Risk Perception Bias and Self Reported Symptoms

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Biosketch

Dr. Jay Fleisher received a B.S. Degree in Environmental Health Science from the City University of New York, an M.S. in Environmental Science from the City University of New York, an M.S. in Epidemiology from Columbia University's School of Public Health, and a Ph.D. in Environmental Epidemiology /Biostatistics from the Institute of Environmental Medicine, New York University. Dr Fleisher holds facility positions at both NOVA Southeastern University and the Center for Research into Environment and Health, Leeds University (United Kingdom). Dr Fleisher's main research interest is in the spread of infectious illness via contaminated recreational / potable waters and has been active in this area for the past 20 years. The focus of Dr Fleisher's research has been in the health effects of exposure to waters contaminated with domestic sewage, indicator organism variability, indicator organism – pathogen relationships, risk assessment, statistical water quality sampling protocols, assessing compliance, setting of microbial water quality standards, population health burden assessment, risk perception, and risk vs current standards. Dr Fleisher has advised numerous international committees, organizations, and government agencies on various aspects of these recreational water quality issues. In addition Dr Fleisher authored over 35 peer reviewed publications and 5 book chapters dealing with these water quality issues.

Abstract

Background

Epidemiologic studies of water associated illness sometimes have to rely on self-reported symptoms of the outcome illness(es) under study. Individual participant's perception of risk, in theory, can affect the validity of self-reported symptoms.

Methods

The magnitude and effect of possible "risk perception bias" was evaluated as part of a series of randomized trials designed to assess infectious disease transmission via exposure to marine recreational waters with modest sewage contamination. All study subjects were blinded to both their individual indice of exposure and the outcome illnesses under study.

Results

Of the five outcome illnesses studied, the effect of "risk perception bias" only affected one: Skin Ailments. Although analysis of crude rates of skin ailments showed the exposed group (bathers) to be 3.5 times more likely to report skin ailments relative to the non-exposed (non-bathers), when the data was stratified by any perceived health risk of bathing in such waters, this association was shown to be spurious in nature. Bathers having pre-conceived notions of any health risk due to the exposure were 10.63 times more likely to report skin ailments relative to the unexposed (non-bathers) (95% CI 2.36-47.8, P = 0.0002), while bathers without any pre-conceived notion of risk were no more likely to report skin ailments relative to non-bathers (OR = 0.60, 95% CI 0.11-3.24, P =

0.71). Further stratification by exposure grouping showed bathers with pre-conceived notions of excess risk to be 4.78 times more likely to report skin ailments relative to bathers without any notion of excess risk (95% CI 1.04-21.86, P = 0.03), while among non-bathers those with pre-conceived notions of risk were 3.70 times less likely to report skin ailments relative to non-bathers without any pre-conceived notion of risk (95% CI 0.70-19.60, P = 0.10).

Conclusions

This study shows that "risk perception bias" can be strong enough to lead to spurious associations in the presence of self-reported symptoms, and should be controlled for in future epidemiologic studies of recreational water associated illnesses and other water associated environmental exposures where the use of self-reported symptoms cannot be avoided.