

## 9 Diffusion of environmental health information: the role of sex- and gender-differentiated pathways

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This chapter presents what we regard as critically important aspects of incorporating sex and gender into environmental health research and interventions. The ideas presented here are based on our research on the diffusion of new knowledge and practices regarding health problems associated with environmental contaminants in Latin America. Our research adopts an ecosystem approach to health. Regarded as a milestone in public health in Canada (Webb et al., 2010), this approach has emerged over the past few years in response to the complexity of the numerous problems in which health and the environment are intertwined. Gender equity is one of the pillars of this approach, which calls for the incorporation of sex and gender into research and interventions. We use the expression sex/gender to refer to both the biological and social differences between men and

women, given the difficulty in distinguishing between these differences (Messing, 2007).

In our research we have tried to better understand the role of sex/gender in the diffusion of information and the adoption of practices that promote health. Two of our studies are particularly interesting in this regard: one on the adoption of new dietary practices to reduce exposure to mercury in the Brazilian Amazon (Mertens, Saint-Charles, Mergler, Passos, & Lucotte, 2005), and the other on the adoption of behaviours to help reduce exposure to pesticides among farmers and their families in Costa Rica (Rioux-Pelletier, Saint-Charles, Barraza, & van Wendel de Joode, 2009). We used mixed methods in both studies that included social networks analysis and content analysis from interviews and discussion groups.

Men talk about sports . . . Women talk about clothes . . .

Men talk about sports, and women talk about clothes—or at least, that is a common stereotype reflecting the idea that men and women have diverging interests (Bischoping, 1993). In fact, it is common to regard subjects discussed with one's own sex/gender as important and those discussed by another sex/gender as trivial (Bischoping, 1993; Alder & Proctor, 2011).

Our research led us to a conclusion consistent with these observations: In any given social context, women and men are, indeed, most concerned with those interests and areas of expertise that are commonly regarded as specific to their sex/gender. This phenomenon has influenced the diffusion and adoption of new health practices. We found that individuals might not feel very concerned, as women or as men, by certain subjects involving the interests and areas of expertise associated with the other sex/gender. Given this finding, we attempted to answer three questions as follows.

How do sex and gender affect the diffusion of health information?

Individuals establish and develop their relationships on the basis of perceived similarities (homophily) (Rogers, 2003), which may be expressed through various characteristics, such as age, ethnicity, sex/gender or similar values and behaviours (McPherson, Smith-Lovin, & Cook, 2001). Regarding the

diffusion of practices that promote better health, the behaviours of men and women can therefore be expected to be more strongly influenced by members of their own sex/gender. Moreover, actual and perceived divergences associated with sex/gender strengthen the tendency to prefer same-sex/gender discussion partners, thus creating differentiated diffusion pathways.

By distinguishing sex/gender in our analysis of relationship structures, we observed that discussions about the issues we were examining occurred mainly between members of the same sex/gender. We were therefore in the presence of two different diffusion networks, differentiated by sex/gender. Consequently, any intervention that does not recognize these differentiated diffusion pathways might inadvertently concentrate information within networks based on similarity. The extent to which access to information is limited to one sex/gender reduces the likelihood of reaching the entire community. Thus, failure to account for the differences in diffusion pathways according to sex/gender might increase distances and inequities between men and women, particularly with regards to health.

## **TO PROMOTE EQUITY**

IN THE DIFFUSION OF HEALTH  
INNOVATIONS IT IS IMPERATIVE TO  
CONSIDER SEX/GENDER-DISTINCT  
DIFFUSION PATHWAYS.



How do sex and gender affect the adoption of new practices that promote health?

One of the primary objectives of research and interventions based on an ecosystem approach to health is to reduce health risks. The methods used to achieve this objective often include the promotion and adoption of new practices by members of the communities concerned. The adoption of a new practice is a complex process that takes time and that is affected by the structure of the community's social networks, the characteristics of these new practices and the characteristics of the individuals concerned (Rogers, 2003; Kincaid, 2000; Valente, 2010).

When we examined the sex/gender-differentiated networks in our study communities, we found that men and women could have different opinion

IT IS IMPORTANT TO ACCOUNT FOR THE DIFFERENCES IN INTERESTS AND EXPERTISE THAT ARE ATTRIBUTED TO MEN AND WOMEN **IN A GIVEN SOCIAL CONTEXT.**



leaders. Opinion leaders are people who can reach and influence a greater number of people within a relational network (Valente, 2010). As a result, we observed that because of the perceived interests and expertise of women and men in a given subject area, the opinion leaders in the global network might be men in some cases and women in others. In our research in the Brazilian Amazon, we found that because of women's significant involvement in issues of health and diet they tended to play a central role in the discussion network on a community-wide scale and tended thereby to favourably influence the introduction of new practices in this domain. Meanwhile, some of the men, who opposed the new practices, were opinion leaders in the men's network—a phenomenon that impeded the diffusion of the new practices in men's networks. We observed a similar phenomenon in Costa Rica, but with the opposite pattern. Because the issue of pesticides is of greater concern to men, the diffusion network was less effective in reaching women. Women therefore had more limited access to information about pesticides and little tendency to adopt protective behaviours. Lastly, in the Amazon, we found that in terms of promoting health practices, those women who adopted new practices acted as intermediaries by linking the men's and women's networks, through their spousal relationships.

In short, any failure to consider the differing information diffusion networks—in this case shaped by sex/gender roles in the community—with regard to the subject of a study or intervention may cause problems in diffusing new practices and may obstruct the flow of information within the community.

How do spousal relationships affect the diffusion and adoption of health practices?

Since the heterosexual couple relationship served as an important link between the women's and men's networks in the communities we worked with, we also examined intra-relationship interactions. In the Amazon, we

observed that men who regarded their spouses as discussion partners were more likely to adopt new health practices. In Costa Rica, the importance of the spousal relationship in the diffusion pathway was revealed by the impact of its absence. In the Costa Rican study, both women and men rarely perceived their spouses as partners in the discussion on pesticides and the health risks that they pose, even though the protective behaviours adopted by any individual are likely to affect his or her household as well. Thus, most people participating in our research did not know whether their partners had adopted any protective behaviours or what protective behaviours they had adopted. The lack of discussion between spouses about the problems posed by pesticides worked against the diffusion of new health practices.

To sum up, even if diffusion pathways develop preferentially through relationships among people of the same sex/gender, interactions between men and women are essential for the diffusion of new health practices. We therefore believe it important to consider sex/gender in planning any research or intervention, inasmuch as discussions between men and women contribute to expanding the pool of knowledge for all and, in the case concerned here, to the adoption of healthier behaviours.

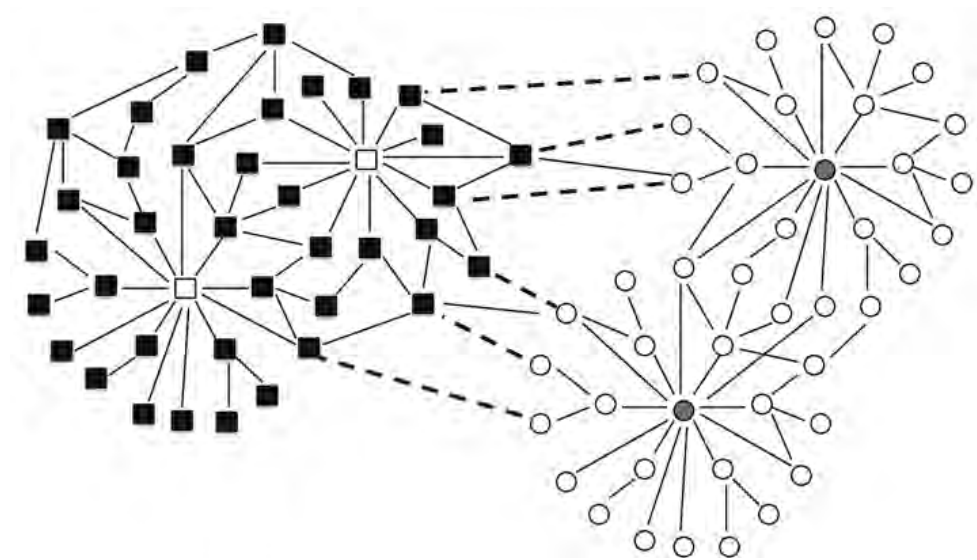
#### Conclusion: lessons learned

We believe that the lessons we have learned about considering sex/gender in our research can be helpful for other studies on the diffusion of innovations in the fields of health and the environment.

By applying an approach that included network analysis, we concluded that diffusion pathways are distinct according to sex/gender. To promote equity in the diffusion of health innovations, we hope that this lesson will encourage health actors to consider the diversity of the structures of relations between men and women. It will also be important to consider other potential pathways differentiated according to other aspects of identity, such as age, ethnicity and occupation, and how these intersect with sex/gender pathways.

Environmental health issues affect many aspects of people's lives. For example, the problem of mercury contamination in the Amazon affects not only human health and diet, but also fishing and agriculture. Integrating sex/

gender provided an additional perspective on the complex interplay among health and environmental issues, by underscoring the role of various opinion leaders and of communication patterns between men and women. In particular, the concept of differentiated diffusion pathways convinced us of the importance of taking into account sex/gender as a structuring factor in diffusion and health research. Our research also taught us the importance of considering the differences in interests and expertise that are attributed to women and men in a given social context. When examining sex/gender, we wish to stress the need to explore knowledge diffusion networks within specific social contexts without a preconceived notion of what is (stereo) typically feminine or masculine. The differentiated diffusion pathways for men and women also point to the importance of identifying places where sharing can take place. Places where men's and women's discussion networks can connect are essential for the diffusion of health and environmental knowledge and practices. We illustrate these lessons learned in Figure 9-1.



**FIGURE 9-1** Network model of sexed/gendered knowledge diffusion pathways. Men (square) and women (circle) form densely connected subgroups, concentrating information in networks of similarity. Opinion leaders are men (blank square) and women (grey circle) with large numbers of connections and constitute same-sex/gender sources of information. The connections between the men's and women's discussion networks—the majority of which are formed by conjugal links (dotted line)—illustrate the importance of sex and gender relations for the diffusion of health and environmental knowledge and practices.

In research or interventions aimed at the adoption of healthier behaviours, integrating sex/gender-related issues makes it possible to better identify persons who could encourage diffusion and influence the pace of diffusion as well as the inclusion of certain groups or individuals. Moreover, considering sex/gender also leads us to examine whose interest is most readily elicited according to how the subject of the research or intervention is formulated and presented to members of the community.

In addition, our research raises ethical reflections on the impact of interventions that are likely to reinforce or modify existing relationship structures between men and women. Indeed, since diffusion pathways are different for men and women and sharing of knowledge among women and men seems to contribute to the adoption of healthier behaviours, two strategies for initiating a process of diffusing new knowledge or practices can be envisaged. The first would be to build on the structure of the network already in place, by working to follow and therefore reinforce different diffusion pathways for men and for women. The second would be to encourage men and women to discuss health problems and issues together, especially within the context of the spousal relationship.

## THE **LINKS BETWEEN WOMEN'S AND MEN'S**

DISCUSSION NETWORKS APPEAR TO BE ESSENTIAL FOR THE DIFFUSION OF HEALTH AND ENVIRONMENTAL KNOWLEDGE AND PRACTICES, IN PARTICULAR WITHIN SPOUSAL RELATIONSHIPS.



## QUESTIONS TO CONSIDER

- ① How do sex and gender affect the diffusion of health information?
- ② How do sex and gender affect the adoption of new practices that promote health?
- ③ How do couple or spousal relationships affect the diffusion and adoption of health practices?

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