The death of a Bryde's whale: paediatricians' perspective and health education implications

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The carcass of a baby Bryde's whale was found in the sea around Hong Kong in late July 2023, days after it had been sighted with a suspected propellor injury. The baby whale was first observed near Sai Kung in the New Territories in mid-July.[1] This rare whale sighting enthralled spectators and intrigued experts who sought to understand the reason for its presence.[2]

When interviewed by the media, some parents said it was a good opportunity to teach children about biology and encourage love for wildlife, whereas children expressed sadness about the baby whale's death. As paediatricians, we should seize this opportunity to encourage societal reflection and to educate children and families. Several educational messages can be conveyed at the societal level.

Animal rights and protection

Fostering a love for the environment, including respect for wild animals in their habitats, is a valuable educational exercise for children and families. Educational tours to view wildlife are not intrinsically destructive. However, it is important to maintain a safe distance from wild animals and avoid harming them.

Laws and regulations exist to penalise animal cruelty. Efforts to investigate and punish offenders might help remind citizens of Hong Kong about the rights of wild animals. Animal cruelty has legal consequences.

Wildlife protection efforts should extend beyond whales. Hong Kong and the southern coast of Mainland China are home to a population of approximately 2000 pink dolphins (ie, Indo-Pacific humpback dolphins or Chinese white dolphins)—the largest such group worldwide.[2] Their abundance in Hong Kong waters has declined by almost 80% within 18 years.[2] Additionally, various mammal species[3] and migratory birds[4] visit Hong Kong.

Accident and injury prevention

The baby whale's death was apparently caused by traumatic injury from spectator boat propellers. Spectator boat trips are popular in many tourist destinations, including Australia, New Zealand, South Africa, and North America. This incident provides a good opportunity for health education to remind parents and children that accidents during recreational activities can affect both animals and humans. This emphasis is especially important in popular Southeast Asian tourist locations, where speed boats and waterskiing activities might occur in close proximity. Speed boat drivers, as well as children and parents, should be cautioned about outdoor accidents that involve swimming and water sports. Traumatic injuries to tourists and children during water sports are possible; recreational boat–related and propellor-related injuries occasionally occur.[5,6]

According to the World Health Organization's world report on child injury prevention,[7] the submersion injury fatality rate among children is 7.2 per 100 000 population worldwide; it is 1.2 per 100 000 population in high-income countries.[7] In Hong Kong, submersion injuries are uncommon and the corresponding fatality rate is 0.34 per 100 000 population.[8,9] Fatal submersion injury risk is higher among tourists, likely due to increased water exposure in an unfamiliar environment.[7,10,11] Incidents of submersion injury among tourists are not recorded in Hong Kong. In a review of 18 paediatric patients admitted to a paediatric trauma centre in the United States with water sports injuries over a 13-year period,[5] 44% of injuries were caused by personal watercraft, whereas 39% were caused by boats and 17% had other aetiologies. The most common water sports injuries were skin/soft-tissue lacerations (59%), head injury/concussion (33%), tendon/ligament lacerations (28%), and extremity fractures (28%). Some deaths were reported.[5]

Although measures exist to reduce or prevent watercraft injuries, inconsistent regulations and enforcement may hinder their effectiveness.[12] Submersion injury, a common cause of accidental childhood fatality worldwide, is potentially

preventable.[9] In Hong Kong, most submersion injury–related deaths occur in natural bodies of water, followed by swimming pools.[9,13] By enforcing water safety measures, we can promote healthy and safe physical activity and participation in water sports–related activities among children.

An understanding of water safety risk factors among Hong Kong children can help prevent submersion injury. Risk factors for submersion injury include male sex, age <5 years, ethnic minority status, and the presence of underlying health conditions including epilepsy, certain cardiac arrhythmias, or autism.[7] Environmental factors include exposure to open water; lack of supervision, personal floatation devices, or lifeguards; lack of barriers to rapid water entry; and uneven, slippery, or steep surfaces near or in water.[7] Public education should emphasise continuous and vigilant adult supervision during swimming, along with the use of personal floatation devices around water.[14] Children should also be encouraged to attend swimming lessons at a young age to build basic swimming skills. Participation in formal swimming lessons is associated with an 88% decrease in submersion injury risk among children aged 1 to 4 years.[15,16]

Issues affecting marine environments and wildlife protection in Hong Kong

Despite the rich terrestrial, freshwater, and marine biodiversity in Hong Kong, along with increasing public awareness of protection for the environment and wildlife, there has been no comprehensive review of existing regulations and policies concerning protection of marine environments and the rights of wild animals. Loopholes in the current system hinder holistic biodiversity conservation efforts and make it challenging to address emerging threats to environments around Hong Kong.

Laws and regulations/government policies

Environmental protection legislation has been enacted in 11 major areas, namely, air pollution control, ozone layer protection, water pollution control, waste disposal, dumping at sea, noise control, environmental impact assessment, hazardous chemicals control, mercury control, product eco-responsibility, and motor vehicle idling.[17] The most relevant legislation may involve water pollution control, waste disposal, dumping at sea, and product eco-responsibility. Unfortunately, no legislation directly addresses marine environments or wildlife protection in Hong Kong. This gap in regulatory policy should be filled.

Education

Effective public education about marine protection, especially for younger generations and through revisions to school curricula, is an important but neglected perspective in Hong Kong. It is particularly important to enhance educational focus on the development of positive values and attitudes regarding life. From kindergarten to secondary school, the school curriculum should include elements related to protecting animal life. Students should learn to respect and protect wildlife and the marine ecosystem by avoiding practices such as overfishing and overconsumption of seafood. Scientific research and structured programmes at tertiary institutions should be prioritised in this important field of wildlife protection. Schoolteachers and educators can utilise the unfortunate death of the Bryde's whale as an opportunity to encourage young children to learn about marine animals and endangered species in Hong Kong and nearby waters. Children can be encouraged to conduct outreach projects exploring marine animal protection, as well as conservation projects in other countries, to inform improvements in Hong Kong's marine wildlife protection measures. Schools can be encouraged to implement early education regarding wildlife protection and to arrange educational field trips focused on environmental conservation. Furthermore, schools can use this opportunity to highlight broader issues affecting marine conservation (eg, plastics, ocean dumping, pollution, and overfishing).

Although education is a vast topic, it is essential to incorporate elements of marine environment and wildlife protection into general science, biology, and environmental science curricula at primary and secondary school levels.

Fishing and seafood consumption

Hong Kong's diverse marine habitats and species face threats from rampant development, unregulated fishing practices, increasing marine traffic, and pollution. Future threats include extensive land reclamation and development.[18] In 2023, 5% of Hong Kong waters were designated as marine protected areas (MPAs)[18]; this was a considerable increase from <0.01% in prior years.[18] Marine protected areas are specific management zones designed to protect marine habitats and species for the greater good. Conservationists, scientists, and non-governmental organisations recommend designating 30% of global waters as MPAs by 2030.[18] Activities such as fishing, vessel traffic, and tourism are regulated within MPAs; such areas can be fully protected marine reserves, moderately protected marine parks, or no-take zones.[18]

Fishing and seafood consumption are also major threats to Hong Kong's marine ecosystem of approximately 6000 species.[19] Overfishing, heavy boat traffic, pollution, and coastal development–related habitat loss have caused many marine species

to become vulnerable or endangered in Hong Kong; some marine species have become extinct. According to the World Wildlife Fund (WWF),[19] Hong Kong has the second-highest per capita seafood consumption in Asia and the eighth-highest seafood consumption worldwide. Commercially fished species are threatened. Globally, Chinese white dolphins and finless porpoises are classified as vulnerable, and their local populations have decreased in recent years. Pollution, boat traffic collisions, fishing net entanglement, and coastal development are major threats to these species.

Progress in fishing and seafood consumption includes the governmental ban on trawling beginning in 2012,[20] expansion of MPAs, and provision of training programmes for the fishing industry. Additional progress can be achieved by encouraging businesses and consumers to make sustainable choices in seafood consumption, retail, and trade. The WWF Hong Kong and the Hong Kong Sustainable Seafood Coalition are actively involved in encouraging such sustainable choices.

There is also an urgent need to reduce Hong Kong's reliance on single-use plastics at the consumer and corporate levels. The widespread use of polystyrene foam boxes in the seafood industry is a serious issue. Through the WWF's Plastic ACTion initiative, two of Hong Kong's largest online food delivery companies substantially reduced plastic use simply by requiring customers to request disposable cutlery when ordering.[21] Efforts from non-governmental organisations spread awareness; they are supported by the general public, businesses committed to conservation and sustainability ideologies, and governmental initiatives.

Overfishing is a global issue leading to the decline of many species.[22] Marine populations cannot recover under such conditions; thus, fishing operations are beginning to explore polar regions. Non-selective fishing methods catch both targeted and non-targeted species. Although certain types of seafood can be obtained through aquaculture, some fish farms catch wild juveniles and raise them to market size, thereby impacting wild populations. Marine habitat loss results from destructive fishing practices and pollution. For example, wild shrimp is caught by bottom trawling, which concurrently destroys the seafloor. Furthermore, shrimp farming generates sewage. Some species are particularly vulnerable to fishing pressure. Groupers, common in Hong Kong's live edible fish trade, require 5 to 10 years to mature but are often caught before they can reproduce. Sharks play crucial roles in marine ecosystems by directly regulating prey populations and indirectly altering the populations of other animals in the food web; these effects maintain ecosystem balance and enhance species diversity. Importantly, sharks are caught to meet consumer demand for their fins and cartilage; they are also threatened by fisheries. Hong Kong imports >5400 tonnes of shark fins and cartilage annually from approximately 70 countries and territories.[23] Because of their slow growth, late sexual maturity, and low fecundity, sharks cannot cope with this rate of consumption; their rapidly declining populations may cause marine ecosystems to collapse. Fish and invertebrates are major components in the marine food web; good fishing and farming practices are essential to maintain balance in this web. Consumers can help by choosing seafood species within the 'Recommended' category in the Sustainable Seafood Guide.[23]

Conclusion

The death of the Bryde's whale serves as a reminder to collectively value Hong Kong's marine life and prompts physicians, especially paediatricians, to strengthen preventive and environmental medicine for children and families in Hong Kong. This incident is certainly not the last occurrence. Recently, in early December 2024, another whale was found dead in Hong Kong waters. A canvas bag was found in the stomach of the carcass during necropsy.[24] Efforts to promote marine environment protection and water recreation safety will benefit from collaborations among key stakeholders including government departments, environmental organisations, marine experts, education professionals, and healthcare professionals.

Author contributions

All authors contributed to the concept or design of the study, acquisition of data, analysis or interpretation of data, drafting of the manuscript, and critical revision of the manuscript for important intellectual content. All authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

As an editor of the journal, KL Hon was not involved in the peer review process. Other authors have no conflicts of interest to disclose.

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