

PREVALENCE OF FREE-LIVING AMOEBAE IN SWIMMING POOLS AND RECREATIONAL WATERS, A SYSTEMATIC REVIEW AND META-ANALYSIS

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Free-living amoebae (FLA) are cosmopolitan microorganisms known to be pathogenic to humans who often have a history of contact with contaminated water. Swimming pools and recreational waters are among the environments where the greatest human exposure to FLA occurs. This study aimed to determine the prevalence of FLA in swimming pools and recreational waters, through a systematic review and meta-analysis that included studies published between 1977 and 2022. 106 studies were included and an overall prevalence of FLA in swimming pools and recreational waters of 44.34% (95% CI= 38.57– 50.18) was found. Considering the studies published up to 2010 (1977 - 2010), between 2010 and 2015, and those published after 2010 (>2010 - 2022) the prevalence were 53.09% (95% CI= 43.33 – 62.73) and 37.07% (95% CI= 28.87 – 45.66) and 45.40% (95% CI= 35.48 – 55.51), respectively. The highest prevalence was found in the American continent (63.99 %), in Mexico (98.35 %) and in indoor hot swimming pools (52.27%). The prevalence varied with the variation of FLA detection methods, morphology (57.21%), PCR (25.78%), and simultaneously morphology and PCR (43.16%). The global prevalence by genera were *Vahlkampfia* spp. (54.20%), *Acanthamoeba* spp. (33.47%), *Naegleria* spp. (30.95%), *Hartmannella* spp. *I Vermamoeba* spp. (20.73%), *Stenamoeba* spp. (12.05%) and *Vannella* spp. (10.75%). There is considerable risk of FLA infection in swimming pools and recreational waters. Recreational water safety needs to be routinely monitored and, in case of risk, locations need to be identified with warning signs and users need to be educated. Swimming pools and artificial recreational water should be properly disinfected. Photolysis of NaOCl or NaCl in water by UV-C radiation is a promising alternative to disinfect swimming pools and artificial recreational waters.

Palavras-chave: Free-living amoebae, risk of infection, swimming pool, recreational waters

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