

10026-Risk of filarial infection among children in relation to parental infection – examining the role of bednet use and local endemicity

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Introduction: Lymphatic filariasis caused by *Wuchereria bancrofti* microfilaraemia is one of the important public health problems of tropical world including India with about 411 to 430 million people at risk and about 6.7% of them were microfilaraemic. In rural communities where disease may be more severe, many people do believe that the disease may be hereditary in nature, however scientific evidence to these observations vary based on area, methodology and endemicity levels.

Lammie et.al (1991) first published this observation on data from Haiti and revealed that children of mf infected mothers are 2.4-2.9 times more likely to become infected. Kumar (1997) however revealed that neither parents' filarial infection status may be closely associated with the mf infection status in children. He further suggested that such a relationship might have been due to synergistic effect (continuum of time of exposure) since Haiti is highly endemic for filariasis. Another study (Das et al.,1997) suggested no statistical significance in mf prevalence among children under 20 years of microfilaraemic mother or Father. Data from Brazil also suggested that maternal microfilaraemia may not be a risk factor for the occurrence of microfilaraemia in offspring (Braga et.al.,1998). However the study highlighted the role of the household environment in the transmission process. Present study thus attempted to examine the role of

bednet use and endemicity as local force of infection in examining the relationship of parental mf status with their children.

Material and Methods : Data for this are taken from a study undertaken by the Author in 3 districts of Orrisa during 1993-4. 40 villages from Khurda district, were selected using Proportion allocation and Systematic Random Sampling procedure (Kumar,1998). For comparison of mf prevalence, 8 villages from Puri and 12 from Nayagarh were also taken. From each village, a sample of 25 households was drawn using Systematic Random Sampling procedure and the whole family was attempted to examine for microfilaraemia by taking 20 cmm of fingerprick blood sample during 1900-2300 hours using standard procedures (Sasa,1967). Information on household characteristics and from individuals on bednet use, clothing etc was collected. In 60 villages surveyed, mf prevalence varied from about 1% to 24%. From these 60 villages, 1725 children from 778 families with known parental microfilaraemia status have been taken for this study.

Results : The offsprings of mf infected mothers are found to have higher risk (OR=2.7, 95%CI:1.2-6.1) when univariate relationship is examined. Similarly, Children were found to have significant risk in households where any adult >20 years was infected, who did not use bednets regularly and who lived in high endemic areas. However, when risk estimates are adjusted for the effect of bednet use, room density and Household infection among adults, children of mf-infected mothers were seen to have insignificant risk (OR=1.4, 95CI%: 0.7-2.5). Results were verified using data from households without mf-infected mothers.

Conclusion: Offsprings/Children of mf-infected mothers have almost similar risk of acquiring filarial infection as others. This is determined by local endemicity and personal protection measures as bednet use.

10122-Comparing environmental worry in 1996 and 2000 in environmentally related studies

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Aim was to evaluate an instrument for assessing environmental worry (EW) in patients and environmentally related surveys especially as far as applicability in present day (around the year 2000) was concerned. A list published by Bowler et al. in 1992, adapted for Germany by Hodapp et al. in 1996 was applied in subjects older than 16 years. Study group of 2000 (N=467) consisted of five subgroups: N=255 exposed to annoying residential odors of a large scale composting site, N=55 respective unexposed controls, N=59 environmental patients with chronic unexplained complaints and N=98 participating in a telephone interview on "environment and health". Of these N=24 subjects reported chemical sensitivity acc. to Kreutzer et al. 1999. Results were compared to a similar study (N=540) completed in 1996 in Düsseldorf. Considering all 1007 datasets it could be demonstrated that: female ($p<0.001$), lower school education ($p<0.001$), completing questionnaire by telephone versus self-completion ($p<0.001$), time of participation ($p<0.001$) was associated with higher scores in EW. Age ($p=0.748$) did not show a relevant influence. In a second analysis of variance subjects (N=467) of the year 2000 with a medical history of atopy ($p=0.219$) as well as presently "non-smokers" did not show higher EW scores ($p=0.586$). The above described five subgroups of the year 2000 differed in their general EW ($p=0.001$). Differences in subjects of the telephone interview between those reporting chemical sensitivity and those not reporting chemical sensitivity were found ($p=0.042$). As could have been expected general EW assessed by the questionnaire has decreased since the middle of the nineties. Mean scores were 9% lower comparing 1996 to 2000. When applying the questionnaire it has to be considered whether it is completed by study subjects themselves or in a telephone interview. Nevertheless it could be shown that the EW-list was presently still applicable as EW differed in subjects with and without self-reported chemical sensitivity. Specific residential odor exposure (due to waste industry) was not associated with higher EW. This being relevant as EW is often considered a bias in health studies concerning effects of industrial pollution on nearby residents. Surprisingly present environmental patients did not show higher general EW, as described in 1996. Lower EW in environmental outpatients of a university center nowadays might indicate that patient's environmental attribution is for them a comfortable way to explain their complaints. Their supposed environmental attribution allows them to not search for other explanations concerning their chronic unexplained complaints. It does not seem to result from true environmental worry.

10146-Risk Perception of Public and Environmental Risks in Santiago, Chile

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Almost all risk perception studies have been carried out in developed countries. In this work we characterize risk perception in Chile, based on the psychometric paradigm, exploring the difference between perceived social and personal risk, with emphasis on public and environmental risks. For this purpose, we conducted a survey including 54 hazards and 10 risk attributes, which included both global and local environmental risks, as well as several public risks. The survey was administered divided in four parts to 508 residents of Santiago, Chile. Using factor analysis, three main factors were identified, which accounted for 80% of the sample's variance: factor 1, commonly called "Dread Risk" in the literature, explained 37% of variance; factor 2, "Unknown Risk", explained 28%; and factor 3, which we called 'Personal Effect', explained 15% of the variance. The general results agree with the classical results of the literature: The comparison between perceived social and personal risks showed that individuals perceive that they are less exposed to risks and have more control and knowledge of them than the general population; and that they have more control over risks than the general population. The analysis for environmental risks showed some interesting results. As a group, environmental risk had the higher scores for both social and personal risk, followed by forbidden or addictive substances and natural disasters and social ills. However, for personal risk, the risks with higher scores were concentrated in environmental (5 risks), transport (2 risks), and natural disasters and social ills (2 risks). The highest score for personal risks corresponds to ozone layer depletion, followed by atmospheric pollution, motor vehicles and public transport. Only environmental risks and natural disasters and social ills have consistently high scores in both social and personal risk. When analyzed in terms of the attributes associated to the risks, environmental risks are perceived as relatively dread, with unknown effects for the exposed population (especially for greenhouse effect and ozone layer depletion), and with high personal effect (especially for ozone layer depletion and atmospheric pollution). The location of these risks in the 'hot' quadrants of the traditional factor space, may explain why Santiago's population perceives that atmospheric pollution has increased, or at best, is the same as 10 years ago, a belief in total contradiction with the objective ambient concentration measurements. These results can help the authorities to formulate risk communication policies, like air pollution episodes management, that can be more effective, by taking people's perceptions into account.

10459-Impact of socio-demographic factors on willingness-to-pay for a reduced future health risk

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Contaminated drinking water is an environmental problem characterised by a considerable delay between time of pollution of ground water and the ultimate presence of toxicants in drinking water. The delay in time differentiates this environmental problem from most previously published analyses of willingness-to-pay (WTP) and deserves special attention. Thus, the traditional discounting across generations in which we benefit now and leave the cost to the future is turned around in the present case, where investments must be made now in order to incur benefits in the future. Contingent valuation using WTP has been used increasingly to explore how people value different environmental problems or interventions. As the success of an environmental intervention depends on the compliance of the population at risk, it is important to know the extent to which specific socio-demographic factors and general risk attitudes affect risk perception. Thus, knowledge on socio-demographic factors affecting attitudes to and perception of risk is an important instrument in enhancing efficiencies of interventions. We evaluated whether socio-demographic variables affected attitudes to an environmental issue (securing future drinking water). An important aspect was the delay between time of environmental pollution and time of human exposure and thereby potential health risk. Gender, educational level, living in cities with more than 100,000 inhabitants, and age all influenced the extent to which individuals were willing to allocate present resources to alleviate a future problem. Specifically, people above the age of 50 appeared more reluctant to pay for an intervention against a future potential health threat. We found a significant coherence between attitude and WTP. In our scenarios, the WTP variable worked more as a dichotomous variable than as a continuous variable, stressing the importance and relevance of the WTP=0 answers.

10461-To do or not to do – risk perception, compliance, and prevention of soil exposure in children

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Lead and tar products are main contributors to soil pollution in many urban areas. The risk from exposure to these compounds in soil is highest in children as they are not only more susceptible to lead, but their outdoor behaviour often involves direct contact with soil. Prevention of exposure may imply soil remediation in cases with very high levels of soil pollutants in confined areas, but oftentimes the concentration of contaminants is lower, and the distribution more diffuse. Health authorities may handle the latter situation by informing institutions and parents about appropriate preventive measures to reduce exposure of children. The effectiveness of such preventive measures depends on parents reading the information and acting accordingly. Whether they do act will depend on how they personally perceive the risk from contaminated soil in absolute terms as well as compared with other everyday risks (relative risk).

Based on qualitative focus interviews, we developed a questionnaire, and 220 parents from an urban or a suburban area with diffuse lead contamination were interviewed. The themes covered by the questionnaire included general attitudes toward pollution, perception of environmental risks, specific knowledge on soil contamination at your own house, and preventive measures taken at home to reduce exposure of children to contaminated soil.

The majority of respondents saw air pollution as the single most important risk factor potentially affecting the health of their children. Eighty percent of parents answered that pollution was something that they thought about regularly. The main determinant for a positive risk behaviour concerning ecology as well as children's hand-wash was the extent that people thought about pollution in their everyday life. Thus, there was a clear and statistically significant trend that parents who generally thought more about pollution also had ecological food more often and that a higher proportion of their children got their hands washed before eating. Among parents who stated that their own garden was contaminated, 60% took measures against exposure of children.

This is positive in the sense that it is three times higher than reported from people living in areas presently regarded as uncontaminated, but never the less leave us with a group of 40% of parents that do not take any measures to reduce the exposure of their children despite living on contaminated ground. As this group of respondents did not deviate in socio-economic terms from the rest of our cohort, specific actions to increase compliance are difficult. Our qualitative data, however, suggests that increased compliance may be obtained if information on environmental pollution, i.e., contaminated soil, is given in personally, i.e., in a letter with your own name on the front, as such information is read and seen as more important than generally distributed information.

10597-CHARACTERIZING FISHING HABITS AND PCB-RELATED FISH CONSUMPTION KNOWLEDGE OF ANGLERS WHO FISH ALONG THE LOWER FOX RIVER

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The lower Fox River in east central Wisconsin is a popular fishing area for anglers and their families, but the presence of PCBs in the river has raised concern about the health risk of eating particular species of fish. The State of Wisconsin publishes a sport fish health advisory pamphlet recommending which fish not to eat due to high PCB contamination, but there is reason to believe that many anglers and their families, especially non-English speaking anglers, are not aware of the health risks of eating the contaminated fish. Results of a face-to-face survey administered from May 1999 to October 1999 to 104 anglers fishing at two different locations along the Fox River indicate that 17 percent of anglers eat some or all of the fish they catch and 83 percent practice “catch and release”. Asian anglers make up the largest group of those reported eating fish. The survey also characterized the anglers’ knowledge of the sport fish advisory and the sources where they acquire this information. Ninety five percent (95%) of the non-fish eating anglers reported they had heard or read about the health risks of eating fish caught from the Fox River. Of those 95% who heard about the risks, 87% reported that they were not aware of the pamphlet published by the State of Wisconsin, but acquired their information through other sources. Fifty percent (50%) of those who had reported eating fish had heard or read about the health risks, but almost all were not aware of the pamphlet and heard this information through other sources. Eating contaminated sport caught fish is thought to be the largest single environmental source of human exposure to PCBs. Research has shown that PCBs can be especially harmful to children and unborn babies. To address the gap in this lack of risk perception, a 12 minute video narrated in Hmong titled “Eating Safer Fish in Wisconsin,” and a sport fish health advisory brochure specific to the Fox River were developed.

ABSTRACT

10785-Title: Science's Role in Preventing and Reducing the Terror Associated with Terrorist Events

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The primary impact of the use of a radiological weapon in a terrorist event is the generation of terror. The actual health impact of these devices is minimal but the terror is significant. There is a significant amount of work planning for the mitigation of the physical impacts of the use of weapons of terror but little on the prevention and mitigation of what will be the most significant health impact – the generation of terror that is not commensurate with the medical risk. The prevention of terror requires a national strategy that is focused in three basic areas. First changing how science communicates. This involves fostering a fundamental change in how science communication is done by the scientific community. The scientific community has not adapted to the advent of the internet and the media interest in science and is unknowingly exacerbating terror. Second, fostering changes in how the media reports science. This is a daunting task that needs to be accomplished at the local level by individuals and at the national level by engaging independent organizations such as the National Academy of Sciences to develop guidelines for media reporting of science and guidelines for the intentional release of scientific papers to the media. Third, examining our relationships with other federal agencies, mainstream non-governmental organizations and identifying those areas that are generating distrust and fixing them. Fourth, fostering research into those areas where terror reigns (such as radiation exposure) whose objective is to find the keys to the discord between real risk and public concern. Our ultimate objective is to enable the communication of science in such a way that the concern generated in the public we serve is commensurate with our estimate of the risk. This requires more than just risk communication, it requires a change in how science is communicated.

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10827-waste management in Ireland. A qualitative study of the knowledge and attitudes of the public, industry and service providers

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Waste generated from commercial, industrial and domestic sources has been steadily increasing worldwide. Although accepted as one of the least desirable options for waste management, most Irish household and commercial waste is consigned to landfill, with a minor proportion being recycled. Current concerns about waste generation extend beyond those relating to disposal capacity. Landfill and thermal treatment have both been implicated as sources of environmental contamination and have both been associated with adverse human health effects.

Concerns about environmental exposures are often emotive. Public perceptions of health risks associated with the environment are not always in agreement with the perceptions of environmental professionals. Communication is a two way process and communication of risks in relation to the environment require an understanding of the knowledge and attitudes of the general public and special interest groups involved.

As part of a larger review of the health and environmental effects of landfill and incineration in Ireland, this study examined the knowledge and attitudes of service providers and members of the public to waste management options. Focus groups with members of the public and a series of semi-structured interviews with service providers were conducted. Topic guides were used to explore the following issues: (a) concerns in relation to current waste management practice in Ireland, (b) perceived risks from landfill and incineration, (c) sources of information, (d) level of involvement and control in decision making processes.

A total of 4 focus groups and 17 semi-structured interviews were carried out. The absence of an appropriate waste management infrastructure emerged as a considerable concern to both service providers and the public. An holistic approach was championed with the caution expressed that technology, in itself, would not offer adequate solutions. Lack of public ownership and confidence were seen as barriers to improvement. The respondents stressed the need for a major shift in behaviour and attitudes and the requirement to convince the population of the alternatives.

Ireland was seen to be at crisis point with regard to waste management policy and practice. A major cultural shift is necessary if any effective solution is to be found. One service provider highlighted that "one of our biggest challenges is to bring the public with us".

In conclusion, this study, which is the first of its kind in Ireland, demonstrates the great disparity in both knowledge and attitudes of the general public and service providers in the area of waste management. These highlighted differences will help to inform future waste management policy in Ireland.

10851-Beyond “I don’t know:” Responsible and effective strategies to communicate results of exposure assessment for endocrine disruptors to study participants and communities in a breast cancer study.

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Advances in environmental exposure assessment and environmental epidemiology often involve collection of environmental and biological samples for exposure assessment and for evaluation of the role of genetic polymorphisms. These methods carry with them a responsibility to report to individual study participants and communities on levels of contaminants and their health implications. This responsibility is particularly challenging in studies, such as the Cape Cod Breast Cancer and Environment Study, where the public is intensely concerned and previous research and public policy provide little guidance. The Cape Cod Study, now in its seventh year, is investigating whether breast cancer risk is associated with endocrine disruptors and mammary carcinogens from drinking water, pesticides, and certain consumer products. New exposure assessment methods using a geographic information system (GIS) yield comparisons of drinking water quality among 18 public water supplies since the 1970s and pesticide exposure estimates for every Cape address dating back to the 1950s. In addition, sampling of air, dust, and women’s urine yield results for about 90 hormonally active target compounds in 120 homes, including many compounds that have not been evaluated for health effects. Drawing on previous research in risk communication and public involvement, the study team developed a communications program that combines both traditional and innovative approaches to report study results. Elements of the program include these strategies: Working with a Public Advisory Committee that serves as a “focus group” to test communications and later to disseminate them; briefings for elected officials and activist leaders; proactive rather than reactive relationships with the news media; community “poster sessions;” a news magazine; a web site that received 350,000 hits last year; and direct mailings to study participants. Content for these outlets involves educating the public about the strengths and limitations of scientific methods, drawing evidence from multiple disciplines to provide context for study results, and acknowledging community outrage about involuntary exposures and frustration with scientific uncertainty. In addition to reporting findings from our own work, the study team evaluates possible benchmarks for comparison, including results from studies in other geographic regions and environmental regulatory guidelines, such as clean-up goals for Superfund sites. The US Centers for Disease Control Exposure Report is another valuable resource and model. In the Cape Cod Study, we reported household levels of some contaminants at concentrations that exceed US EPA Region 9 clean-up standards. Air sampling results parallel the US CDC report of surprisingly high concentrations of certain phthalates. We identified more than a dozen pesticides, including both banned (DDT) and current-use compounds, in a majority of homes. Scientists’ fears of being misunderstood or attacked in public forums will be addressed. Specific communications examples from the Cape Cod Study will be presented, so others can apply and build on these methods.

10887-Communicating Risk: A DoD Perspective

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This presentation explores critical aspects of communicating risk to populations potentially exposed to harmful substances. The Deployment Health Support Directorate within the Department of Defense initiated investigations of potential chemical, biological and environmental exposures experienced by Gulf War veterans and was responsible for communicating to the veterans and the American public the scientific associations between such exposures and adverse health effects. The various exposures included depleted uranium, pesticides, immunizations, chemical warfare agents and smoke from oil well fires. For the veterans, these were areas of high concern. DoD was viewed with low trust because of its failure to listen to the veterans immediately after the Gulf War and the legacies of previous veteran exposures to nuclear radiation and herbicide orange. Communicating scientifically technical risk information in terms that are understandable to non-technical people is a challenge.

The DoD investigations into possible exposures developed facts from interviews and Gulf War-related documents and used them as footnotes in the case narratives and full reports of the incidents of concern. It was important to present all information, even if its scientific significance was miniscule. With depleted uranium, the emotional concern was radiation, and it was critical to initially address the issue of contamination with transuranics in parts per billion in order to prevent the perception of covering up data. Communicating the risk in a way that results in an appropriate level of concern is the goal. If risk is perceived as too low, then populations may not take adequate protective measures when faced with such exposures, and funding for additional research may be imperiled. If risk is perceived as too high, then populations may develop anxieties from previous exposures or demand such agents be removed from use, and research dollars may be inappropriately directed outside the scientific peer review process.

Scientists influence the level of concern about environmental exposures when they communicate risk in professional publications, at scientific meetings, in press interviews or on the Internet. When communicating risk, it is wise to adhere to the medical professional dictum, "first, do no harm." It is important to target the risk communication message to the audience so that it is understood correctly. Communicating technical aspects to non-technical audiences requires understanding the other sources of information they use and incorporating supportive risk information from sources that they deem credible.

**10951-An Analysis of Risk Perception With Respect to Pesticide Exposure Within the
Farmworker Community of the Salinas Valley**
Nolan Cabrera, James O. Leckie, Stanford University

In 2000, the US Department of Labor ranked agricultural work the second most dangerous occupation nationally in terms of work-related injuries and death. Causes include farming equipment accidents, unpredictable farm animal behavior, and pesticide exposure. Of these factors, pesticide exposure is the least understood.

While many scientists work to quantify exposure, farmworkers can be empowered through pesticide education that is manifested in safer behavior. However, there are many barriers to this becoming a reality. Farmworkers in California average eight years of schooling, the majority are monolingual Spanish-speakers, and they have limited information sources regarding pesticides. Thus, farmworkers face numerous obstacles to effective pesticide exposure risk communication, and this impedes their risk perception formation.

To examine how these issues affect the farmworker community, a questionnaire containing 95 primarily quantitative questions was administered to 50 Salinas Valley participants during the summer of 2001. Of the respondents, 27 were male, 23 were female, all had experience working in the fields, and they represented an older sector of the farmworker population because minors were not interviewed. The questionnaire posed three fundamental questions:

1. How risky do farmworkers understand pesticide exposure to be?
2. How do farmworkers arrive at these conclusions given their respective education levels and amount of information accessed on the subject?
3. How are farmworkers' perceptions of risk manifested in terms of behavior?

Recruitment of participants occurred using social networks through a local health clinic, the Center for Health Assessment of Mothers and Children of Salinas, California Rural Legal Assistance, and farmworker educational meetings.

The first section of the questionnaire asked farmworkers how risky they understood a series of activities to be on a 1- 10 scale (10 representing high risk and 1 representing minimal risk). Within a set of 20 behaviors, pesticide exposure ranked second behind drinking and driving with an average score of 9.46. One contributing factor to this high perception of risk was the information network in which the informants were immersed.

All recruitment areas for this study are locations where people can learn about pesticides (e.g., legal rights with respect to pesticide exposure). Of the respondents, 78% reported using alternative sources of pesticide exposure information such as newspapers, radio, health clinics, friends, family, and legal aid, while only 50% cited the grower. Consequently, 80% of the respondents identified, through open-ended questions, at least one possible effect of acute poisonings and 78% identified at least one possible outcome of chronic poisonings.

This sector of the farmworker population has the required perception of pesticide exposure risk necessary to mitigate this risk in the workplace. While risk perception does not dictate behavior, it can definitely influence it. Thus, one of the three main questions of this study remains unexplored. How are these understandings of pesticide exposure manifested in terms of behavior? While the questionnaire touched upon this subject, the results were not statistically significant.

11056-Communicating Contaminants in Cross-Cultural Environments

Carole Mills, Contaminants Division, Department of Indian Affairs and Northern Development

One of the largest challenges of contaminants research is the effective communications of contaminants data to the people most impacted by the information. For Arctic Canada this would be Indigenous peoples. Technical messages must be made understandable, interpretable, accurate and consistent. Adding complexity to the issue is the fact that contaminants data is focused on traditional foods that provide not just nutritional benefits to Indigenous peoples, but also spiritual, social and economic benefits. This presentation will focus on how to communicate information and research results, particularly the following topics: traditional food, indigenous peoples' relationship to animals, communications model, northern contaminants program practices, examples of good communications materials, advisories on traditional foods, examples of past advisories, practical advice for giving presentations in communities. The Northern Contaminants Program (NCP) of Canada has 10 years of experience in delivering messages in cross-cultural environments. NCP recognized that in order for research to be useful it must be understood. NCP has incorporated principles of good communications into its program in many ways from the review of proposals, the type of projects funded to the delivery of results. This presentation will allow others to benefit from NCP's past experiences.