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Kevin Moran

The University of Auckland, k.moran@auckland.ac.nz

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Watching Parents, Watching Kids: Water Safety Supervision of Young Children at the Beach

Kevin Moran

The number of children who drown at open-water locations such as surf beaches increases with age. In New Zealand, from 1980 to 2002, 70% of 5–9-year-olds ($n = 71$) drowned in open water locations. Little is known about parental supervision of young children at beaches. The purpose of this paper is to report on exploratory observations of caregiver supervision of children at the beach. Two experienced lifeguards were trained to observe caregiver water safety supervisory behaviors at 18 popular beaches in the summer of 2006/7. Of the 544 observations made, one quarter (24%) of children in the water were not considered to be adequately supervised. Most supervision (74%) was done by a single person irrespective of the number of children under their control. Of the 130 caregivers failing to provide adequate supervision, one third (30%) lay on the beach sunbathing, one quarter (28%) talked to others, and one quarter (27%) used cell phones. In light of these findings, recommendations about further research on how to observe caregiver supervision and how to enhance safe supervision practices by parents/caregivers are suggested. Water safety organizations need to develop and promote guidelines for the safe supervision of young children at beaches.

While most under 5-year-olds drown in home environments, the number of children who drown at open-water locations such as beaches increases with the age of the victim. In New Zealand from 1980 to 2002, 34% ($n = 37$) of 1–4-year-olds ($N = 110$) drowned in open water locations compared with 70% ($n = 50$) of 5–9-year-olds ($N = 71$; Child and Youth Mortality Review Committee, CYMRC, 2005). One of the persistent risk factors identified in almost all child drowning tragedies, irrespective of location, is the lack of adult supervision (Cody, Quraishi, Dastur, & Mickalide, 2004; Landen, Bauer, & Kohn, 2003). While most studies of child drowning have focused on risk factors in the home, little is known about parental supervisory practices of young children in beach environments.

High rates of drowning among young children have prompted many organizations to promote the necessity of close and constant adult supervision of young children around water (e.g., American Academy of Pediatrics, AAP, 2000; Centers for Disease Control and Prevention, CDC, 2010; Safekids USA, 2007). Water safety messages have used such phrases as “touch supervision,” “within arm’s length,” and

Kevin Moran is with the Faculty of Education at the University of Auckland in Auckland, New Zealand.

“in sight, in reach” to promote the necessity of best supervisory practice (Moran, 2007). In New Zealand and many other Organization for Economic Cooperation and Development (OECD) countries (including Australia, Britain, and the U.S.), nonsurf beaches are often perceived to be “safe” and so professional surveillance via lifeguard services is often unavailable. In such conditions, a premium is placed on parents and other family members to provide young children with the necessary protection in the event of unintentional submersion. The supervisory role of the parent/caregiver thus becomes paramount in the drowning prevention chain for youngsters at the beach.

Supervision in the context of child safety is, however, a slippery construct that oscillates (especially in the public mind) between notions of supervisory care and supervisory neglect. It often defies concise definition because of the variability of settings, caregiver, and child. A recent World Health Organization entitled, “World report on child injury prevention” (WHO, 2008) emphasized the importance of supervision in child drowning prevention but noted that “what qualifies as ‘adequate supervision,’ though, needs defining and evaluating” (p.72). Morrongiello (2005) succinctly summarized that the act of supervising conscientiously “generates knowledge of a child’s whereabouts, actions, and activities” (p. 538). What caregivers do in response to danger (hereafter referred to as *responsivity*) when armed with this knowledge adds to the complexity of defining appropriate supervisory care.

Coohy (2003) categorized 11 types of supervisory neglect, several of which have specific relevance to water safety supervision at beaches, including *did not watch closely enough*, *allowed or encouraged harmful activity*, and *left alone*. Saluja and colleagues (2004) proposed a hierarchy of supervisory behaviors that incorporated attention (e.g., visual and auditory), proximity (e.g., touching, within reach, out of reach), and continuity (e.g., constant, intermittent, absent). In the context of child water safety at beaches, the *attention* construct firmly focuses on the visual, since auditory cues of child safety are often obfuscated by environmental noise such as wind and waves. More importantly, respiratory impairment because of aspiration of water that is normally associated with drowning is likely to preclude the ability to call for help—drowning often is a silent process. *Proximity* is also problematic in a water environment because play activities such as being under-water, swimming, surfing waves, and body boarding are inherently free of contact with others, even for young children. The third dimension, *continuity*, grounded in the work of Morrongiello and colleagues (Morrongiello, Corbett, McCourt, & Johnston, 2004) identifies lapses in supervision, such as checking safety only intermittently or from an out-of-view location, that have a particular relevance to child safety around water. The hierarchy of supervisory behaviors has been used to identify caregiver supervision characteristics in child drowning fatalities at dams in rural settings (Bugeja & Franklin, 2005). The beach environment is often a social setting for group/family/community leisure activity that offers many social as well as environmental distractions to challenge the attention, proximity, and continuity aspects required for providing adequate child water safety supervision.

How best to measure supervisory care has often confounded injury prevention researchers and been the subject of debate (for example, Morrongiello, 2005; Morrongiello & House, 2004; Peterson & Stern, 1997; Saluja et al., 2004). The use of self-reported supervisory behaviors in hypothetical situations has limitations in

that caregivers are likely to give a socialized response indicating what they believe to be their true behaviors (for example, Hapgood, Kendrick, & Marsh, 2001; Howland, Hingson, Mangione, Bell, & Bak, 1996; Moran & Stanley, 2006; Robertson, 1992). Morrongiello (2005) has reasoned that observational studies of supervisory behavior may provide greater ecological validity, even though such studies are time consuming and labor intensive. Saluja et al. (2004) concluded that observational data on caregiver supervisory behaviors needed to be gathered to provide a better understanding of the spectrum of supervisory behaviors.

Naturalistic observation, undertaken with minimal intrusion on the participant's behaviors may yield rich descriptive data on true supervisory performance (McBurney & White, 2007). For example, Harrell (2003) unobtrusively observed both child and caregiver behaviors in supermarkets and concluded that risk-taking by children increased when the child was left unattended and when the distance between caregiver and child exceeded 10 feet. The efficacy of naturalistic observation as a research method in a highly dynamic environment such as a busy beach (with minimal regulatory controls for people enjoying their leisure time) is unknown. It was therefore the purpose of this study to explore ways of observing water safety supervisory practices of parents and to make recommendations that may enhance future study of child safety supervision at the beach.

Method

A two-part study was undertaken during the summer of 2007, consisting of an initial observational study of parental/caregiver supervisory behaviors on beaches followed by a survey using a self-completion questionnaire of those caregivers whose children were observed playing in or near the water. The second part of the study that investigated parent/caregiver perceptions of good supervisory practice and perceptions of risk of drowning have been reported elsewhere (Moran, 2007).

Participants

The observational study took place on public beaches throughout the upper North Island of New Zealand, which included the metropolitan and west coast beaches of Auckland and popular holiday beaches in Northland and the Bay of Plenty. Eighteen surf and nonsurf beaches were purposefully sampled to generate a sample of New Zealand's beach-going population. The beaches were selected because of their popularity and proximity to major urban population concentrations. The observations took place on weekends and public holidays from 10:00 a.m.–4:00 p.m. each day over a period of eight weeks. The sample population included all people over the age of 16 years who accompanied young children and who were on the beach at the time the research assistants were conducting the field work. Young children were arbitrarily identified by estimate as being less than 10 years old.

Procedures

Two research assistants assigned to observe caregiver behaviors had extensive experience of dealing with the public through their professional teaching and

medical training and, in addition, both had extensive knowledge of beach safety from their considerable surf lifesaving experience. Two operational definitions were established to ensure consistency of reported observations. First, “water activity” was defined as any activity undertaken by children under 10 years of age in or near the water’s edge. It included immersion activities such as swimming activities or playing with body (boogie) boards. It also included activities such as sand-castle building that did not have water immersion as a primary intent but took place close enough to the water’s edge to warrant protection from incoming tides, surf sweeps, or other sudden exposure to drowning risk. Second, “adequate water safety supervision” was defined as close and constant attention to the water safety of young children without distraction. Attention, proximity, and continuity characteristics of supervision (Saluja et al., 2004) were noted using a pass/fail response. Failure to demonstrate any of these characteristics (e.g., failing to maintain visual contact with child, or failing to supervise the child in the water, or failing to maintain constant supervision) was recorded as a “lack of adequate supervision.” The observers were also required to note the type(s) of distractions that reduced the adequacy of the supervision among those who were deemed not to be providing appropriate supervision.

Initially, the research assistants worked together on beaches to ensure consistency of observations. They were trained to observe adult beachgoers’ arrival at the beach, note the composition of their social group, and the number of children estimated to be less than 10 years of age in their charge, and then observe caregiver supervisory actions when children went into the water. A weekend pilot study to confirm interrater reliability was conducted before the main data collection and observations were compared in a de-brief session. No quantified rater objectivity statistics were calculated in the current study. Where beachgoers were spread along a beach, the research assistants systematically observed caregivers in approximately 50 m sections of the beach for periods of 20 min before moving to the next adjacent section. It was initially hoped to assess *responsivity* (caregiver ability to respond to changing risk) on a pass/fail response. This was to be subjectively assessed by the observers based on their professional knowledge as experienced lifeguards. A pass required the supervisor to be able to identify and respond effectively to the risks associated with changing water hazards (such as surf, water depth, tide, and currents) and the changing weather conditions (such as cold and wind) that may have placed a child at risk for drowning in or near the water. In the pilot testing of *responsivity*, however, the proposed component was deemed to happen too infrequently to be effectively reported and be too difficult to observe accurately under busy conditions. It was subsequently dropped from the list of observable features.

Data Analysis

Data from the completed questionnaires were entered into Microsoft Excel X for statistical analysis using SPSS Version 14.0 in Windows. Descriptive statistics such as means and percentages were used to describe the supervisory behaviors of parents and caregivers. Chi-square tests of independence were used to determine significant differences between independent variables (such as gender and ethnicity) and dependent variables (such as supervisory practice).

Results

Table 1 shows that, of the 544 observations made, one quarter of adults (24%; $n = 130$) were not considered to be providing adequate supervision of their children for the prevailing water conditions. Of those who were observed providing appropriate supervision of water activity (76%; $n = 414$), females were the most frequently-observed, single supervisors (42%; $n = 173$). One third of single supervisors were adult males (32%; $n = 131$), a small proportion were nonadults under the age of 16 years (3%; $n = 12$), and one quarter of supervision was undertaken by more than one adult (24%; $n = 98$).

The number of children together in the water under the supervision of adults varied from 1 to 10 children (see Table 1). One third (31%; $n = 130$) of those observed being supervised were single children, groups of two children made up almost half of the supervised groups (45%; $n = 190$), and groups of three children accounted one sixth (16%; $n = 66$) of supervised children. Less than 10% of children (7%; $n = 28$) were being supervised in groups that varied in size from 4 to 10 and in all these cases there were multiple adult supervisors.

The research assistants also recorded the distractions that reduced the adequacy of the close and constant supervision among those who were deemed not to be providing appropriate supervision. Six types of distractions to adequate supervision were observed occurring 175 times by the research assistants. Of those caregivers not

Table 1 Observed Supervisory Behaviors

Supervision of Children's Water Activity	<i>n</i>	%
Appropriateness of supervision		
Adequate supervision	414	76.1
Inadequate supervision	130	23.9
Total	544	100.0
Supervisor		
Female adult	173	41.8
Male adult	131	31.6
Nonadult	12	2.9
more than 1 adult	98	23.6
Total	414	100.0
Size of child groups being supervised in the water		
1 child	130	31.4
2 children	190	45.9
3 children	66	15.9
4-10 children	28	6.8
Total	414	100.0

stationing themselves at the water's edge or in the water supervising their children ($n = 130$), almost one third (30%; $n = 39$) spent their time lying down on the beach sunbathing, and more than one quarter (28%; $n = 36$) talked to other people or used cell phones (27%; $n = 35$). Other distracters observed among parents/caregivers not providing adequate water safety supervision were eating or drinking activities (11%, $n = 14$), reading books or magazines (7%; $n = 9$), drinking alcohol (3%; $n = 4$), and other unspecified activities (29%; $n = 38$).

Table 2 shows the characteristics of the 544 observations made according to beach type. More observations were made at surf beaches reflecting the frequency, accessibility, and popularity of these beaches in the northern part of New Zealand. No significant differences were observed in either the provision of adequate supervision or the number of children in the water under supervision when analyzed by beach location. Significant differences, $\chi^2(4, n = 437) = 18.144, p = 0.001$, were observed in the gender of supervisors with more females than males likely to provide close supervision at nonsurf beaches (females 52%; males 22%). No significant differences in the supervisory practice of caregivers by ethnicity were reported.

The specific nature of the adequate supervision was not systematically recorded, although inappropriate behaviors were anecdotally reported in de-briefing processes at the end of the field study. Among the inappropriate supervisory behaviors observed among in-water caregivers were the wearing of unsuitable attire such as shoes and being fully clothed, failing to constantly maintain visual contact of their children, allowing their charges to drift too far away from them, and failing to recognize changing conditions such as larger than usual waves and rip currents.

Table 2 Characteristics of Observations by Beach Type

	Surf beach		Flat water beach		χ^2	<i>p</i>
	<i>n</i>	%	<i>n</i>	%		
Adequate supervision	249	76.1	168	77.4	0.118	0.731
Inadequate supervision	78	23.9	49	22.9		
Total	327	100.0	217	100.0		
Male caregiver	98	36.7	38	22.4	18.144	0.001*
Female caregiver	91	34.1	89	52.4		
>1 adult caregiver	70	25.9	41	24.1		
Nonadult caregiver	8	3.0	2	1.1		
Total	267	100.0	170	100.0		
1 child in water	88	33.6	48	28.4	9.420	0.151
2 children in water	109	41.6	86	50.8		
>3 children in water	65	24.8	35	20.8		
Total	262	100.0	169	100.0		

* significant difference at the 1% level

Discussion

The results of this naturalistic descriptive study suggest that parental/caregiver child water safety supervisory behaviors vary considerably among the beach-going public. While most adults did provide appropriate supervision of their children's water activity, almost one quarter (24%) of those observed did not. Of those caregivers who did not stay at the water's edge, one third (30%) chose to lie down on the beach sunbathing, thereby providing little or no surveillance of their child's location and behaviors. This observational finding was reinforced by the self-reported behaviors reported in the questionnaire section of the study (Moran, 2007) in which almost one third (30%) of respondents admitted that they did not provide close in-water supervision.

During our study, most children were observed playing in the water in groups of two or more (62%) and most supervision (74%) was done by a single person irrespective of the number of children in the water. Looking after more than one child in open water, especially if they are of differing ages and abilities, is challenging even when the caregiver is located in-water and not distracted. This is especially the case in surf conditions where waves, tide, and current actions may make staying close together a continual challenge for parent and children alike.

Gender differences in the provision of adequate supervision, with significantly more females than males providing adequate supervision at flat water beaches may suggest a greater sensitivity to risk among female caregivers. Whether this heightened sensitivity provides greater protection to young children at play in open water environments and requires targeted water safety education for male caregivers warrants further investigation.

The results should, however, be considered with respect to several methodological limitations. First, the sample did not include parents/caregivers who take young children to the beach for aquatic activity outside peak hours or during weekdays that were not public holidays. Second, the sample population, while representative of the holiday beach-going population, varied from the national population in terms of gender and ethnicity demographics with more females (58% vs. 51%) and fewer Pacific peoples (5% vs. 10%). Third, on very busy beaches with multiple points of entry, observation of some supervisory behaviors may have been missed. Fourth, the age of children observed in the water (estimated to be < 10 years) was not able to be verified and may have resulted in the inclusion of some children over that age. Fifth, how caregivers responded to changing risks and changing environmental conditions, originally conceived as an additional supervisory element termed *responsivity*, was not adequately identified and reported. Further research is required to determine whether this factor is a critical component in a hierarchy of supervisory behaviors.

Sixth, the supervision was assessed as being adequate/inadequate on the basis of previously determined models of best practice (Saluja et al., 2004; Morrongiello, 2005). Even though the trained observers were familiar with these supervisory models, the judgments involved in deciding that supervision was adequate/ inadequate introduced an element of subjectivity that may have influenced interobserver objectivity, as previously reported in a study of supervisory neglect in injury deaths among youngsters aged 0–6 years in Alaska and Louisiana (Landen, Bauer, & Kohn, 2003). No case-by-case, objective breakdown of supervisory care or neglect was

systematically recorded. Furthermore, no direct comparisons between what caregivers actually did (e.g., recorded and what they either self-reported via a written survey as doing; Moran, 2007; i.e., real and perceived supervisory practice) were made in the current study. Recent research on caregiver supervision of children at the beach appears to have addressed many of the limitations identified in this initial study of beach water safety of young children and offers promising new insights into supervisory behavior at beaches (Blitvich, Petrass, & Finch, 2008; Petrass, 2009). Finally, the reproducibility of these results may be limited because no inter-rater agreement was calculated to quantify how well the observers actually agreed. Future research studies should quantify this variable to ensure that observations are reproducible among observers. These limitations notwithstanding, the findings of the current study do provide sufficient indication of questionable parental/caregiver supervisory practice of children's water activity at the beach to warrant further systematic scrutiny.

Conclusion

This observational study is believed to be the first of its kind in the drowning prevention literature to address caregiver water safety supervision of young children in an open-water environment using naturalistic procedures. While it was anticipated that the interaction between children and caregivers would be dynamic and multifaceted, quantifying this dynamic in terms of the recognized components of safe supervision, especially in relation to time and the number of children and caregivers involved, proved difficult. In addition, the concept of *responsivity* originally included in this study, then abandoned because of measuring difficulty, requires further exploration in future observational studies.

Though further research is required to corroborate or refute these initial findings, results suggest that lapses in caregiver supervision happen frequently enough to warrant specific intervention via water safety promotion and education. To counter any misconceptions among parents/caregivers of their essential role in supervision, current water safety education initiatives emphasizing the importance of close and constant supervision of young children in pools and other closed environments needs to be specifically extended to parents/caregivers in charge of children at beaches. Furthermore, given the inadequacy of some of the observed in-water supervision, the precise nature of good beach safety supervision also needs to be explicitly promoted. Chief among these explicit instructions would appear to be the immediate need for caregivers to be in or at the water's edge, within ready reach in the event of an emergency. The future safety of all children at beaches demands nothing less.

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