Drowning in a high-income developing country in the Middle East: Newspapers as an essential resource for injury surveillance

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Summary Despite frequent media accounts of drownings in the United Arab Emirates, little was known about the epidemiology and prevention of such incidents. The research objective was to assess newspapers as a national source on incidence, activities, and risk factors for drowning in this high-income media-rich developing country where official sources do not include sufficient variables for injury prevention. The three main national English and six Arabic newspapers were assessed for electronic retrieval of incidents, which proved impractical; however, the largest English-language paper maintained a clipping file on drowning. Newspaper data, including incidence, activity, and purpose, together with personal, equipment, and environmental risk factors, were compared with Ministry of Health reports for 1998—2002. Incidence from clippings was 0.50 drownings/100,000 population/year and from Ministry reports, 0.27. Activity such as swimming or boating and purpose of activity such as recreational or occupational were unreported by the Ministry. Activity was reported in 100% of newspaper clippings. Swimming (49%) was the most common activity. The purpose of 17% of cases was classified as occupational. Gender was 100% complete in both sources. In newspaper reports, age was classifiable as child or adult, while the Ministry used age groups. National citizenship was 100% reported by Ministry; 91% of newspaper reports included nationality, providing details for expatriates. Swimming ability was unreported by Ministry, and by newspaper 52%, of whom 73% were non-swimmers. While the newspaper provided information on body of water, mainly ocean and pools, this was unreported by Ministry. Month was unspecified by Ministry, 100% by newspaper. Neither reported safety equipment. The newspaper proved the most useful resource for drowning prevention since there were more incidents and most included key variables; however, Ministry...
Introduction

An estimated 410,000 people drowned around the world in 2000, making drowning the second cause of unintentional injury death after traffic.\(^1\) In many countries, submersion incidents are the most frequent cause of fatal sport and recreational injuries and most fatal immersions occur during recreational activities. To illustrate, in Victoria, Australia, 69% of sport and recreation deaths resulted from drowning during 2001–2003,\(^2\) while in Canada recreational boating and swimming were the source of 68% of 4671 drownings other than road and air incidents during 1991–2000.\(^3\)

According to the World Health Organization (WHO), 97% of unintentional drownings occur in low to middle-income countries with limited injury surveillance capabilities.\(^1\) The first paper to investigate the usefulness of newspapers for injury surveillance, published in 1992 in the American Journal of Public Health,\(^4\) described newspapers as a useful source for assessment of risk factors for drowning and fire deaths, and offered hope for improved surveillance where official sources are poor. Since then, others have challenged the utility of newspapers for unintentional and intentional injury surveillance.\(^5\)–\(^11\) With one exception in Finland,\(^7\) none of these were national studies.

Although the drowning rate in WHO's Eastern Mediterranean Region was reported as 5.7 drownings/100,000 population/year in 2000,\(^1\) annual rates in United Arab Emirates (UAE) Ministry of Health reports averaged 0.27/100,000/year during 1998–2002, with little information about activities and risk factors.\(^12\) The UAE is a wealthy developing country with intensive development, rapid lifestyle changes, and a multietnic population differing widely in income and exposure to risk. With no injury epidemiologists in government, the many national newspapers in English and Arabic instead offer an alternative for improving safety. This study was undertaken to assess newspapers as a national information source as a basis for drowning surveillance, research, and prevention. Objectives included comparing newspaper data with Ministry reports on drowning incidence, associated activities and purposes, together with personal, equipment, and environmental risk factors.

Methods

A retrospective survey of national UAE newspaper and Ministry of Health accounts of drowning incidents for 1998–2002 was done in 2004. Average population was 3,169,800 persons, i.e., about 15.8 million person years at risk during 1998–2002. Approval was obtained from the Ethics Committee of the UAE University Faculty of Medicine and Health Sciences. Although submersion or immersion incidents are the external cause of drownings, and WHO uses both "submersion" and "drowning" in its nomenclature,\(^13\) "drowning" was mainly used, as in newspaper reports of submersions. A structured data abstraction form was prepared by identifying information fields essential for drowning prevention, including activity and its purpose, together with personal, equipment, and environmental factors. This was adapted to local conditions from data fields used by Canadian Red Cross in research publications on water-related injuries.\(^3\),\(^14\) Activities commonly associated with drowning in most countries include swimming, boating, walking, or playing near water with a fall into water, playing or wading in water, bathing, and road transport.\(^15\) The main purposes of such activities are recreation, occupation, and daily life, such as washing.

Final data sources included one national newspaper and Ministry of Health biennial reports. The original research plan was to electronically search for drowning incidents in three national daily newspapers in English and six in Arabic with the help of our reference librarian, and to use police reports as a second government source. Searching of newspapers proved unfeasible due to lack of search capability for drownings, and police were unable to supply drowning data. Fortunately, after contacting the newspapers, it was found that Khaleej Times, the English-language paper with the largest readership, 450,000 multinational readers\(^16\) (compared to Gulf News, at 90,000\(^17\)), maintained clipping files of their news coverage on various topics, including drownings. They provided copies of drowning clippings for 1998–2002. Since about 80% of UAE’s population is expatriate, with Indians the largest subgroup, this and other English-language national newspapers are sold throughout the country in...
Table 1  Availability of key drowning data items in a national newspaper versus Ministry of Health surveillance reports, United Arab Emirates 1998–2002 (n = 79)

<table>
<thead>
<tr>
<th>Drowning variables</th>
<th>Incidence and percent of records with data items present by source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Newspaper</td>
</tr>
<tr>
<td>Average incidence per 100,000</td>
<td>0.50</td>
</tr>
<tr>
<td>population per year\textsuperscript{a}</td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td>100%</td>
</tr>
<tr>
<td>Purpose of activity</td>
<td>17%\textsuperscript{b}</td>
</tr>
<tr>
<td>Personal factors</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>100%</td>
</tr>
<tr>
<td>Age</td>
<td>92%\textsuperscript{c}</td>
</tr>
<tr>
<td>Nationality</td>
<td>91%</td>
</tr>
<tr>
<td>Swimming ability</td>
<td>52%</td>
</tr>
<tr>
<td>Equipment factors</td>
<td></td>
</tr>
<tr>
<td>Safety equipment</td>
<td>0%</td>
</tr>
<tr>
<td>Environmental factors</td>
<td></td>
</tr>
<tr>
<td>Type of body of water</td>
<td>100%</td>
</tr>
<tr>
<td>Month</td>
<td>100%</td>
</tr>
</tbody>
</table>

Note: Sources were Khaleej Times newspaper clippings file on drowning and Ministry of Health biennial reports.
\textsuperscript{a} Actually per 100,000 person-years based on 15.8 million person-years at risk.
\textsuperscript{b} 17% specified as occupational drownings.
\textsuperscript{c} Age specified mainly as child/adult.
\textsuperscript{d} Age specified by standard groups.
\textsuperscript{e} Specified only as citizen or non-citizen.

Results

Completeness of reporting by data source is summarised in Table 1. Overall, newspaper clippings provided a greater count of drownings, excellent reporting on activity and environmental factors, and reasonable reporting on personal factors. While Ministry reports provided more precise information about age as standard groups, there was no coverage of activity and purpose or environmental factors. Neither covered safety equipment.

Incidence of drowning calculated from newspaper clippings was double that from Ministry reports with large year-to-year fluctuation in Ministry reports (Fig. 1).

Activity and purpose were unspecified in Ministry reports. Activity or type of incident was in all newspaper reports, including swimming 49%, walking or playing with a fall into water 23%, boating 9%, wading and playing in water 8%, road transport 8%, and others 3%. Regarding purpose of activity, although incomplete, 17% could be attributed to occupation, mainly fishing and construction.

Personal risk factors included sex, age, nationality, citizenship, and swimming ability. Sex was specified for 100% of drownings in both data sources; in newspaper reports, 83% were male. In Ministry reports, age was reported within stan-
dard groups for all, while in the newspaper, age was not always reported precisely; however, victims could be categorized as adults 62%, children 30%, and unknown 8%, and 72% of swimming victims were adults and 28% children. In Ministry reports, information on nationality was restricted to UAE citizenship. In contrast, nationality was specified 91% of the time in the newspaper, including details for expatriates; local citizens made up 33%, Indians 18%, and other nationalities 40%. Although swimming ability was not reported by the Ministry, it was described in 52% of newspaper accounts; 73% were non-swimmers. As the country is Islamic, public alcohol consumption is uncommon, and alcohol was not reported as a personal risk factor.

Environmental risk factors included type of body of water and month. While Ministry data did not include bodies of water, newspaper data were complete: ocean 67%, swimming pool 13%, reservoir 10%, creek 8%, lake 1%, and well 1%. Similarly, month of incident was not available from Ministry but was complete for newspaper reports, with April and November as peak months, 24 and 18% of drownings, respectively. Recommended safety equipment, such as flotation devices for boats and automatically closing and self-latching gates for home pools were not reported by either source.

**Discussion**

The clippings file from a national newspaper proved helpful in assessing activities, purpose, personal risk factors, and bodies of water. The results facilitated planning of subsequent surveys at high schools and sports clubs to assess water safety and swimming training, main hazards at beaches and homes, surveys of pool vendors and owners, and media reports. The UAE is a desert country where traditional lifestyles and housing have been greatly changed by oil revenues and rapid development. Near-universal access to cars facilitates travel from desert cities to beaches and many homes have swimming pools, creating new exposures with risk of submersion.

While training and employment of skilled professionals for surveillance and prevention of injuries have not kept pace with introduction of new hazards, there is a flourishing newspaper industry with several national English and Arabic newspapers. This is fortunate since underreporting of incidence and risk factors for drowning by official sources tends to be more severe than for other injuries since many victims do not survive long enough to reach hospital. Transient populations of expatriate physicians and untrained coders have also posed a challenge to valid coding of deaths, including immersions. It is, therefore, helpful to use unofficial information sources to monitor and prevent submersions, or to create specialized surveillance databases which are cost-effective in prevention especially for children. Limitations included availability of clippings from only one newspaper whose file may have been incomplete. Due to lack of a national coroners’ database, there was no gold standard for verification. Comparison with other papers on the dates of incidents to verify cross-coverage of details might have been useful. Nonetheless, the results had face validity, supported by sporadic reports from hospitals or media of children drowning in home and hotel pools and bathers swept from beaches by currents, April and November pleasantly warm for beaches and swimming, and lack of water-safety organizations with national swimming programmes. Nevertheless, bias could have resulted from journalists’ unawareness of home pool and bathtub incidents. Although family and friends are generally aware if a victim was a non-swimmer or weak swimmer, validity of swimming ability reported by newspapers, police, and coroner files could be challenged in UAE and elsewhere.

In comparing newspaper with Ministry reports, the relatively poor performance of Ministry reporting was of concern since it was based on mandatory death notification; physicians frequently report cardiac or cardio-respiratory arrest as a cause of death and omit external causes such as submersion. Large year-to-year fluctuations in Ministry reports suggest missing or incomplete data from at least some of the nine UAE health districts. Mean annual number of drownings during 1998–2002 was 9, while 25 were reported in 2003 and 51 in 2004. The 2004 data give an incidence of 1.6 drownings/100,000 population/year, comparable to the 2000 WHO incidence for Australia of 1.7. Nonetheless, this UAE incidence must underestimate the true burden of drowning, since only 4% (2/51) of drownings were reported from the coastal emirate of Dubai which includes 30% of the UAE population and has many beaches and pools.

In comparing UAE findings with previous research, first use of newspapers for injury surveillance was difficult to ascertain, since early surveillance was published as organizational “gray literature”. To illustrate, prior to
development of national surveillance in 1991, Canadian Red Cross volunteers across the province of British Columbia clipped local newspaper reports of drowning. In the first journal publication in 1992, from North Carolina in United States (US), newspapers were reported useful for drowning surveillance; 78% of child drownings retrieved from medical examiner records were also found in newspapers. Newspapers included more information on pool fences, warning signs, and supervision, whereas medical examiners did better on children’s swimming ability, 25% versus 14%, and alcohol, 84% versus 0%. Activity was not studied. In subsequent research from Washington State, newspapers were assessed as not very useful for surveillance. Using clippings from multiple newspapers, 52% of immersions reported by death certificates were found in at least one. Personal and equipment factors were compared, but not key environmental factors such as body of water, nor purpose of activity. Newspapers reported activity for 100% of deaths and hospitalisations, personal factors including swimming ability and alcohol for 7%, equipment factors such as type of watercraft and wearing of flotation for 100 and 35%, and supervision for 82%. The authors did not suggest reasons for the differences between their findings and those of the first US study, but this might reflect local variability.

In Finland, a service combining national and local news clippings with local police information captured 59% of drownings in the death certification data of Statistics Finland. Newspapers underreported incidents in baths and pools, from falls into ditches, and involving vehicles. It was concluded that neither source provided all useful details for prevention and a multidisciplinary national surveillance system was therefore recommended. In Canada, where boating accounts for about 40% of drownings, 33–43% of boating drownings reported by coroners were misclassified under other activity codes by vital statistics, probably due to incomplete reporting of external cause by physicians on death certificates.

While activity was described for all drownings in both UAE and Washington State newspaper reports, UAE journalists surpassed those in Washington State and North Carolina in reporting swimming ability, 52% versus 12–14%, and compared favorably with Canadian coroners’ reports, which described swimming ability for 50% of 5–14-year-olds and 39% of ≥15-year-olds. Although some US researchers believe increased exposure of swimmers puts them at higher risk of drowning than non-swimmers, the present findings from newspaper accounts together with limited availability of drowning programmes suggest that most UAE victims are non-swimmers or weak-swimmers. Despite the encouraging findings of the first US study, others found deficient reporting on safety equipment and/or environmental factors and in one of these surveys coverage of pool fencing was only 12% and supervision 0%. Most journalists in UAE and elsewhere are probably unaware of the effectiveness of safety equipment for pools and boats, due to unfamiliarity with the concept of automatic “passive” prevention of immersion. Furthermore, since police need to attribute guilt and necessarily focus on personal factors, it is scarcely surprising that journalists who rely on police reports show similar bias.

**Conclusion**

Newspaper clippings are useful for surveillance of incidence, activity, and several key risk factors for drowning. Unlike the case for many other injury contexts, fatal immersions outnumber hospitalisations in people >4-years-old in some countries. Because newspapers provide better coverage of injury fatalities than hospitalisations and, with the exception of small children in urban areas, most immersion victims do not survive long enough to reach hospital, newspaper surveillance of immersions is probably more useful than for other injuries.

While newspapers cannot be expected to report all injury incidents, many journalists excel in describing external causes, including risk factors neglected by public health sources. Such information can be helpful for prevention, even with incomplete counts of incidents. Water safety professionals should assess the utility of newspapers in their country and/or region, rather than generalising from local reports in other countries. A newspaper provided the best data for drowning prevention in UAE since journalists described activity and body of water. Newspapers can be supplemented with Ministry data and population surveys. On the basis of the present and other research, the situation is evolving with improvements in death reporting forms and training of physicians and coders. As official sources improve in the UAE, newspapers may become a complementary surveillance source for circumstances of recent incidents. Greater attention to reporting of equipment factors, including safety devices such as automatic...
childproof pool gates and flotation devices, by both official sources and newspapers would be beneficial.

**Practical implications**

- Newspapers are a potentially good source of information about the occurrence of fatal immersion/drowning injuries.
- Newspapers may be as useful, if not more so, than government surveillance reports for details of factors associated with fatal immersions/drowning injuries such as activity, swimming ability, and the type of body of water.

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**References**

Drowning surveillance and newspapers

