One Century of the Discovery of Arsenicosis in Latin America (1914–2014) – Litter, Nicolli, Meichtry, Quici, Bundschuh, Bhattacharya & Naidu (Eds)
© 2014 Taylor & Francis Group, London, ISBN 978-1-138-00141-1

Diversity and trustworthiness of information sources on environmental contamination and risks of exposure to As in Paracatu, Brazil

F. Mertens, R. Távora & M. Alves
Centro de Desenvolvimento Sustentável, Universidade de Brasília (CDS/UnB), Brazil
Brazil Community of Practice in Ecohealth, Latin America and Caribbean (CoPEH-LAC), Brasília/DF, Brazil

Z.C. Castilhos
Centro de Tecnologia Mineral, Ministério da Ciência, Tecnologia e Inovação (CETEM/MCTI), Rio de Janeiro, Brasil
Brazil Community of Practice in Ecohealth, Latin America and Caribbean (CoPEH-LAC), Brasília/DF, Brazil

ABSTRACT: The largest gold mining activities carried out in Brazil are located in the city of Paracatu, Minas Gerais State. This gold mining may be an important source of arsenic in the environment and might put the population at risk from water consumption and through inhalation. The objective of this study is to analyze the level of awareness of the Paracatu population regarding As issues, as well as to identify the sources of information on the topic and the level of trustworthiness of these sources. Data were collected using face to face interviews, carried out in Amoreira (n = 251) and Paracatuzinho (n = 214), located close and far (few kilometers) away from the gold mining area, respectively. Information sources included Internet, newspapers, television and radio, as well as interpersonal communication. The results have implications regarding the development of communication strategies to promote the diffusion of information on As issues and the implementation of interventions.

1 INTRODUCTION

The largest gold mining activities carried out in Brazil are located in the city of Paracatu, Minas Gerais State. This gold mining may be an important source of Arsenic (As) in the environment and might put the population at risk of exposure from water consumption and through inhalation. In response to these potential threats, an interdisciplinary team of researchers and decision makers teamed up to address As environmental contamination and risk of exposure to the human population of the city. The present study is part of the research project "As environmental contamination and human health risks assessment in Paracatu-MG", which has been coordinated by several Brazilian institutions: CETEM/MCTI, IEC, UFF, UNICAMP/FCM, FIOCRUZ, TECSOMA, CDS/UnB and CoPEH-LAC.

As this interdisciplinary project is aimed at generating a diverse set of results regarding the environmental and health aspects associated to As contamination and exposure, a research component was included in order to guide the development of communication campaigns directed toward the population of Paracatu, in collaboration with local governmental institutions. In order to achieve this goal, it is important to diagnose which information on As issues are available to the population and which are the more efficient channels of diffusion (George *et al.*, 2013). The objective of the present study is to analyze the level of awareness of the Paracatu population regarding As issues, as well as to identify the sources of information on the topic and the level of trustworthiness of these sources.

The expected results have implications regarding the development of communication strategies to promote the diffusion of information (Mertens *et al.*, 2012) on As issues and the implementation of interventions to reduce environmental contamination and risk of exposure.

2 METHODS/EXPERIMENTAL

Data were collected using face to face interviews, carried out in two neighborhoods linked to the Health Family's Assistance Program, Amoreira (n = 251) and Paracatuzinho (n = 214), located close and far (few kilometers) away from the gold mining area, respectively. Specific questionnaires were used to gather information on: a) individuals' knowledge about As environmental sources, toxicity and health effects; b) sources of information on

As issues most accessed by individuals; c) level of trustworthiness of each information source and d) size and composition of personal discussion networks on As issues.

3 RESULTS AND DISCUSSION

In our sample, there is a higher percentage of people aware of the potential health effects associated to environmental exposure to As in the neighborhood of Amoreira (65.7%) than in the one of Paracatuzinho (49.3%). Regarding information sources, overall, 8.4%, 17.9%, 19.9% and 18.3% of the people who were enquired in Amoreira and 6.1%, 11.2%, 15.0%, 18.2% in Paracatuzinho received information on As issues through the Internet, newspapers, television and radio, respectively. The most trusted source of information was the Internet (71.4%) in Amoreira and television (87.5%) in Paracatuzinho.

Furthermore, the mapping of personal discussion networks on environmental and health aspects associated to As issues revealed that a significant percentage of individuals, 38.6% in Amoreira and 17.3% in Paracatuzinho, used to have conversations on these themes with other people, including family members, friends, neighbors, co-workers, members of associations and health agents. Interpersonal relations were considered as the most trusted source of information regarding the issue in the Amoreira district (92.8%), where more people were concerned about the possible health effect associated to As exposure.

4 CONCLUSIONS

Based on the present results, we suggest to consolidate an Internet platform that will present goals, methodology and results of the research and to design television campaigns to communicate the main findings of the project.

The next step will be to further analyze the composition of personal communication network to identify potential opinion leaders on As issues in both neighborhoods. Indeed, the involvement of key individuals in technical workshops to present and debate the research results may have the potential to enhance the diffusion of information regarding As, as a first step toward promoting behavior changes to lower risk of exposure (Valente & Davis, 1999).

These strategies might be carried out in combination and associated with the involvement of local government stakeholders, in order to achieve an increase in local awareness about As environmental contamination and health risks. This approach may also be used as a model for other research projects on mining sites, including abandoned mining sites.

ACKNOWLEDGEMENTS

We thank the UnB´students: Juliana F. de Assis, Lucas V. da Silva, Marcela D. Britto, Marina C.de M. Alves and Sheila L. da Silva for their contribution in collecting field data.

REFERENCES

George C.M., Factor-Litvak, P., Khan, K., Islam, T., Singha, A., Moon-Howard, J. van Geen, A. & Graziano, J.H. 2013 Approaches to Increase As Awareness in Bangladesh an evaluation of an As education program. *Health Education & Behavior* 40: 331–338.

Mertens, F., Saint-Charles, J. & Mergler, D. 2012. Social communication network analysis of the role of participatory research in the adoption of new fish consumption behaviors. *Social Science and Medicine* 75: 643–650.

Valente, T.W. & Davis, R.L. 1999. Accelerating the diffusion of innovations using opinion leaders. *The Annals of the American Academy of Political and Social Science* 566: 55–67.