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A Multi-Method Process Evaluation for a Skin Cancer Prevention Diffusion Trial

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This article describes process evaluation methods for the *Pool Cool* diffusion trial across 4 years. *Pool Cool* is a skin cancer prevention program that was found to improve behaviors and environments for sun protection at swimming pools in a randomized efficacy trial, which was followed by a national diffusion trial. The process evaluation focus shifted from measuring program satisfaction to assessing widespread program implementation, barriers and facilitators to implementation, and program maintenance and sustainability. Data collection methods include training surveys, database tracking, field coordinator activity logs, e-mails, surveys of parents, lifeguards and pool managers, and process evaluation interviews and site visits. The data revealed high levels of implementation of major program components when disseminated in the diffusion trial, including sun safety lessons, sun safety signs, and sunscreen use. This article describes program features and participant factors that facilitated local implementation, maintenance and sustainability across dispersed pools such as linkage agents, a packaged program, and adaptations of program elements.

Keywords: *process evaluation; skin cancer prevention; sun protection; child health; organizational adoption*

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Introduction

There is a growing interest in the dissemination of evidence-based programs into public health and community practice. Evidence-based programs are interventions that have positive outcomes, ideally from findings of multiple well-designed studies (Brownson, Baker, Leet, & Gillespie, 2003).

Diffusion research investigates the factors necessary for successful widespread adoption and institutionalization of evidence-based interventions (Rebchook, Kegeles, Huebner, & Team, 2006). However, only a few programs with evaluated diffusion and dissemination efforts in the field of health behavior have been reported (Dowda et al., 2005; Hoelscher et al., 2001; Owen, Glanz, Sallis, & Kelder, 2006; Rebchook et al., 2006). Briss, Brownson, Fielding, and Zaza (2004) noted the need for research to understand how dissemination and adoption of evidence-based interventions occurs, focusing on issues such as assessing fidelity to science-based programs in adoption, understanding barriers and facilitators to adoption, and learning how to increase implementation.

Process evaluation measures the frequency and extent of implementation of selected program components (Linnan & Steckler, 2002; Windsor, Clark, Boyd, & Goodman, 2003). It can measure recruitment (attracting implementers or participants), reach (the extent to which the program is received by the participants), context (aspects of the environment around the intervention), resources (materials or characteristics of implementers or participants to achieve program goals), implementation (the extent to which the program is conducted as designed), barriers (problems that arise in reaching participants), and exposure (the extent to which the participants received the program materials) (Baranowski & Stables, 2000; Linnan & Steckler, 2002). In addition, process evaluation can measure the extent to which intervention providers delivered the program as intended, or fidelity of implementation (Baranowski & Stables, 2000; Basen-Engquist et al., 1994) and reactions (satisfaction with program activities). Process evaluations can assist in understanding how and why interventions work (McGraw et al., 1994) and how intervention components link to outcomes (Israel et al., 1995).

Few disseminated science-based programs address the generalizability of the intervention or external validity. Because of the limited focus on this issue, Green and Glasgow (2006) proposed that research on diffusion of evidence-based interventions also collect data to help evaluate external validity, such as reach, program implementation and adaptation, maintenance and sustainability. The collection of these types of process evaluation

data will enhance the relevance of findings to potential adopters in different populations, settings, and situations. Translational research examines factors that facilitate the effective transfer of research into public health policies and programs (Sussman, Valente, Rohrbach, Skara, & Pentz, 2006), and process evaluation data can provide valuable information across the translation continuum from intervention development and diffusion to program sustainability.

This article describes process evaluation methods and findings from a multiyear diffusion trial of an evidence-based skin cancer prevention program, called *Pool Cool*. The diffusion trial conducted after an efficacy trial found significant positive effects on children's sun protection (SP) behaviors and sun safety environments at swimming pools (Glanz, Geller, Shigaki, Maddock, & Isnec, 2002). The *Pool Cool* efficacy trial was a randomized, controlled trial conducted at 28 swimming pools in Hawaii and Massachusetts in 1999. The program audience was children from 5 to 10 years of age, their parents, and lifeguards and aquatics instructors. Sites in the SP arm ($n = 15$ pools) received staff training; a series of sun safety lessons; on-site interactive activities; provision of sunscreen, shade, and signage; and promotion of sun safe environments. Sites in the attention-matched control, or injury prevention (IP), arm ($n = 13$ pools) received a program that involved lessons and activities on bike safety, traffic safety, fire safety, and poisoning and choking prevention. At baseline, 558 SP and 452 IP parent respondents participated in the study. Children's use of sunscreen, shade, and overall SP habits were significantly higher at follow-up in the SP arm than in the IP arm. The SP group also reported a 23% reduction in child sunburns compared to the preceding summer, with little or no reduction occurring in the IP group (Glanz et al., 2002).

Few studies have documented factors critical to local implementation of disseminated evidence-based programs. The current article also describes participation, use of key program components, implementation processes, and sustainability indicators across many pool settings. Finally, lessons learned about process evaluation are presented.

Methods

The *Pool Cool* diffusion trial was conducted over a 4-year period from 2003 to 2006 and evaluated the effects of two strategies for diffusion of the *Pool Cool* program on implementation, maintenance, and sustainability;

improvements in environmental supports for sun safety in swimming pools; and SP habits and sunburn among participating children (Glanz, Steffen, Elliott, & O'Riordan, 2005).

The diffusion trial used a three-level nested experimental design, with field coordinators (FCs), swimming pools, and children aged 5–10 in swimming lessons making up the three levels. Each FC was responsible for a cluster of 4–15 pools in a metropolitan region, and regions were randomly assigned to Basic and Enhanced study arms. The pools in the Basic condition received a tool kit containing a leader's guide that describes how to implement the program, laminated lesson cards, a mini big book of colorful cartoons to use interactively with the lessons, materials for poolside SP activities, a large dispenser of sunscreen, and an aquatics-targeted sunscreen tips sign. Pools in the Enhanced condition received the Basic condition materials, plus additional sun safety items (reinforcements) for distribution, environmental supports including aluminum sun safety signs and shade structures, supplementary guidance and incentives to promote maintenance and sustainability of the *Pool Cool* program (Glanz et al., 2005). The participating pools included public pools, Young Men's Christian Association (YMCA) pools, and military pools. The main aims of the diffusion study were to evaluate the effects of two strategies for program diffusion on the following: (a) program implementation, maintenance, and sustainability; (b) improvements in organizational and environmental supports for SP at swimming pools; and (c) SP habits and sunburns among children.

Pool managers completed surveys at the beginning and end of the summer to provide pool-level data, and lifeguard/aquatic instructors and parents completed surveys on the same schedule. In addition, logs and e-mails to and from the FCs were tracked. A comprehensive process evaluation of the program, including annual independent process evaluation, provided additional data that were used to supplement survey data.

During the earlier efficacy trial, process evaluation focused on reach extent of implementation and satisfaction of participants exposed to the program (Glanz, Isnec, Geller, & Spangler, 2002). It specifically was designed to assess the extent of program implementation, the amount of time required for the program, whether environmental changes were implemented, whether lifeguards and children were exposed to intervention components, and how they rated the program components. Lifeguards and aquatic instructors completed monitoring forms to report on their use of sun safety lessons across all participating pools. Several items on the posttest survey for parents asked about parents' and their children's participation, which incentive items they received, and their reactions to the program.

In addition, at posttest, aquatic staff members were asked how often they taught the lesson, teaching methods used, and incentives they received (Glanz et al., 2002).

In the diffusion trial, much of the process evaluation shifted to focus more on implementation across pool sites. Its aims were to understand implementation across the study groups and diverse pools, to assess maintenance and sustainability of the program in the latter years, and to identify barriers and facilitators to program implementation and external factors occurring during the study. The process evaluation also provided an opportunity to examine concordance between various sources of data and reports from parents, pool manager, and lifeguard surveys, and to help interpret study outcome data.

The process evaluation of the *Pool Cool* diffusion trial involved multiple data collection instruments and strategies for pool staff, FCs, and the project/research team during the 4 years of the study. The process evaluation methods included the following: archival information from program databases, training surveys, process evaluation interviews and site visits with pool staff implementing the program, FC e-mails and activity logs, and items on the pool manager, parent, and lifeguard surveys. The process evaluation focused on participation, implementation of the program at diverse sites, patterns of communication and facilitators and barriers to program improvements. In the latter years of the program, issues related to program maintenance and sustainability were assessed. Table 1 provides information about each individual data source, its purpose, the population or sample, key measures, and data analysis. The following section describes each process evaluation method, including data collection, instruments, and data analyses. In addition, key results are highlighted.

FC Training Surveys

Prior to participating in the *Pool Cool* program, each FC participated in a 1- to 2-day training course taught by the *Pool Cool* research staff. This course consisted of basic sun safety information, an introduction to the *Pool Cool* staff and program materials, and training on the research protocols being used in the diffusion study. Participants filled out brief surveys evaluating their *Pool Cool* FC training experience shortly after the training was completed. The surveys included questions on a 4-point Likert scale (*not at all, somewhat, mostly*, and *completely*) regarding FC understanding of the program, its materials, its purpose, and their commitment to carry out program responsibilities. An open-ended question asked for additional comments

Table 1
Summary of *Pool Cool* Diffusion Trial Process Evaluation Data Sources, Purpose and Analysis

Data Sources	Purpose	Population/Sample	Measures	Analysis
Training surveys	Obtain feedback on the effectiveness of the *Pool Cool* FC training and any improvements needed	FCs	Mostly close-ended questions with rating scales; one open-ended question about ways to improve the training	• Rating of training • Thematic analysis of suggestions for improvement
Archival data from program databases (Excel)	Track reach and level of program participation, assess time FCs spent on program-related activities, and highlight problem areas	Project staff and FCs	Conference call logs; FC logs; incoming survey logs	• Information on pools participating each year • Descriptive statistics on number of calls, number of FC logs, types of activities, time spent, anvd surveys received • Calculation of stipend/participation
FC logs	Track primary program activities conducted by FCs and time spent on such activities	FCs	Date, pool, time spent on activity, type of activity	• Number and frequency of types of activities • Time spent on activities • Pattern across years • Differences between the two study groups
E-mail records	Maintain contact with FCs over the summer months to remind FC's about tasks, track program progress, and address problems or difficulties	Project staff and FCs	Topics related to program implementation, research processes, and communication	• Number, frequency, length of e-mails sent • Content analysis of topics • Differences between groups

(continued)

Table 1. (continued)

Data Sources	Purpose	Population/Sample	Measures	Analysis
Pool manager follow-up surveys	Measures program implementation of lessons, policy, and environment	Pool managers at participating pools	Teaching of *Pool Cool* lessons and activities; promotion of sun protective behaviors and policies; use of sunscreen dispenser; receipt of *Pool Cool* items	• Descriptive statistics • Computation of program implementation score
Parent follow-up surveys	Measures program participation and exposure to program messages and materials	Parents participating in the study (answering also for their children)	Receipt of sun safety information from pool; exposure to program messages and environmental supports; receipt of *Pool Cool* items	• Descriptive statistics • Computation of exposure scale
Lifeguard follow-up surveys	Measures program implementation and exposure to *Pool Cool* materials	Lifeguards at participating pools	Teaching of *Pool Cool* lessons and activities; promotion of sun protective behaviors and policies; use of sunscreen dispenser; receipt of *Pool Cool* items	• Descriptive statistics • Computation of program implementation score
Pool site visits and (interviews + observation) and telephone interviews	Evaluate program implementation and differences in implementation between the two study groups; identify internal and external factors and barriers to program implementation	Pool contacts from a sample of 120 pools each year: 80 phone interviews and 40 site visits	Interviews (telephone or in-person): open- and close-ended questions about staff training, receipt/use of materials, and staff responses to the program; Site visits: observations of the pool environment, staff practices, and program implementation	• Descriptive statistics • Differences between groups • Calculation of an implementation score for each pool

NOTE: FC = field coordinator.

on how the training might be improved. The data from these surveys have been used for the purposes of ensuring that FC training was being well received and to plan and improve subsequent trainings and "refresher" trainings.

In the first year of training, 32 FCs reported on the training surveys that they understood the purpose of *Pool Cool* study ($M = 3.88 \pm .34$) and the responsibilities of a *Pool Cool* coordinator ($M = 3.88 \pm .34$) on a scale of $1 =$ *not at all* to $4 =$ *completely*. They also reported that they mostly understood all of the program components ($M = 3.72 \pm .46$) and the purpose of each lesson ($M = 3.71 \pm .59$). Some suggested improvements were to provide the materials to them earlier for review, to conduct the training earlier, and to shorten the subsequent training sessions.

Archival Data From Program Databases

The *Pool Cool* research staff kept records of each FC's activity in the program. Regularly updated databases were used to keep track of pool and coordinator participation, contact information, important dates/timelines, frequency/type of communication, submission of activity logs, and program materials and surveys shipped to and received from each pool and FC. Contact information frequently changed, both for coordinators and pools. Staff training dates, swim lesson start/end dates, and pool facility open/close dates for each summer varied greatly across pools and regions, necessitating frequent adjustment by research staff in materials and survey shipment dates. In addition, the data helped to highlight trouble areas where pools or FCs might have fallen behind in their research and/or program requirements so that additional help could be provided where appropriate. This information was needed to keep track of field activity in such a large study.

The number of pools participating in the program each summer ranged from 262 to 469 pools across the 4 years. FC participation showed similar variation ranging from 33 to 44 FCs participating from 2003 to 2006. Pools and FCs both frequently fell behind in their staff training and completion/return of surveys. Databases were used to identify these pools and then provide additional help and assistance as needed for getting the necessary research elements completed.

FC Logs

Each summer, FCs were provided with an activity log in a Word document form to record their time spent on various *Pool Cool* program

activities throughout the summer and were asked to return the logs on the 1st and 15th of each month. FCs typically returned the completed logs to *Pool Cool* staff by fax or as e-mail attachments, which were then printed out and organized by year and by FC. In each log, FCs recorded the date, pool name(s), type of activities, and approximate amount of time spent on logged activities. Response options for "type of activity" were as follows: phone call, phone message, sent fax, sent e-mail, deliver materials, conduct training, collect surveys, and other. Analysis of the logs included computing descriptive statistics of number of logs submitted, frequency of activities logged, time spent on activities, and differences between the Basic and Enhanced groups.

A range of 96–121 activity logs were received from FCs each summer during the Diffusion study (404 logs total over the 4 years), with a range of 0–9 logs per FC each summer (median = 3). The primary activities logged included communication, management of survey data collection, and management of *Pool Cool* program materials. Other activities that they recorded were training, site visits with participating pool staff, and administrative tasks.

E-mails

E-mail was the primary means of communication between FCs and *Pool Cool* program staff throughout the diffusion study. Research staff had access to an e-mail account set up exclusively for program use, and FCs were instructed to use this address when trying to contact program staff about study questions. Through the use of e-mail, FCs and program staff were able to stay updated on program progress, coordinate shipment of program materials and surveys, exchange administrative documents (as e-mail attachments), and quickly address any problems that arose. Furthermore, using a single e-mail address allowed for easy organization of tracking of e-mails, which were saved, printed, and organized by year and by FC. E-mail length, date, and content were later coded, allowing for analyses of length, frequency, and content of the e-mails, as well as differences in communication between the Basic and Enhanced groups.

A total of 5,215 e-mails were sent to and from FCs over the 4 years, with a range of 428–892 e-mails sent to FCs each year and a range of 421 to 897 e-mails received from FCs each year. E-mails most commonly discussed program administration, survey data collection, and program materials. Other e-mail topics included recruiting participants, the FC training, pool staff training, personal communication, and sustainability issues.

Lifeguard, Pool Manager, and Parent Surveys

Follow-up surveys completed by lifeguards, pool managers, and parents were a key source of information regarding program outcomes but included process evaluation data as well. Lifeguard follow-up surveys were mailed to FCs at the end of the summer for distribution. FCs were responsible for distributing the surveys before their pools closed for the season, collecting completed surveys and mailing surveys back to *Pool Cool* program headquarters. Across the years, responses rates for follow-up surveys ranged from 50.3% to 66.8% of lifeguards who completed a baseline survey. Process evaluation measures on the survey were the pool's implementation of core program components, addition of shade structures, lifeguards' use of the leader's guide and sunscreen, conduct of poolside activities, and the receipt of *Pool Cool* items.

A centralized survey research contractor conducted parent follow-up surveys by phone or internet. The contractor was given a spreadsheet database with the names and addresses (or e-mail addresses, if provided) provided by parent participants on baseline surveys and invited these parents to complete follow-up surveys by telephone or on the internet. Nonresponders were also given the option of completing a mail survey. Process evaluation measures on parent follow-up surveys queried exposure and involvement in *Pool Cool*: the receipt of sun safety messages from the pool, whether the pool taught about SP in the lessons, advised parents to apply sunscreen to children, and provided sunscreen and shade, and the receipt of P*ool Cool* items.

Across the years, lifeguards reported that there was high implementation of the *Pool Cool* program and policies. A *Pool Cool* program participation score with a scale from 0 to 10 was calculated from 16 items including conduct of lessons, environmental change, and instituting policies. In 2005, the mean participation score was 4.23 ($SD = 2.78$). Finally, a composite score for receipt of *Pool Cool* items was created from seven items with a range from 0 to 2. The receipt of the *Pool Cool* items (yes/no) was $M = 1.13$ ($SD = 0.84$). Lifeguards reported receiving lanyards, pens, and water bottles the most.

For the parent surveys, the follow-up responses rates ranged from 55.1% to 82.0% of parents who completed a baseline survey. A range of 79–83.1% of parents reported receiving sun safety information from the pools over the 4 years. An index score was computed for parental exposure (dose) to the program from eight items related to policies, activities, and lessons received out of a scale of 0–3. For example, in 2005, the score was 1.59 ($SD = 0.95$). Another composite score was the receipt of the seven *Pool Cool* incentive

items with a range of 0–2 (0 = 0 items, 1 = 1 item, 2 = receipt of 2 or more items). The mean score in 2005 was 0.79 (*SD* = .80) with the most popular item received being the sunscreen bottles.

Pool manager follow-up surveys assessed program implementation at the pool-level with 10 items asking whether the main components of the *Pool Cool* program were used and at what level. Four questions were on a 4-point scale and asked about the frequency of educational activities in swimming lessons, sun safety educational programs, teaching of *Pool Cool* lessons, and use of the *Pool Cool* leader's guide. These items were recoded (1 = *sometimes, rarely, or never* to 3 = *usually or always*) to a 3-point scale. The other six questions were dichotomous (yes/no) items and asked if the pool used the mini big book, conducted poolside activities, displayed the sunscreen tips poster, displayed the aluminum sun safety signs, used the sunscreen provided, and added shade structures or shaded areas this summer. These yes/no items were also recoded (1 = *no* and 3 = *yes*) to have the same range as the recoded educational activities. The 10 items were summed to create a composite implementation score with a range of 10–30. The mean implementation sum score in 2005 was 23.27 (*SD* = 4.19).

Process Evaluation Site Visits, Interviews, and Pool Observations

The primary independent annual process evaluation—that is not conducted by the main program/research team—involved site visits, on-site interviews, and telephone interviews of a sample of participating pools each year (Table 1). Each year, a sample of 120 pools—40 for site visits and 80 for phone interviews—were stratified to ensure balanced sampling of regions from the two study groups. Selected pool contacts were interviewed using a 57-item interview guide in the middle of the summer to allow time for program implementation. The interview included closed-ended and open-ended questions to collect information on program participation, implementation, and challenges to implementation. The pool contacts reported on use of core educational and environmental program elements, comments about program materials, and general questions about implementing *Pool Cool* in their setting. During the site visits, evaluators made visual observations of program implementation, the pool environment, and sun safety practices of aquatic staff. An implementation score was developed and calculated for each pool based on responses to interview items (Escoffery, Glanz, & Elliott, 2008).

Table 2
Sample Questions From Process Evaluation Surveys

Data Sources	Question	Response Options
Lifeguard follow-up surveys		
	Pool Cool Activities: Did you take part in these Pool Cool Poolside Activities: [5 items] • Weather Watch: UV Index • Blue & Purple People, etc	Yes/No
	Use of Sunscreen: Did you use the sunscreen in the large dispenser at the pool?	Yes/No
	Taught Lessons: How many times in total did you teach the Pool Cool sun safety lessons to children?	0 = I do not teach swimming lessons or I was not able to teach the class of Pool Cool 1 = 1–4 times 2 = 5–8 times 3 ≥ 8 times
	Pool Cool Items: Did you receive any of these Pool Cool items: [7 items] • Sunscreen samples? • Water bottles? • Lanyards, etc.?	Yes/No
	Program Participation Composite Score: 16 items = Pool Cool Activities (5 items) + Pool Cool Leader's Guide (2 items) + Use of Sunscreen (1 item) + Taught Lessons (1 item) + Pool Cool items (7 items)	

(continued)

Table 2. (continued)

Data Sources	Question	Response Options
Pool Manager follow-up surveys		
	Educational activities: How often did you teach the Pool Cool sun safety lessons?	Rarely or never, sometimes, often, usually-always
	Use Leader's Guide: How often did the lifeguards and/or aquatic instructors use the Leader's Guide?	Rarely or never, sometimes, often, usually-always
	This summer did your pool • Display the aluminum sun safety signs • Use the sunscreen provided by the Pool Cool program • Added any shade structures or shaded areas this summer?	Yes/No
	Pool Manager Implementation Composite Score: Educational activities (1 items) + Sun safety program (1 item) + Times taught lesson (1 item) + Use Leader's Guide (1 item) + Used Mini Big Book (1 item) + Conduct of Poolside Activities (1 item) + Displayed the sunscreen Posters (1 item) + Displayed the sunscreen Posters (1 item) + Used Sunscreen (1 item) + Added any shade structure (1 item)	
Parent follow-up surveys		
	Does this pool teach about sun protection in swimming lessons?	Yes/No
	Policies: Does this pool: • Make an effort to reduce children's sun exposure? • Provide sunscreen for swimmers who forgot to bring it along? • Provide shade for pool users?	

Did you or your child receive any of the following Pool Cool items this summer: • Sunscreen samples? • Water bottles, etc.?	Yes/No
Parent Participation Composite Score: Policies and activities (7–8 items) +Teach Sun protection in Lesson (1 item) + Receipt of Pool Cool Items (6–7 items)	
Pool site visits and telephone interviews	
Did your lifeguards/instructors/staff complete a training for Pool Cool?	Yes/No
Did your pool receive: • the Pool Cool Laminated Lessons and Half Sheets? • the Pool Cool Leader's Guide? • the Pool Cool Mini Big Book? • any aluminum signs?	Yes/No/Don't Know
How often are the Pool Cool lessons taught at your pool?	Open-ended
On average, how many times per week this summer did you or your pool staff use the: • Weather Watch- the UV Index Sheets? • Sun Jeopardy Game?	____per day/per week/per month/per summer ____Don't know
Have you posted any sun safety signs at your pool?	Yes/No If Yes: Where did you post them? If No: Why?

Data analysis included computing descriptive statistics for major implementation items and running chi-squares and *t* tests to determine differences in implementation of specific program elements and differences in implementation scores between the Basic and Enhanced conditions and between years. The primary implementation score was computed from one training, six lessons, five poolside activity, two sun safety, and two sunscreen questions (Escoffery et al., 2008). Qualitative data analysis involved coding the open-ended responses into major themes.

The process evaluation data from 2003 and 2004 indicated high implementation levels across pools across the 2 years (Escoffery et al., 2008). The primary implementation score for a sample of the pools spanned from 68.3% to 73.2% from 2003 to 2006. More than 70% of the pool managers reported receipt of a training on the *Pool Cool* program over the 4 years. Likewise, for the environmental components, more than 75% of the pools posted the sun safety signs, and more than 90% used the large pump bottle of sunscreen. Pool contacts reported lower use of poolside activities. These activities were not considered a core part of the *Pool Cool* program but were encouraged as supplemental strategies that could be used for special events or on rainy days. Finally, there were few significant differences between the Basic and Enhanced condition in implementation of specific *Pool Cool* components across all years.

Information about the adaptation of *Pool Cool* program activities and materials was also collected in the process evaluation interviews across the years. Participating pools reported that the lifeguards or pool managers made additional sun safety signs to put around the pool, tie dyed *Pool Cool* shirts, had a *Pool Cool* carnival, photocopied brochures or information sheets from the *Pool Cool* CD-ROM, purchased a Jeopardy board for the Poolside Activity of Sun Jeopardy, and developed new games based on the messages such as Lifeguard Protective Steps by asking the kids to point out which lifeguards had on sun protective items and what those items were.

Factors that facilitated and hindered *Pool Cool* program implementation were identified through qualitative questions on the process evaluation interviews across the years. Key facilitating factors included the receipt of the *Pool Cool* tool kit or materials with the signs and sunscreen, simplicity of the lessons, knowledge gained about skin cancer, appeal of the materials for young children, and ease of implementing the program. In addition, pool contacts generally had praise for their FCs with more than 70% reporting that she or he was helpful or very helpful. The barriers mentioned as challenges were limited time to conduct the program and parents' complaints about loss of swim lesson time. Finally, several maintenance

and sustainability data were assessed in the process evaluation interviews. For program maintenance, in the last year of the program, pool contacts reported that the program was easy to implement. In relation to program sustainability, more than 65% of pool contacts were in strong agreement that the *Pool Cool* program was integrated in the pool operations, the staff perceived the program as effective, the program was visible in the community, and there was strong management support for the program.

Discussion

This article describes the multi-method process evaluation of a skin cancer diffusion trial. It demonstrates the utility of process evaluation tracking, feedback from implementation sites that are implementing a science-based program, and monitoring of communications during a multiyear diffusion trial. The process data highlighted the benefits of process evaluation in the diffusion of an evidence-based program to many different community sites in better understanding program adoption, context, maintenance, and institutionalization.

The data contribute to understanding of the reach and fit of the diffused program to the context of implementing pools. The reach of the program is fairly extensive and most pools implemented the core elements of the program, or the features of an intervention that are responsible for its effectiveness (Kelly, Heckman, et al., 2000), based on several data sources. The process evaluation survey and observation data demonstrate that the pools implementing the program had fairly high implementation of core components across setting characteristics such as community size, urban or rurality, municipal or independent pools, and region of the country. These findings present implementation data across local settings to begin to address issues of external validity and generalizability as suggested by Green and Glasgow (2006).

Many factors facilitated program implementation, including the tool kit, training of FCs and pool staff, provision of technical assistance, and the FC. Research notes that a significant barrier to the utilization of evidence-based programs is the lack of information on how practitioners can replicate a program with fidelity (Kelly, Somlai, et al., 2000; Sussman et al., 2006). Packaging program materials so that they are user-friendly and appealing may help with adoption and successful implementation (Rohrbach, Grana, Sussman, & Valente, 2006). The distribution of the *Pool Cool* tool kit was documented as a critical component to program implementation. The kit

included step-by-step instructions in the leader's guide of how to implement the program and key program materials.

Training is another critical element to the implementation and maintenance of the *Pool Cool* program over the years. Wandersman et al. (2008) emphasize the importance of supporting organizations in their effort to adopt evidence into practice through the provision of training and technical assistance. Our finding of the need to continually provide and improve program training is similar to other diffusion research, in that groups receiving a manual, training, and regular consultation or technical assistance are more likely to adopt an evidence-based intervention and use the intervention more frequently (Hamdallah, Vargo, & Herrera, 2006; Kelly, Somlai, et al., 2000; Mihalic, Irwin, Fagan, Ballard, & Elliott, 2004). A related issue is technical assistance given during the diffusion process. The tracking of e-mails and logs allowed program staff to offer assistance in areas of program implementation and to identify key issues related to management of the program and distribution of the program materials. This process allowed staff to quickly identify FCs who were having difficulties fulfilling their role.

These process data further confirm the importance of a linkage agent or champion in the adoption of an evidence-based program (Forsetlund, Talseth, Bradley, Nordheim, & Bjorndal, 2003; Mihalic et al., 2004; Rogers, 2003; Titler, 2007). We observed that FCs were critical to the success of the program at pool sites as designed. The e-mails and logs support the notion that the majority of their work involved administration of the program to participating pools, facilitating data collection, and distribution of program materials. The FCs' importance was also validated from the process evaluation interviews.

Another important factor in the adoption of evidence-based practice is adaptation of the program to fit the local context without changing the core elements and internal logic of an intervention are not modified (McKleroy et al., 2006). For example, program implementers may add their pool name, logos, and local images or colors to program materials. The process evaluation data were helpful in documenting methods used by participating pools to modify existing *Pool Cool* materials or to enhance the program with new materials or ideas such as the *Pool Cool* carnival. Similarly, Harshbarger, Simmons, Coelho, Sloop, and Collins (2006) found many program adaptations among community-based organizations who were implementing an HIV evidence-based program.

This study also offers insight into maintenance and sustainability of the diffusion of an intervention nationally. More than three fourths of pools

reported that they would continue the program in the process interviews. Several pools mentioned that they would continue to teach *Pool Cool* lessons and implement the program, and a few reported that they will seek funding to sustain it. These are strong indicators of program sustainability for these participating pools (Pluye, Potvin, & Denis, 2004; Shediac-Rizkallah & Bone, 1998).

Lessons Learned

Some of the lessons learned from the diffusion trial are as follows. Most importantly, process evaluation can contribute valuable data to document program reach to sustainability in communities through the phases of program translation. In addition, the different methods helped track program implementation and troubleshoot training issues across the different sites over the 4 years. We received feedback about program implementation at different levels through the FCs and participating pool contacts. It also was helpful to have multiple process evaluation methods; however, it was labor intensive to implement and monitor the process evaluation data collection. Some of the process methods were routine communications, whereas the process evaluation across site involved intensive data collection and site visits. The different methods all contributed to program staff monitoring of implementation across sites, understanding the dissemination process, and offering technical assistance to participating programs with implementation issues. Finally, the process evaluation data from different sources validated each other. For instance, the surveys from the process evaluation confirmed what was found during the site visit. In addition, the e-mail communications issues also matched the major activities FCs reported in their activity logs.

Conclusions

The promotion of translation of evidence-based interventions into communities has great potential for impacting the health of communities. Employment of multiple methods for collecting process evaluation data can contribute to understanding factors related to the generalizability of evidence-based programs across different settings and populations by measuring reach, program exposure, implementation, program adaptation, maintenance, and sustainability. Further research on factors related to

external validity of diffusion trials may build the knowledge of translation of science-based programs into real-world settings.

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