accepted drowning terminology, correct drowning terminology, signs, and symptoms to watch out for after a drowning incident, myths regarding dry drowning, and how to address caregiver concerns regarding dry drowning.

Participants and Recruitment

A convenience sample was used to recruit participants for this project. Participants were sent an email from the DNP student with information regarding the project along with the disclosure form and then given the choice to participate (Appendix B). Participation in the project was voluntary. The inclusion criteria for participants were to be a current Hubbard Family Swim School employee, read and understand English, and be 18 or older.

Intervention

A staff meeting was held at a local swim school with seven staff members; the staff members at the meeting were provided with the opportunity to participate in this QI project. This QI project was held at the end of the meeting to ensure participation was voluntary. The

staff that voluntarily participated were given a pretest questionnaire on paper that they filled out before the start of the meeting. That consisted of eight questions. After the staff finished the pretest questionnaire, the DNP student completed the 10–15-minute presentation with a handout regarding signs and symptoms that caregivers should look for if a child experiences a drowning incident. After the presentation, the DNP student asked the participants if they had any questions before concluding the presentation. Once the presentation and questions/answers were completed, the DNP student handed out a posttest questionnaire on paper with eight questions to assess the effectiveness of the educational session.

Consent and Ethical Considerations

All participants of this DNP project were provided with a consent and disclosure form before participating (Appendix B). All participants were informed that participation is voluntary, and they can choose not to participate at any point throughout the project for any reason. There were no anticipated physical or financial risks for participants except for the time that they chose to listen to the presentation and participate in the pretest and posttest. To ensure privacy for all participants, no names or personally identifiable information was collected during the pretest or posttest surveys.

The DNP project manager received approval from the site, Hubbard Family Swim School, and received approval from The University of Arizona's Institutional Review Board before implementing any portion of this project.

Data Collection

The pretest and posttest surveys were completed on paper. The pretest survey was completed right before the presentation, and the posttest survey was conducted immediately

after the presentation. The PI had a physical drop box for participants to place their questionaries into, so the PI did not know whose survey was whose. The PI gathered the completed surveys and entered the information from the surveys into an Excel spreadsheet stored on the PI's laptop until the completion of the project. The pretest and posttest surveys consisted of the same five knowledge-based questions and three Likert scale questions. The five knowledge-based questions pertained to drowning terminology and signs and symptoms of drowning . The Likert scale questions evaluated the perceived comfort level of dry drowning, perceived knowledge of drowning terminology/dry drowning, and the usefulness of in-person educational sessions, and the benefit of in-person educational sessions. The pretest and posttest results were then compared to determine the effectiveness of the presentation.

Data Analysis

Data analysis was completed using Microsoft Excel. This data analysis compared the answers from the pretest and posttest surveys to determine the change from the group means between the surveys. A paired t-test was used to determine the difference in the participants' knowledge regarding drowning terminology and signs and symptoms of drowning. A paired t-test was chosen since it is beneficial when evaluating two measurements taken at different times, which is helpful for the pretest and posttest for this QI project. The paired t-test allowed this DNP student to assess the potential differences in scores from the pretest and posttest surveys and determine if the change was significant.

RESULTS

Seven eligible participants participated in the education intervention on October 10, 2024. All seven participants completed the pretest survey, educational presentation, and the

posttest survey. All participants in this QI project work at Hubbard Family Swim School.

Outcomes

All surveys were completed on paper with no personally identifiable information and then transferred and stored on the PI's computer. The survey questions were the same for both the pretest and posttest surveys. The survey consisted of 8 questions. The survey consisted of three Likert scale questions and five knowledge-based questions. The goal of the Likert scale questions on the surveys was to assess the participant's perceived knowledge of drowning terminology/dry drowning, perceived comfort level with discussing drowning terminology/dry drowning, and whether they believe in-person educational sessions are informative. The five knowledge-based questions assessed the participant's knowledge of drowning terms and signs and symptoms to look out for after a drowning event.

The scores showed increased participant knowledge between the pretest and posttest surveys for the knowledge-based questions. The lowest score on the pretest survey was 0/5 (0%), and the highest pretest score was 2/5 (40%). The average score on the pretest survey was 17.14%. After the education session, the participants completed the posttest survey. For the posttest survey, all seven participants scored 5/5 (100%) on the five knowledge-based questions. This shows a significant increase in the participants' knowledge before and after the educational session. See Figure 3 for details on knowledge-based survey answers comparing pretest and posttest scores.

The pretest and posttest scores were evaluated to determine if there was enough difference in the pretest and posttest scores to be statistically significant. The p-value was calculated and showed a statistically significant difference in the scores since the p-value was

0.0001. See Table 1 for the P value, along with other descriptive statistics.

Figure 3

Percentage of Correct Survey Answers

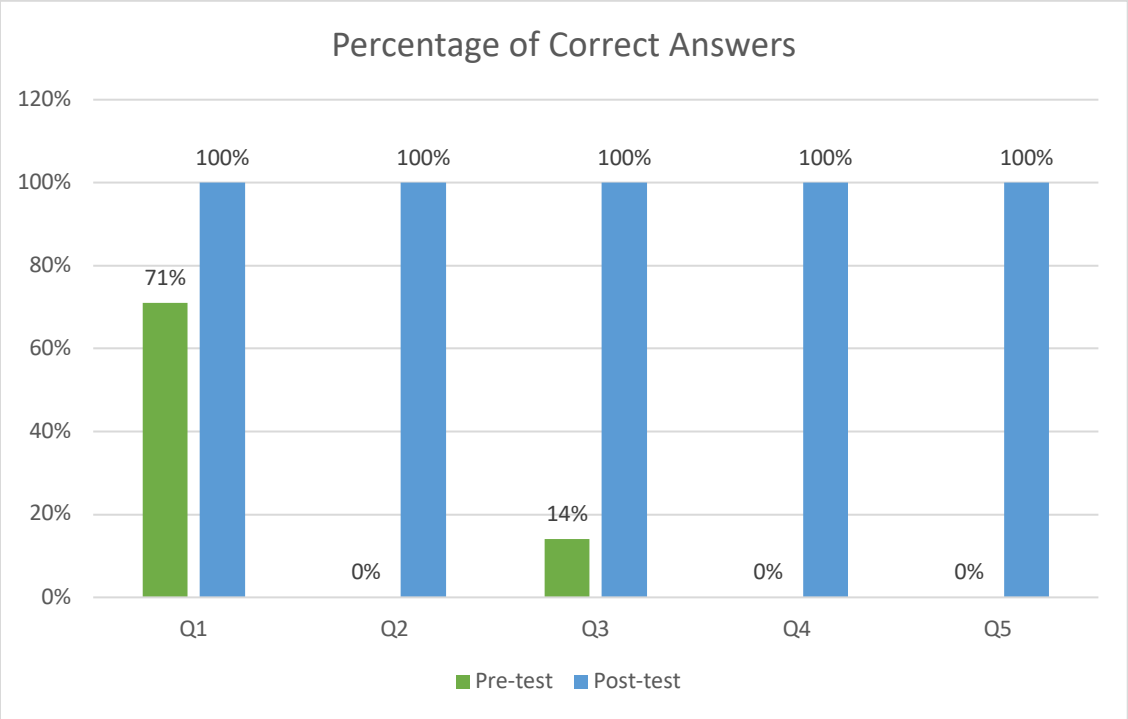


Table 1

Results of Paired t-test and Descriptive Statistics

Pre-education	Post-Education	N	95% CI for Mean Difference	P-Value (two-tailed)
Mean=0.88	Mean=5.0	7	-4.78	0.0001
SD=0.69	SD=0.0		-3.5	

The pretest and posttest surveys also consisted of three Likert scale questions to assess the participant's perceived knowledge of dry drowning, their perceived comfort level with discussing drowning terminology/dry drowning, and whether they believe brief in-person educational sessions are informative. The main goal of these questions was to assess if their perceived knowledge and comfort level increased or decreased after the educational session.

The first Likert scale question evaluated if participants thought brief in-person education sessions were informative. For the pretest survey, one person selected that they strongly agreed, and six other participants selected that they agreed with the statement. For the posttest survey, all seven participants selected that they strongly agreed. This shows that after conducting the brief in-person educational session, more participants strongly agreed that brief in-person education sessions are effective. See figure 4 for a visual representation of the results of the first Likert question.

The second Likert scale question evaluated the participants' perceived knowledge/familiarity with dry drowning. For the pretest survey, one participant selected extremely familiar, five selected moderately familiar, and one participant selected slightly familiar. For the posttest survey, four participants selected extremely familiar, two selected very familiar, and one selected moderately familiar. This shows that most participants' perceived knowledge/familiarity with dry drowning increased after the educational session. For a visual representation of the results of the second Likert scale question, see figure 5.

The third Likert scale question evaluated the participants' perceived comfort level with discussing drowning terminology and the term dry drowning. For the pretest survey, one participant selected very comfortable, four participants selected moderately comfortable, and two participants selected slightly comfortable. For the posttest survey, three participants selected extremely comfortable, two selected very comfortable, and two selected moderately comfortable. This shows an increase in the participant's perceived comfort with discussing drowning terminology and the term dry drowning. This is seen in the fact that zero participants felt extremely comfortable discussing drowning terminology/dry drowning before the educational

session, whereas, after the educational session, three participants felt extremely comfortable with discussing the terms. See figure 6 for a visual representation of the results of the third Likert scale question.

Figure 4

Likert Scale Question 1

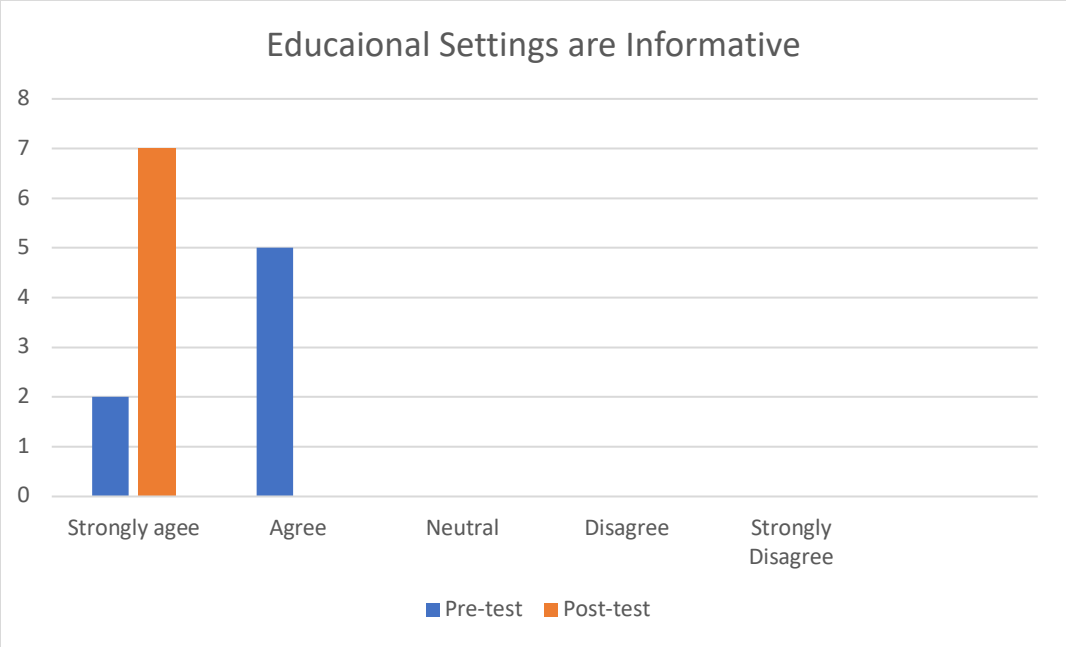


Figure 5

Likert Scale Question 2

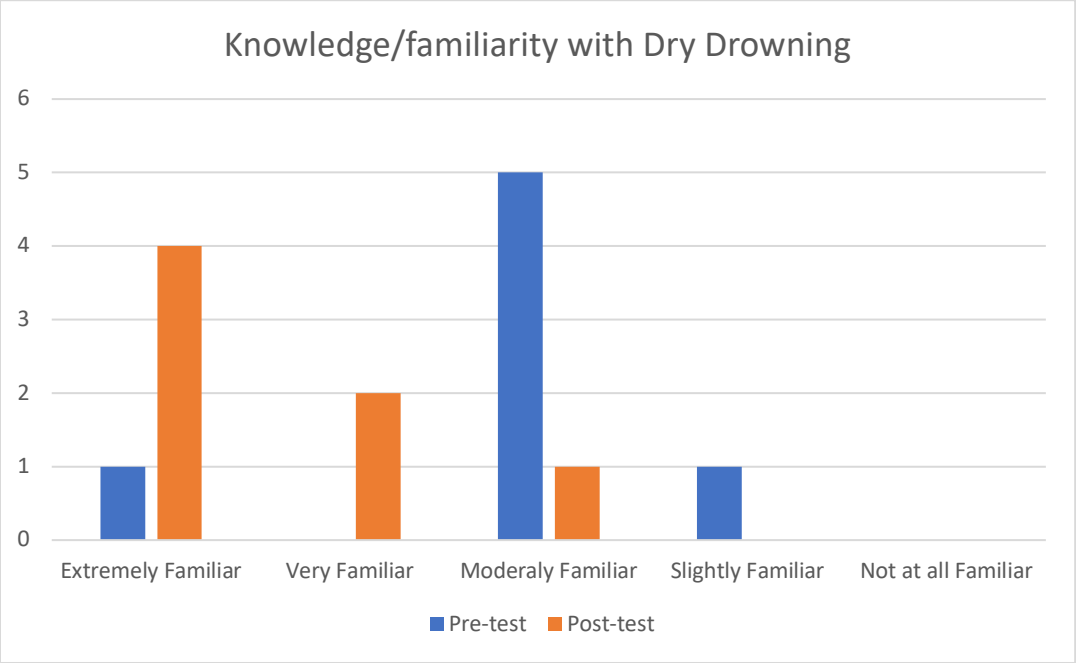
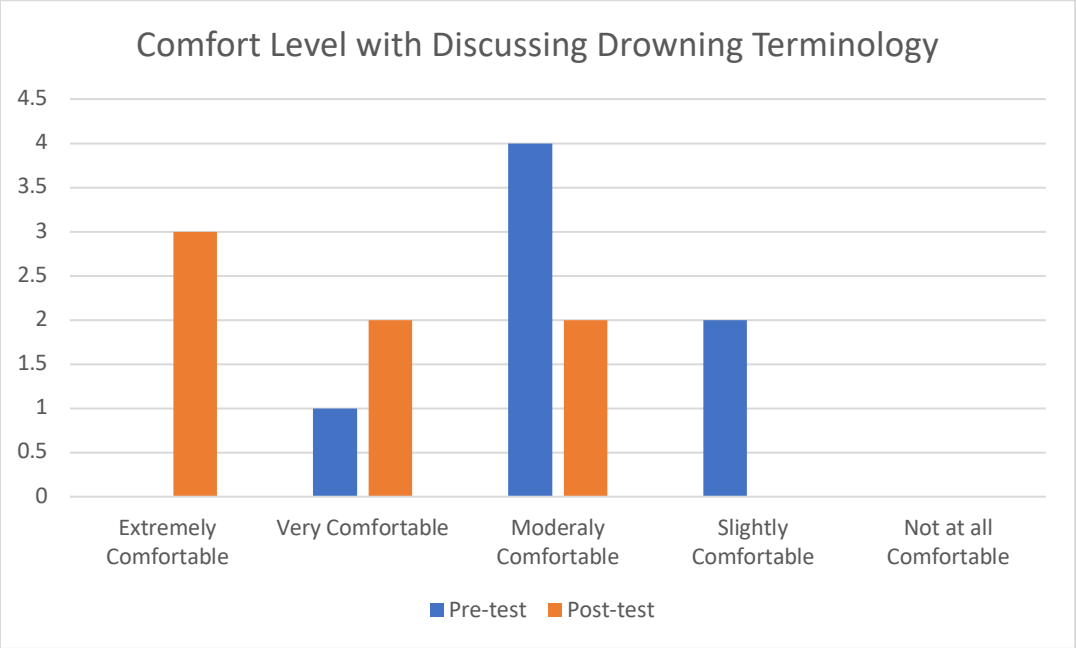


Figure 6

Likert Scale Question 3



DISCUSSION

Summary

The purpose of this project is to educate staff at Hubbard Family Swim School regarding correct drowning terminology, how to discuss caregiver concerns regarding dry drowning, what symptoms to look out for after a drowning event, and to evaluate their perceived comfort level with discussing drowning terminology with caregivers of swimmers at Hubbard Family Swim School. This was achieved by conducting a brief 10–15-minute presentation discussing correct drowning terminology, myths regarding incorrect drowning terminology, and what signs and symptoms to look out for after a drowning event. A survey was conducted before and after the presentation to determine its effectiveness. The questions were the same on the pretest and posttest survey. The average score on the knowledge-based questions increased drastically from

the pre-survey to the post-survey. Overall, this DNP project was successful, and all goals were met for this project. The outcome of this project shows that a brief in-person educational session is effective for increasing one's knowledge and comfort level regarding drowning terminology, how to address caregiver concerns regarding dry drowning, and what signs and symptoms to look out for after a drowning has occurred.

Interpretation

The average score for the knowledge-based questions on the pretest was 17.14%, versus the average score for the posttest survey was 100%. This is an increase of 82.86%. The p-value between the two scores was calculated to be P=0.0001, which shows a statistically significant result for the knowledge-based questions and is a crucial finding for this QI project. All participants selected the correct answers for the knowledge-based questions on the posttest survey. This indicates that participants learned that dry drowning is not a medically accepted term; WHO changed the definition of drowning in 2002, a person can experience drowning symptoms 4-6 hours after leaving the water, and over 25 different non-accepted terms are being used for drowning, and that coughing hours later and fast breathing are symptoms that would require immediate medical care after drowning.

As for the Likert scale questions, they assessed the participants' perceived knowledge of dry drowning, their perceived comfort level with discussing drowning terminology/dry drowning, and whether they believed brief in-person educational sessions are informative. The first Likert scale question evaluated whether participants thought brief in-person educational sessions are informative. Most participants agreed that brief in-person educational sessions were informative, whereas for the posttest survey, all participants selected that they strongly agree

with the statement. The second Likert scale question evaluated participants' perceived knowledge/familiarity of dry drowning. For the pretest survey, most participants selected moderately agree; whereas in the posttest survey, most participants selected that they are extremely familiar. For the third Likert scale question, participants were evaluated on their perceived comfort level when discussing drowning terminology/dry drowning with caregivers. For the pretest survey, most participants selected that they were moderately comfortable, whereas in the posttest survey, most participants selected that they were extremely comfortable with discussing drowning terminology/dry drowning with caregivers. These three Likert scale questions show an increase in the participants' findings of brief in-person educational sessions, an increase in participants' knowledge/familiarity with dry drowning, and an increase in their comfort level with discussing drowning terminology and dry drowning. These results indicate that the educational session was effective.

Implications (Practice, Education, Research and Policy)

This DNP project has implications for nursing practice, education, research, and policy. The pretest survey showed a lack of familiarity, comfortability, and knowledge regarding dry drowning, drowning terminology, and signs and symptoms to look out for after a drowning event. The posttest survey showed a significant increase in the participant's familiarity, comfortability, and knowledge regarding dry drowning, drowning terminology, and signs and symptoms to look out for after a drowning event. This indicates that a brief in-person educational session is effective for this topic. The next step for this DNP project would be implementing it companywide to all Hubbard Family Swim School supervisors. This way, if caregivers approach any Hubbard Family Swim School supervisor regarding this topic, they would be well prepared

to answer the caregiver's questions. However, it would be appropriate to research the topic on a larger scale; research needs to be conducted on this information's impacts. Does being more comfortable, familiar, and knowledgeable on drowning terminology and dry drowning help to reduce caregiver concerns regarding drowning? Does it help caregivers to know what to look out for after a drowning event and know when to seek immediate medical care and possibly save lives? These are topics that could be researched in the future.

Limitations

One main limitation was discovered for this DNP project. The one limitation was the lack of follow-up. This DNP student did not follow up with participants to see if the information was retained weeks later, if the information was forgotten, or if they had had the opportunity to implement the information they had learned. A future study with follow-up would be useful to determine if the information is retained weeks later and if participants can apply the knowledge they obtained from the educational session.

DNP Essentials Addressed

The American Association of Colleges of Nursing (AACN) has listed eight DNP essentials for advanced nursing practice (AACN, 2006). These DNP essentials are foundational competencies for DNP advanced practice nurses. Two of these DNP essentials were used to help guide this DNP project.

DNP Essential II: Organizational Systems Leadership for Quality Improvement and Systems Thinking

This DNP essential focuses on the ability of the DNP advanced practice nurse to be proficient in quality improvement strategies that affect patient safety and involve organizational

leadership (AACN, 2006). This DNP essential was applied in this project by this DNP student reaching out to the organization's leadership to identify an educational topic and then researching the topic thoroughly. After thorough research in the literature, this DNP student created this quality improvement topic that focuses on safety.

DNP Essential III: Clinical Scholarship and Analytical Methods For Evidence-Based Practice

This DNP essential focuses on the DNP advanced practice nurse's ability to analytically appraise the literature for evidence-based information that can be applied to improve current practice (AACN, 2006). This DNP essential was used in this QI project by this DNP student analytically searching the literature for evidence-based information, taking that evidence-based information, and creating a QI project. Then, the information obtained from the QI project was analyzed to determine its effectiveness.

Conclusions

The DNP project was a quality improvement project that utilized a brief in-person evidence-based presentation to enhance participants' comfort, familiarity, and knowledge regarding dry drowning, drowning terminology, and signs and symptoms to look out for after a drowning event. This QI project was conducted at a Hubbard Family Swim School staff meeting. This QI project consisted of a pretest survey, a brief in-person educational session, and a posttest survey. The pretest and posttest scores were then examined to determine the effectiveness of the educational session. Overall, the educational session was highly effective since there was a statistically significant increase in the knowledge-based questions. The posttest survey showed increased participants' comfort, familiarity, and knowledge of dry drowning, drowning

terminology, and signs and symptoms to look out for after a drowning event.

Plan for Sustainability

A copy of the handout used in the educational session was provided to the registered nurse on staff at Hubbard Family Swim School. She was also provided with a copy of the script and PowerPoint that was utilized. This allows the registered nurse to utilize these resources in the future to continue educating staff at the swim school regarding drowning terminology and dry drowning.

Plan for Dissemination

The results of this DNP project were shared with the registered nurse at Hubbard Family Swim School. Hubbard Family Swim School has three locations; it was encouraged to conduct a similar educational session at the other two swim school locations so that all three locations' site supervisors would be prepared to address caregivers' questions regarding drowning terminology and dry drowning.

APPENDIX A

SITE APPROVAL/THE UNIVERSITY OF ARIZONA INSTITUTIONAL REVIEW BOARD AUTHORIZATION LETTER

Hubbard Family Swim School

SWIM SCHOOL LOCATIONS
Phoenix 32nd St. & Thunderbird Rd.
Peoria 84th Ave. & Thunderbird Rd.
Mesa Riverview Loop 202 & Dobson Rd.
Goodyear Pebble Creek Pkwy & McDowell

08/15/2024

Hubbard Family Swim School
13832 North 32nd Street, Suite 100
Phoenix AZ, 85032

University of Arizona Institutional Review Board
c/o Office of Human Subjects
1618 E Helen St
Tucson, AZ 85721

Please note that Mrs. Amber Trujillo, UA Doctor of Nursing Practice student, has permission of Hubbard Family Swim School to conduct a quality improvement project at our facility for her project, "Evidence-Based Education to Enhance Swim School Staff Knowledge Regarding Drowning Terminology".

Ms. Amber Trujillo will conduct a brief in-person educational presentation regarding drowning terminology at Hubbard Family Swim School. She will recruit participants through a flier. She will also conduct a pre-test and post-test survey from the participants. Mrs. Trujillo's activities will be completed by 12/19/24.

Ms. Trujillo has agreed to provide to my office a copy of the University of Arizona Determination before she recruits participants. She will also provide results of the project to the RN at Hubbard Family Swim School at the completion of the project. If there are any questions, please contact my office.

Signed, Maureen Young

Maureen Young, RN
Hubbard Family Swim School
Safety Administrator

www.hubbardswim.com www.camphubbardaz.com

THE UNIVERSITY OF ARIZONA
Research
Innovation & Impact

University of Arizona IRB
845 N Park Ave., Suite 537A
Tucson, AZ 85719
Fax: 520-621-9810
VPR-IRB@arizona.edu

NOT HUMAN RESEARCH

September 30, 2024

Amber Trujillo

Dear Amber Trujillo:

On 9/30/2024, the IRB reviewed the following submission:

Type of Review:	Initial Study
Title:	Evidenced-Based Education to enhance swim school staff knowledge regarding drowning terminology.
Investigator:	Amber Trujillo
IRB Submission ID:	STUDY00005373
Sponsor:	None
Prime Sponsor:	None
IND, IDE, or HDE:	None
Documents Reviewed:	• Advisor Attestation.pdf, Category: Institutional Approval; • CONSENT AND DISCLOSURE DOCUMENT.docx, Category: Consent Form; • EVALUATION INSTRUMENTS.docx, Category: Data Collection Tool; • IRB Protocol for Determination of Human Research.docx, Category: IRB Protocol; • PARTICIPANT MATERIAL.docx, Category: Participant Material; • RECRUITMENT MATERIAL.docx, Category: Recruitment Materials; • SITE APPROVAL.docx, Category: External Site Authorization;

The IRB determined that the proposed activity is not research involving human subjects as defined by DHHS and FDA regulations.

APPENDIX B

CONSENT DOCUMENT (DISCLOSURE AND CONSENT FORM)

Evidence-Based Education to Enhance Swim School Staff Knowledge Regarding Drowning Terminology

Amber Trujillo

Voluntary Disclosure and consent

You are being asked to participate in a quality improvement project conducted by a Doctor of Nursing Practice Student attending The University of Arizona. Your participation is voluntary, and you will be free to withdraw your participation in the project at any point. Refusal to participate will result in no penalty to you. You will receive no immediate benefit from your participation. By choosing to participate in the project, you are giving your consent. Below is important information about the project if you choose to participate.

This project aims to increase swim school staff knowledge regarding drowning terminology. If you choose to participate in this project, you will be asked to:

1. Complete a short pretest questionnaire
2. Participate in a brief 5-10 minute educational presentation
3. Answer a short posttest questionnaire

In all, participation in the project should take about 15-20 minutes. No personally identifiable information will be collected and questionnaire answers will be anonymous. There are no perceived risk associated with your participation in this project.

If you have any questions, concerns, or complaints regarding this project, you may contact:

Amber Trujillo
DNP-PNP Student
Phone: 623-910-9907
Email: amtrujillo@arizona.edu

APPENDIX C

RECRUITMENT MATERIAL (RECRUITMENT EMAIL)

Dear HFSS Employee,

My name is Amber Trujillo, I am a student at the University of Arizona. I am studying to become a doctoral prepared pediatric nurse practitioner. I am writing this email to extend an offer for you to volunteer to participate in my quality improvement project for my Doctor of Nursing Practice (DNP) degree. The project is titled, "Evidence-based Education to Enhance Swim School Staff Knowledge Regarding Drowning Terminology", the intent of this project is to help increase ones knowledge regarding drowning terminology and to learn how to address caregiver concerns regarding terms such as dry drowning. Participation in this quality improvement project will involve a pretest, a brief in-person educational session, and a posttest. The entire process will take approximately 20 minutes.

Please note that participation is completely voluntary. You may withdraw from participation at any point without penalty. Should you wish to participate in this project, please read the disclosure statement attached to this email. If you wish to participate, this project will take place at a staff meeting, and you will be informed of the date of the meeting.

Sincerely,

Amber Trujillo BSN, RN
DNP Student
amtrujillo@arizona.edu

APPENDIX D

EVALUATION INSTRUMENTS (PRETEST AND POSTTEST QUESTIONNAIRE)

Pretest and Posttest Questionnaire

1. Brief in-person educational setting are informative
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly Disagree

2. What is your perceived knowledge/familiarity regarding dry drowning?
    a. Extremely familiar
    b. Very Familiar
    c. Moderately familiar
    d. Slightly Familiar
    e. Not at all familiar

3. What is your perceived comfort level with discussing drowning terminology and the term dry drowning?
    a. Extremely comfortable
    b. Very comfortable
    c. Moderately comfortable
    d. Slightly comfortable
    e. Not at all comfortable

4. True or false: Dry drowning is a medically accepted term
    a. True
    b. False

5. When did The World of Congress of Drowning and the World Health Organization last revise the definition of Drowning
    a. 1996
    b. 2002
    c. 2018
    d. 2010

6. How long after a drowning event can a person have delayed respiratory symptoms of drowning?
    a. Up to 30 minutes later
    b. Up to 1-2 hours later
    c. Up to 4-6 hours later
    d. Up to 24-48 hours later

7. Approximately how many different non-medically accepted terms have been used to describe drowning?
    a. 2
    b. 8
    c. 14
    d. 25

8. What symptom should caregivers seek immediate medical attention for after swimming? (circle all that apply)
    a. Fatigue
    b. Vomiting
    c. Coughing hours later
    d. Fast Breathing

APPENDIX E

PARTICIPANT MATERIAL (INSTRUCTIONAL POWERPOINT, SCRIPT, AND HANDOUT)

Drowning Terminology

Amber Trujillo BSN, RN
PNP-DNP Student

Incorrect terminology

+ Dry drowning
+ Near drowning
+ Missed drowning
+ Delayed drowning etc.

Correct Terminology

+ WHO: **"Drowning is the process of experiencing respiratory impairment from submersion/immersion in liquid. Outcomes are classified as death, morbidity and no morbidity."**
  + Fatal drowning
  + Non-fatal drowning with deficits
  + Non-fatal drowning without deficits

Literature regarding drowning terminology

- Over 20 years since the universal acceptance of the term drowning
- A study conducted in 2017 found that 32% of peer-reviewed articles published from 2010 to 2016 discussing drowning used non-accepted terminology.
- A literature review was conducted in 2023 found 25 different definitions referring to drowning incidents.

Research regarding "Dry drowning"

- "There has never been a published case where a patient was initially asymptomatic and later deteriorated or died" (Connelly, 2017).
- People can still die from drowning after leaving the water but that most would have symptoms within 4 to 6 hours of the incident.
- Those that do end up having respiratory issues 4 to 6 hours later typically experienced drowning where they had to be pulled out of the water and experienced some level of coughing or trouble breathing immediately after being pulled out of the water.
- Medical professionals agree that drowning can continue once the person has already left the water. Although, studies show that the patients that drowned and required medical evaluation would either continue to improve or decompensate within 8 hours following a submersion, not days later.
- Children who presented to the emergency room following a drowning incident would demonstrate symptoms within 6 hours of the drowning incident.

Script

- Hi, my name is Amber Trujillo. I am a Doctor of Nursing Practice student at the University of Arizona. I am going to do a presentation on the correct terminology regarding drowning and signs to look out for after a drowning event.
- I'm going to discuss incorrect drowning terminology first and then correct drowning terminology.
- Raise your hand if you have ever heard of the terms dry drowning, near drowning, delayed drowning, or missed drowning.
- Now, raise your hand if a caregiver of a swimmer has ever asked you about one of those terms.
- The term dry drowning has become popular over the last decade and has caused significant fear even though it is not an accepted term (Szpilman et al., 2018). Caregivers have heard of news stories discussing the term and become fearful that their child will suddenly die days or weeks after swimming without any symptoms, but what these caregivers may not be aware of is that dry drowning is not a medically accepted term and that the news stories of kids dying of "dry drowning" were ultimately found to have passed away from another illness, completely unrelated to the child being in water days earlier.
- In 2017, the media spread the story of a 4-year-old boy who allegedly died from dry drowning after being briefly submerged in water days before he passed away. After the autopsy, it was determined that this boy did not die from drowning but instead died from myocarditis completely unrelated to the water submersion incident

(Szpilman et al., 2018). The media never released articles correcting the cause of death for this child.

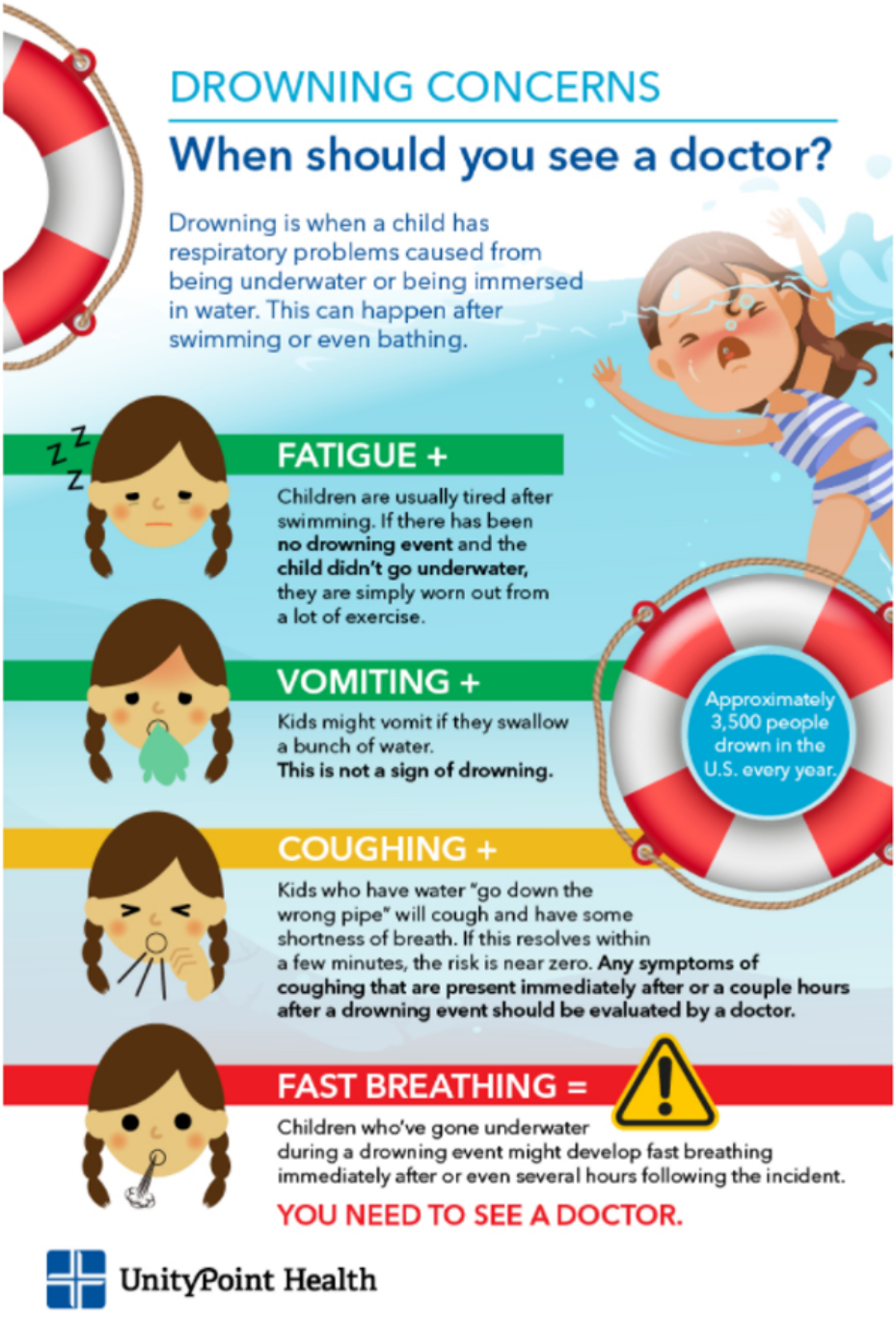
- According to the World Health Organization (WHO) “Drowning is the process of experiencing respiratory impairment from submersion/immersion in liquid. Outcomes are classified as death, morbidity and no morbidity.” (WHO, 2023). In other words, drowning is classified as fatal drowning, nonfatal drowning with deficits or nonfatal drowning without deficits. Terms such as dry drowning, secondary drowning, delayed drowning, or silent drowning should not be used (Denny et al., 2019).
- It has been over 20 years since the universal acceptance of the term drowning. Despite this, a study conducted in 2017 found that 32% of peer-reviewed articles published from 2010 to 2016 discussing drowning used non-accepted terminology referring to drowning events, this included articles in the medical community (Schmidt et al., 2019).
- A literature review was conducted in 2023 found 25 different definitions referring to drowning incidents. This indicates a lack of consensus on the definition and terminology regarding drowning. This can create confusion when so many different definitions are being used, especially since these terms are no longer accepted.
- A children’s emergency room doctor in Texas stated that “There has never been a published case where a patient was initially asymptomatic and later deteriorated or died,” (Connelly, 2017). This same doctor does agree that people can still die from drowning after leaving the water but that most would have symptoms within 4 to 6

hours of the incident. It has also been shown that those that do end up having respiratory issues

- 4 to 6 hours later typically experienced drowning where they had to be pulled out of the water and experienced some level of coughing or trouble breathing immediately after being pulled out of the water
- Medical professionals agree that drowning can continue once the person has already left the water. Although, studies show that the patients that drowned and required medical evaluation would either continue to improve or decompensate within 8 hours following a submersion, not days later
- Similarly, a study conducted by Cohen et al., (2019), that was conducted over a 12-year period, showed that children who presented to the emergency room following a drowning incident would demonstrate symptoms within 6 hours of the drowning incident. This study showed that children who had normal oxygen saturation, clear respiratory auscultation, and showed no signs of respiratory distress within 6 hours were safely discharged home and no readmissions occurred.
- Now, if a child were to have a drowning event and caregivers were wondering if their child needs to be seen by a medical professional, then there are signs and symptoms that you can inform the caregivers to look out for. One symptom to look out for is coughing, if the child is coughing a little bit as if water "went down the wrong pipe" immediately after coming up from the water and that was it then the risk is small, but if the coughing last longer or is present hours later then the child should be seen by a medical professional. The second symptom that caregivers should look out for

following a drowning event is fast breathing, if their child seems to be breathing fast after a drowning event then they should immediately take them in to be seen by a medical professional.

- Are there any questions?


DROWNING CONCERNS
When should you see a doctor?
Drowning is when a child has respiratory problems caused from being underwater or being immersed in water. This can happen after swimming or even bathing.
FATIGUE +
Children are usually tired after swimming. If there has been no drowning event and the child didn't go underwater, they are simply worn out from a lot of exercise.
VOMITING +
Kids might vomit if they swallow a bunch of water.
This is not a sign of drowning.
Approximately 3,500 people drown in the U.S. every year.
COUGHING +
Kids who have water "go down the wrong pipe" will cough and have some shortness of breath. If this resolves within a few minutes, the risk is near zero. Any symptoms of coughing that are present immediately after or a couple hours after a drowning event should be evaluated by a doctor.
FAST BREATHING =
Children who've gone underwater during a drowning event might develop fast breathing immediately after or even several hours following the incident.
YOU NEED TO SEE A DOCTOR.
UnityPoint Health

APPENDIX F

PROJECT TIMELINE

Completion Date	Planning	Pre-implementation	Implementation	Evaluation
February 21st, 2024	Discussed topic ideas with RN at Hubbard Family Swim School			
August 15th, 2024	Received Site Approval letter			
September 28th, 2024	Prepare IRB Application			
September 30th, 2024	Submit IRB Application			
September 3rd, 2024		Proposal Defense		
September 30th, 2024		Received IRB Approval		
October 8th, 2024		Scheduled time of intervention with swim school		
October 8th, 2024		Emailed Recruitment email along with consent and disclosure agreement		
October 10th, 2024			Swim Instructor Education provided and surveys collected	
October 12th, 2024				Analysis of data completed

APPENDIX G

LITERATURE REVIEW GRID

Project Question: Will an educational intervention on drowning terminology and dry drowning to swim school staff supervisors increase their knowledge of drowning terminology, dry drowning and increase their perceived comfort level of discussing the terms with caregivers of children who take swim lessons at Hubbard Family Swim School?

Pub. Year; Author's Last Name	Title of Publication	Type of Study	Main Outcomes of Findings	Support for and or Link to Project
2019; Schmidt, A., Hawkins, S., & Quan, L.	Drowning is never dry	Systematic review	That incorrect terminology regarding drowning is still being wildly used. The articles written about children who died from "dry drowning" there was no event leading to respiratory distress reported, instead a coincidental exposure to water occurred hours to days preceding the death.	Incorrect terminology use can increase unnecessary fear in parents. This article supports this project by discussing the fact that dry drowning is not terminology that should be used, and it supports this project by discussing that the deaths that have been deemed "dry drowning" had a casual relation with water exposure due to alternative reasons being discovered.
2022; Stern, A. M., & Thompson, L. A.	What parents should know about drowning and dry drowning		Water safety, drowning prevention, what is dry drowning, and recognizing danger signs of drowning.	This article supports this project by discussing the true definition of drowning and discusses how the myth of dry drowning occurs. This article also states that the cases of "dry drowning" had ultimately been found to have a different diagnosis due to an underlying medical condition.
2019; Denny, S. A., Quan, L., Gilchrist, J., McCallin, T., Shenoi, R., Yusuf, S.,	Prevention of drowning		Drowning prevention strategies and drowning chain of survival.	This article supports this QI project by discussing the importance of pediatricians

Pub. Year; Author's Last Name	Title of Publication	Type of Study	Main Outcomes of Findings	Support for and or Link to Project
Hoffman, B., Weiss, J., Council On Injury, V., & Poison, P.				educating parents that dry drowning and secondary drowning are not medical terms. While also educating them on the fact that nonfatal or fatal drowning do not occur later in patients with no previous symptoms. (pg. 7)
2019; Cohen, N., Capua, T., Lahat, S., Glatstein, M., Sadot, E., & Rimon, A.	Predictors for hospital admission of asymptomatic to moderately symptomatic children after drowning	Quantitative study	Children who arrive to the ED after a nonfatal drowning incident are observed for 6 hours. Those whose exams were negative for lung crepitus and respiratory distress were sent home after 6 hours, no readmissions occurred.	This article supports this QI project by showing that those who experience a nonfatal drowning incident typically show symptoms within 6 hours, if no symptoms arise in that time are safely discharged home.
2024; Chandy, D., & Richards, D.	Drowning (submersion injuries)		Discusses terminology, risk factors, and treatment regarding drowning.	This will be used in this QI project by discussing the correct terminology for drowning to help educate on what drowning really is.
2021; Mbanda, N., Dada, S., Bastable, K., Ingalill, G. B., & Ralf, W. S.	A scoping review of the use of visual aids in health education materials for persons with low-literacy	Scoping review	Discusses the benefits of the use of visual aids when teaching health education.	The literacy level for participants in this QI project will be unknown, this article shows the effectiveness of visual aids in teaching health education.

Pub. Year; Author's Last Name	Title of Publication	Type of Study	Main Outcomes of Findings	Support for and or Link to Project
	levels.			
2021; Lee, K., & Nathan-Roberts, D.	Using Visual Aids to Supplement Medical Instructions, Health Education, and Medical Device Instructions.	Systematic review	The use of visual aids when teaching helps to increase the learners adherence, comprehension, and recall.	The use of visual aids will be utilized throughout this QI project to help increase the participants adherence, comprehension, and recall.
2023; Kiakalayeh, A. D., Mohammadi, R., Chabok, S. Y., & Kiakalayeh, S. D.	Suitability of existing definitions for drowning to meet the new definition: A scoping review.	Scoping review	There are a many terms surrounding drowning, even though only three terms should be used.	This article helps to show why there is such confusion with the terminology used with drowning. There are only three terms that are medically accepted regarding drowning. Although, medical providers, journalists, and others are still using non-accepted terminology, which creates confusion.

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