An Assessment of health literacy needs in the development of warning signs for Harmful Algae Blooms (HABs) in Northern California

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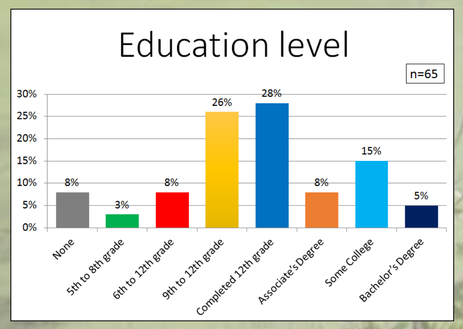
Significance

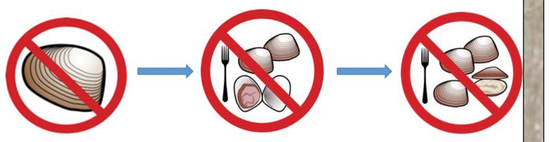
Health literacy affects an individual's ability to understand and take action based on health-related information. Health literacy level is significantly correlated to prior health knowledge, race, ethnicity, income, educational attainment and age. More than 36 million American adults are unable to read above a third grade level.



Icons and messages that were most understood throughout all rounds of field testing (n=65)

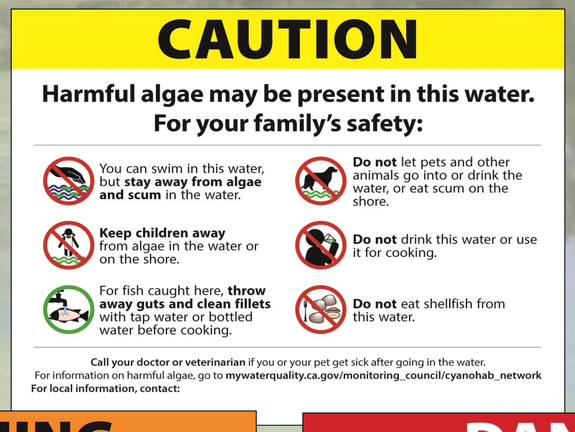
Icon	Message	% of understanding	# of signs
	No swimming	86%	2
	***Do not** eat fish*	85%	2
	***Stay out of the water** until further notice. **Do not touch scum** in the water or on shore.*	84%	2
	***Stay out of the water** until further notice. **Do not touch scum** in the water or on shore.*	80%	1
	***Do not** let pets or other animals go into or drink the water, or go near the scum.*	75%	3

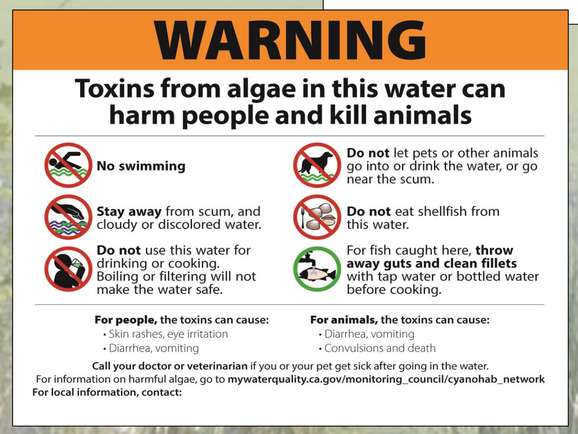
"**Do Not** eat shellfish from this water".

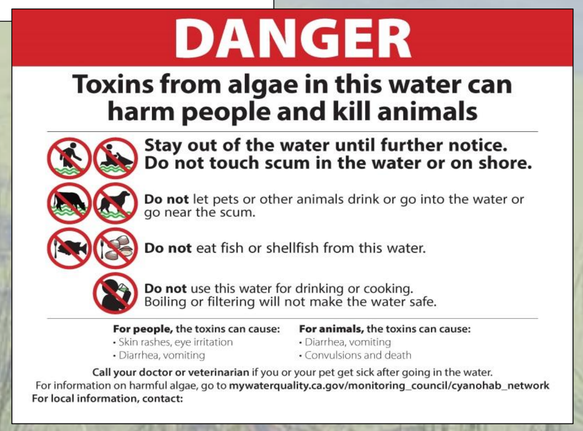


Background

Written environmental warning signs are posted throughout California to advise communities of hazards, such as the presence of harmful algae blooms (HABs). There is little known research that evaluates the effectiveness of these signs in communities with health literacy concerns. This study examined the effectiveness of newly developed HABs signage to communicate key environmental health messages and to assess an individual's interpretation of hazard prevention guidance.

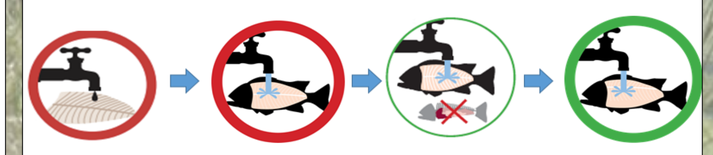






"**Do not** drink this water or use it for cooking".
"**Do not** use water for drinking or cooking. Boiling or filtering will not make the water safe".

"For fish caught here, **Throw Away Guts and Clean Fillets** with tap water or bottled water before cooking".



Methods

Using an evidence-based instrument, 65 participants of different racial, age, and educational levels, were interviewed in one-on-one encounters to assess comprehension and interpretation of warning signs for HABs. The survey tested images and interpretation of messages through open-ended questions; the ability to take health-protective actions; recollection of important information, and more. Key messages and images were evaluated and adapted through an iterative process.

Results & Conclusions

Participants of all educational levels understood most key HABs prevention messages after a series of modifications. Participants with less than a high school education (42%) understood key messages with commonly used images that conveyed one simple idea, such as "no swimming" or "no wading." Among this group, messages with less commonly used images that conveyed multiple ideas, such as "don't eat fish and guts" or "do not let animals drink or wade," were least understood.

The effectiveness of environmental warning signs improved by using evidence-based methods with attention to the needs of communities with health literacy concerns.