

How do researchers influence decision-makers? Case studies of Mexican policies

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Though the problems translating or applying research in policy-making are legion, solutions are rare. As developing countries increase their capacities to develop effective local solutions to their health problems, they confront the research/policy dilemma. Yet few descriptive studies of research–policy links can be found from developing countries, and the relevance of European and North American models and data is questionable.

We report the results of a descriptive study from Mexico of the relationship between health research and policy in four vertical programmes (AIDS, cholera, family planning, immunization). We interviewed 67 researchers and policy-makers from different institutions and levels of responsibility.

We analyzed interviewee responses looking for factors that promoted or impeded exchanges between researchers and policy-makers. These were, in turn, divided into emphases on content, actors, process, and context. Many of the promoting factors resembled findings from studies in industrialized countries. Some important differences across the four programmes, which also distinguish them from industrialized country programmes, included extent of reliance on formal communication channels, role of the mass media in building social consensus or creating discord, levels of social consensus, role of foreign donors, and extent of support for biomedical versus social research.

We recommend various ways to increase the impact of research on health policy-making in Mexico. Some of the largest challenges include the fact that researchers are but one of many interest groups, and research but one input among many equally legitimate elements to be considered by policy-makers. Another important challenge in Mexico is the relatively small role played by the public in policy-making. Further democratic changes in Mexico may be the most important incentive to increase the use of research in policy-making.

Introduction

Many believe that bridges should be built between research and policy. Such beliefs are visible in terms like ‘informed choice’, ‘rational policy’, and ‘considered decision’. But knowledge is often lacking about where bridges should be built, how, or by whom. In fact, many efforts to build bridges between research and policy have suffered from unrealistic predictions of traffic volume, poor or misleading traffic signs and signals, and ignorance of drivers’ motivations and decision-making processes. The problems are known (see, for example, Stocking 1995; Weiss 1979, 1980). Researchers are often unprepared or unwilling to communicate their results to the public or to decision-makers; they expect that publication of results in scientific journals is sufficient to bring them into eventual use. Policy-makers, on the other hand, sometimes need unequivocal and rapid research, or want final answers (or cover for their decisions), not predictable conclusions that ‘more research is needed’.

Though the problems are known, their solutions are not so clear. In fact, a review of literature on the use of research in health policy offers a few surprises. First, much of the best

work on research and policy has been undertaken in the education sector, with a few notable exceptions (e.g. Walt 1994; Davis and Howden-Chapman 1996). Second, few studies describe how researchers and policy-makers themselves talk about their (actual or potential) relationship. Finally, developing countries have produced few descriptive studies of research–policy links. One review even concluded that ‘... systematic research on the use of technical information by policy makers in developing countries has yet to be undertaken’ (Porter 1995: 3).

This lack of data is critical considering the resources now being invested in building ‘essential national health research’ capacities (Commission 1993) to assist developing countries to find appropriate solutions to their health problems. Even policy researchers in industrialized countries have called for additional descriptive studies and less typologizing (Bulmer 1987: 20), and for more careful analyses of policy processes (Walt 1994a, 1994b; Walt and Gilson 1994). Unfortunately, however, while in the United States and Western Europe the points of entry for research into the policy process are relatively clear, or at least well-researched, we do not have an equivalent understanding for those who seek to increase the

use of research to guide policy-making in developing countries. Can full advantage be taken of applied research if the process of applying research results itself is not understood? How relevant to developing countries *are* European and North American models of the relationship between research and health policy?

To address these issues we undertook a descriptive study of the relationship between health research (and researchers) and health policies (and policy-makers) in four vertical health programmes (AIDS, cholera, family planning, immunization) in Mexico. The principal objectives of the study were to reconstruct the processes through which research was used to make decisions and policies; to characterize these processes; and to identify the elements that enable or impede the transfer of research results. This article summarizes the main findings of the research; detailed reports will be available in a Spanish-language book.

Background

Many attempts to apply research to policy have suffered from unrealistic expectations, unclear definitions, and a lack of comprehension of the policy-making process. Studies reporting low rates of utilization of research have been criticized for using narrow definitions of utilization, and for paying too little attention to actual decision-making processes (Patton et al., 1977: 144). Policy-making is commonly understood as a series of decisions made by an identifiable person or set of 'decision-makers', who are charged with this responsibility. Yet studies of decision-makers show that most do not feel they make decisions at all; their work processes are filled with compromise and referral more often than rational choice based on evidence (see Weiss 1980: 395–7). Studies also show that there is rarely a single decision-maker who is charged with making a specific decision (Lindblom 1986: 353; Lynn 1978: 15–16). In our study, for example, a Mexican decision-maker referred to policy influences outside of government: 'The decisions made in our Program are not solely the decisions of government; there are other levels of decision-making.'

We define *research* as a structured process of collecting, analyzing, synthesizing, and interpreting (explaining or describing) data to answer theoretical questions not visible in the data themselves. Research is also a structured form of communication to share knowledge, which is the combination of data and theory. Research can be distinguished from monitoring, the collection of data to indicate the state of some underlying process. Monitoring produces information but not knowledge. We define *policies* as governmental or organizational guidelines about allocations of resources and principles of desired behaviour. Many individuals who might be called 'policy-makers' prefer to view themselves as 'decision-makers', actors in a decision-making process. Because we are most interested in this paper in the use of research for policy-making, we will continue to use the term *policy* when we want to refer to decisions with governmental or institutional weight behind them.

The decision-making process is misunderstood by researchers and by research analysts in part because policy is affected by

multiple forces other than research. Achieving agreement about guidelines and principles is by definition a political activity, because it requires finding a balance among competing forces. (For this reason, a Mexican policy-maker in our study defined policies as 'the re-channeling of existing rivers'.) Empirical data from researchers are only one small force among many, and therefore do not and cannot have the weight outsiders – especially researchers – might want them to have. For example, a recent article on public health policy stated: 'In the absence of scientists' involvement in the policy-making process, policymakers are likely to rely more heavily on vested interests (e.g., the tobacco industry), which may not have the public's health as their primary motivation' (Brownson et al., 1997: 738). By implying that scientists are not 'vested interests', and by claiming the moral high ground for science, this perspective can hinder the participation of researchers in policy-making. Claims of special status for science create rapid protest from other interest groups.

Many research results DO influence decisions, but this influence is sometimes unpredictable, and often broad or diffuse. In fact, the notion of influence itself needs to be better conceptualized. Weiss, for example, a researcher in evaluation and in educational policy, proposes that evaluation research makes a difference when it *warns* about problems, *guides* actors toward better and worse choices, *reconceptualizes* familiar problems in innovative ways, or *mobilizes* support for proposals (1988: 15–17). As a government health official in Mexico put it to us in an interview: 'Research is, for purists, the generation of new knowledge, but what is needed for decision-making is the organization of knowledge in such a fashion that its very ordering allows us to see options.'

Weiss has described seven general models of how research is used to formulate policies or guide decision-making (Weiss 1979). These can be summarized within three basic approaches. The *rational* approach includes what Weiss calls 'knowledge-driven' and 'problem-solving' models. This approach represents the conventional thinking of researchers (and many others): the policy process is inherently rational; participants in the process will use research if it exists; and they will commission research if a decision requires it. Two other models proposed by Weiss (the 'political' and the 'tactical') can be grouped into a *strategic* approach to making policy. This approach conceives research as ammunition to support predetermined positions or to delay decisions. The other three models proposed by Weiss ('interactive', 'enlightenment', and 'intellectual pursuit') can be grouped into an *enlightenment or diffusion* approach which emphasizes that both research and policy-making take place alongside other social processes. Research is sought from, and emerges from, many sources, and plays a role in sensitizing policy-makers to the presence of problems as well as an informative role in presenting solutions.

These models are useful in highlighting the range of uses of research in policy. They tell us little, however, about the policy-making process, and are too abstract to facilitate close comparisons among sites or policies. For this we need to refer to analytic categories suggested by Gill Walt and Lucy Gilson (1994: 354), who wrote that 'much health policy wrongly

focuses attention on the *content* of reform, and neglects the *actors* involved in policy reform . . . , the *processes* contingent on developing and implementing change and the *context* within which policy is developed' [emphasis in the original]. These categories of content, actors, process, and context are also relevant to understanding the specific contributions of research to the formulation of policies, and we will present our findings within these categories.

Figures 1 and 2 represent these analytic dimensions. Actors and context are emphasized in Figure 1, which maps some of the influences on research and policy-making. The largest circles represent the State and civil society, areas that partially overlap. Various interest groups, represented by the smaller circles, act to influence policies, and researchers are only one among these many groups. Interest groups and decision-makers exert mutual influences. The public policies that are the focus of this research study are under the control of public decision-makers, located in the overlapping space between the State and civil society. (But note that other policies not examined by this research, such as private hospital medication purchase policies, or insurance company decisions to reduce the cost of coverage for non-smokers, would be located exclusively in the domain of civil society.) Some interest groups like the church or private industry belong exclusively to civil society. Some, like Health Ministry personnel or legislators, belong to the State, while others, like researchers in State-sponsored research institutes, belong to both.

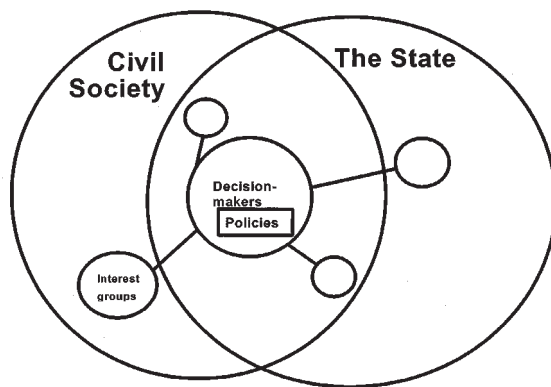


Figure 1. A map of actors and context surrounding research and policy

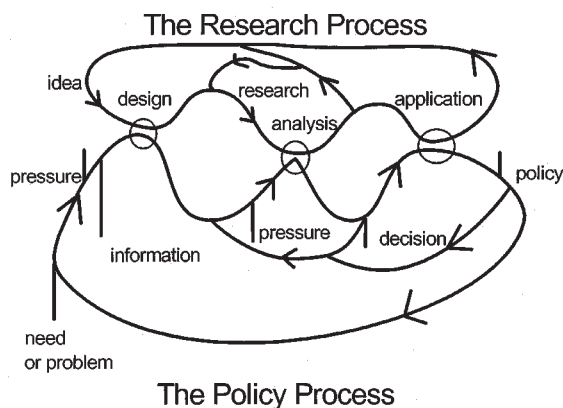


Figure 2. A diagram of the research and policy processes

Figure 2 emphasizes the dynamic relationship between processes of research and policy formation. These two processes usually take place independently, but they can meet at various moments, symbolized by the small circles. These possible contacts between the two processes are moments of opportunity for the participants in each process to learn from or contribute to the other. The main challenge in applying research to policy consists of learning to create or recognize these moments of opportunity, and then acting efficiently to take advantage of them.

Starting at the left side of Figure 2 and continuing counter-clockwise, the research process includes phases of idea generation, design, data collection (here labelled research), analysis, and application. Because research results create new ideas and new research projects, one pathway in the Figure returns to these prior stages while another moves to research application. Research application also yields new research ideas and designs.

The policy process is represented in similar fashion, starting at the left side of Figure 2 in a clockwise direction. When needs or problems arise that might be resolved through policies, information about those needs and problems is collected or presented from different sources. Interest groups exert pressure at various stages: they influence what types of needs are recognized and which are ignored; they influence what types of decisions are made, and what types of policies emerge. As in the research process, some pathways return to information gathering before policies are made. Some decisions cause a search for additional information and new negotiations, while other decisions yield policies. New policies ultimately create new interest groups and new policy challenges.

These figures oversimplify the complex relationships and multiple actors influencing research and policy. We provide them nonetheless to illustrate the differences between maps of actors and context on one hand, and diagrams of processes on the other.

Methods

In mid-1994, we selected four priority health topics (family planning, AIDS, immunization, and cholera) where we knew there was at least some interaction between researchers and decision-makers. These four were also vertical programmes in the Mexican Ministry of Health. As part of the negotiations over the pending North American Free Trade Agreement, the Mexican legislature passed a '*Ley de Metrología y Normalización*' in July 1992. That 1992 law required that all existing government regulatory norms expire by the end of 1993, but allowed new '*Normas Oficiales Mexicanas*' (NOMs) to be produced that would describe the types of administrative and technical procedures that State agencies should follow. (We translate *Normas* roughly here as 'norms', though they have more political force than the English word suggests.) These norms were to be completed by the end of 1993, and were to be adapted to the regulations of the other NAFTA cosigners, Canada and the United States.

The 1992 law also established rules governing how the new norms were to be designed, reviewed, and disseminated. Any government unit designing a new norm had to include all the other government units that might be influenced by that norm, as well as relevant organizations from civil society and the academic community. Once consensus was reached about the content of the new norm, it was published in provisional form and 90 days were allotted for comments, critiques, and additions. In the case of the *Normas Oficiales* for Family Planning and AIDS, substantial changes were made to the provisional norms during the 90-day comment period. The new version was then published in the '*Diario Oficial del Gobierno de México*' as a new NOM.

This provided us with an excellent chance to focus our study on concrete interaction, because of the required explicit consultation with members of the academic community and social organizations, and because the norms were available as published documents. We also looked at examples of educational or behaviour change outreach campaigns each ministry programme undertook. While examining the norm was likely to let us look at the use of biomedical and health services research, the campaigns were more likely to have used results from social research.

Some differences among the programmes made them especially attractive: a) family planning and immunization were relatively old programmes, while AIDS and cholera were more recent; b) immunization and cholera programmes were socially accepted and supported by many groups, while family planning and AIDS programmes were more controversial and factionalized; and c) AIDS and cholera programmes were based on emergency responses to new or re-emerging infections, while family planning and immunization programmes were based on new technological responses to old and familiar concerns.

Our sample of existing government programmes does not represent a complete range of areas where Mexican health policy is formed or where health research might make a difference in decision-making. The very existence of these vertical programmes implies some level of consensus that they merit attention by both researchers and decision-makers. One of our informants argued that 'Communication between researchers and decisions-makers began in this area 22 years ago, when the family planning programme was approved. When the government said, 'This is going to be done.' That was the important decision made.' Thus this study of four vertical programmes in Mexico represents relatively optimal conditions for seeing interaction between research and decision-making, and its findings must be taken as a kind of 'best case scenario' for Mexico.

Our methods of in-depth interviewing allowed us to reconstruct processes and depict nuances of each case. Between November 1994 and June 1995, local experts in each topical area interviewed a total of 67 researchers from different institutions and officials from different levels and hierarchies. They reviewed the norms, did extensive documentary research, and produced the four case studies summarized here. Following completion of the case studies, the results

were reviewed with additional researchers and government officials. Interviewers used a common set of interview guidelines. All but two interviews were taped and transcribed. Where interviewees refused to be taped, careful notes from the interviews were used instead.

The following sections first summarize some of the common factors across the programmes that promoted and impeded the use of research results. Then they describe some of the differences among the programmes, and finally present some applied ramifications of this type of research in Mexico. Our findings are based primarily on the comments of individuals. They therefore represent perceptions and opinions more than they report external evaluations.

Common responses across programmes

As mentioned, the four programmes were chosen to vary along dimensions of duration, level of controversy, and urgency of response. It was therefore somewhat surprising to see the extent of agreement among interviewees in all four programmes about the types of factors enabling or promoting and impeding research/policy interactions in Mexico.

1. Content

We use the category 'research and policy content' to refer not just to the content of the topic covered, but also to a variety of attributes related to the topic. Some examples of research content mentioned in prior studies include level of innovation of the research, its complexity, replicability, intelligibility, perceived or attributed significance, quality, and urgency. With the exception of replicability, these variables are also relevant to policy content; other policy content variables could include cost, benefit, beneficiaries, technical requirements for implementation, and level of popular participation required for implementation.

1.1 Promoting factors

Quality was an influential factor both researchers and decision-makers cited as promoting use of research in policy. However, unlike what one might expect in large scientific communities, quality of research was not measured through its publication and peer review. Instead, the quality of a particular study was largely determined by the identity and fame of the researcher who generated the results, the reputation of journal or book in which the results were published, and, when he or she had training in research, the judgment of the decision-maker. Among these elements, scientific publications were not the most important factor, and, especially for local or national researchers, were not usually the route through which research influenced decision-making. A cholera researcher illustrated the issue: 'if there isn't a good relationship between a researcher and a decision-maker . . . it is difficult for research results to be taken into account. It doesn't matter whether it [the trouble] comes from one side or the other, if there isn't a good relationship I don't see how research results will be noticed. There is a lot of individual and institutional jealousy, and even if we like a set of research results, if we don't get along well with

those who generated them then we won't pay attention to them.'

Second, as expected, researchers and decision-makers agreed that they paid more attention to biomedical research results than to social science research. In some vertical programmes, social research has recently been added as an important source of information for programme operation. Examples included the rapid surveys of coverage and of lost opportunities for immunization, which were important sources of data to design and modify strategies for the Consolidated Vaccination Program. But even in the Vaccination Program, social research had a restricted meaning. As one researcher put it, 'some of those responsible for immunization programs – the same ones who considered basic and applied research as important components of the program – have mistaken ideas about what the materials for a campaign must be like. They just expect them to be visually pretty and they are less concerned about their basis in research results that validate them as the most appropriate media or messages.'

The third content factor commonly mentioned as a promoter of research–decision interaction concerns the specificity, concreteness, and cost-effectiveness of research recommendations. Interviewees said that research projects are more likely to be useful in decision-making when they target specific issues and offer short-term, concrete and applicable results. At the same time, if research recommendations are low cost and provide high benefits, respondents said they are especially likely to be used.

1.2 Content impediments

There was general agreement about a series of content-related factors that impeded links between research and decision-making. Many remarked (as previous studies have also documented) that the vocabulary of researchers and decision-makers was markedly different, and that this impeded the ability of each to understand the other. But some of our informants also mentioned differences in expression among different types of research. For example, one AIDS researcher said:

'It is a problem of language because the language of the researcher is very ramified: a basic researcher is one thing and a clinical researcher is another, and sometimes there is an impressive divorce between these branches, and in their language, too. This makes it more difficult for the decision-makers to understand the importance of what you are saying.'

Vocabulary is not the only factor impeding exchanges between researchers and decision-makers. The perceived utility of each group's knowledge is also open to question. Some decision-makers do not think knowledge of research is necessary for policy and programme development, while some researchers think that decision-makers will not recognize their work or will not be able to put the recommendations derived from research into practice. This phenomenon is referred to as a type of 'mutual intellectual disdain' and can be observed when both researchers and decision-makers want to be recognized as the

greatest contributor to the control or solution of the problem. In essence, this seemed to apply to a desire from each party to 'own' the process and to obtain social premiums for it. For example, a cholera researcher reported that: 'Behind this also appears something related to authorship credit. A [knowledge or intervention] campaign is property, for example. It signifies resources, credit for doing things very well and for justifying the process. The skills [of the campaign designers] justified the credit, but at the end this was transformed into outright feuds.'

Many of the content factors mentioned by our respondents have also been mentioned in other studies from industrialized countries. One peculiarity of the Mexico cases seems to be that they present diverse, and divergent, criteria for measuring research quality. Decision-makers in particular, but also many researchers, attributed quality more often to the identity of the researcher than to the study design or content of the data themselves. Other aspects of content (specificity, concreteness, cost-effectiveness, and language) mentioned by our respondents have also been found to be important in other studies. The struggle for recognition and credit seems endemic within both policy-making and research communities.

2. Actors

Individuals and groups act to create and obstruct policies. They must be studied both with respect to their identities (who is or might be involved in formulating policy) and their qualities (what is their level of motivation, leadership capacity, training, access to power, prestige). Multiple actors are involved in preventing illness, promoting health, and providing curative services, including consumers and providers, financiers, legislators, researchers, mayors and municipal councils, national and international industries, religious groups, local mass media, and others. To understand how each of these individual or group actors could be influenced one might also need to know which information sources they consider reliable, what information interests them, how they evaluate that information, what motivates them to make particular types of decisions, and with whom they interact, compete, or ally themselves.

2.1 Promoting factors

Our informants mentioned three promoting factors that we categorize under 'actors': first, groups of researchers and decision-makers who have identified priority problems. For example, groups in Mexico like The Epidemiology Advisory Board (*Consejo Asesor en Epidemiología, CAE*), and the Commission on Health Research (*Comisión de Investigación en Salud, COMISA*) help to establish which public health problems require most urgent action, and, thus, which merit additional research. This links research and decision-making to a national research agenda that, in turn, has its priorities influenced by organizations such as the World Health Organization.

International support for research was also mentioned by various informants as a second important contributor to interaction between researchers and decision-makers. Nonetheless, some informants specified that the normative

force exerted by a group like the World Health Organization was more important than its financial support. Some international organizations do provide important financial support to researchers' projects. However, their contribution to most research projects in Mexico is far less than that of the federal government (which finances infrastructure and researchers' salaries) and is not important to day-to-day programme operation. When crediting the normative force of the WHO, one informant in the AIDS programme said, 'there was enormous resistance to thinking and convincing the people that it was a problem that really did exist. How good it was that an organization with the weight of the WHO was making declarations, publications, and meetings with Ministers of Health. This was definitely an invaluable help for us.'

Third, our informants spoke of the critical role played in Mexico by official research organizations in the health sector, such as the National Institutes of Health, research departments in general directorates (for example, the various research groups within IMSS [the Social Security Institute]), and National Councils such as CONASIDA (the National Council on AIDS) or CONAVA (the National Council on Immunization). Such organizations provide environments in which the personal connections important in establishing credibility and influence can be created and strengthened. As one family planning researcher in such an organization put it, about his work with decision-makers, 'they see you everyday, they ask how things are going, they are waiting for your results. . .'

Some informants emphasized differences between research undertaken in the public sector and research undertaken in academic institutions outside government, even if public. For example, a family planning researcher told this story:

A decision-maker asks: 'How many IUDs did we put in and what happened? Where are they? What do the women say?' Or: 'Why aren't as many men accepting vasectomies as we thought, given we have made this much of an investment?' So they form a group of researchers from the public sector and they begin to look for answers of an operational nature. In contrast, if an academic asks these questions, it is to develop another, much more theoretical, approach. The researchers in the public sector may ask basic questions, but they are not going to develop them: there isn't time. It isn't going to happen that one of them comes and says to his boss: 'You know what? I'm going to have to do a research project, and then I'm going to go to the field and do a survey, and then the analysis. . . ' and the boss says: 'Good, go do it. Here are the resources. When will you go bring me the results?' and the researcher answers: 'well, in eight or nine months. . . ' Because the response of the boss will be: 'Thanks, but I need an answer within one month at the most.'

2.2 Actor impediments

Our informants mentioned three major types of impediments relevant to actors: lack of technical background of both decision-makers and the mass media; a pervasive sense that

decision-makers tended to value experience more than they did information; and the particular agendas brought to bear by non-academic interest groups like private industry or specific social constituencies.

Lack of technical background among Mexican decision-makers was one important impediment to communicating with them. For example, an AIDS researcher said, 'There is an abyss between researchers and decision-makers. Usually decision-makers aren't in direct contact with researchers. Results are reported in scientific articles, not in a format more accessible to decision-makers. They do not have sufficient knowledge to understand statistics and they do not have the time to read research reports. . . ' Similar complaints were sometimes voiced about the technical preparation of the mass media, with one decision-maker (a former researcher) saying that many journalists could not interpret what was sent to them. 'They can't even understand rates,' she complained.

A second impediment to successful interaction between researchers and decision-makers was part of what our informants called 'political culture'. Both researchers and decision-makers described an attitude among officials in which decision-making was based on experience and immediate pressures, instead of taking into account information generated by research, which they did not perceive as a useful tool. A researcher in a State-supported cholera research unit explained this by saying: 'It's a cultural problem. Our directors belong to a generation that didn't live with research as a part of their formation. They aren't accustomed to considering research as a support for decision-making; decisions are made fundamentally on experience. They don't have the tradition of asking that research be done on a problem they need to address. Most decision-makers belong to a generation that wasn't educated about science.' Similarly, an immunization researcher said 'All of these contributions of clinical research haven't been properly exploited in practice, and their use has depended more on personal relationships with certain groups of doctors than on a policy that establishes the ties between laboratory scientists and decision-makers.'

A third impediment mentioned by various informants was the actions of interest groups, especially financial. The cholera programme ran into trouble from laboratories and private physicians, on whom the Ministry's norms were not imposed. In the AIDS field, there were disputes between the government and private laboratories. Interest group pressure produced fear among decision-makers that research data themselves would represent a potential conflict with other groups. The case of AIDS is the clearest example of this: decision-makers feared that research results would cause opposition from conservative sectors, which led them to deny support to, or ignore, controversial results, especially those related to sexuality. As a decision-maker in an AIDS programme put it, 'Our system responds to bombardments and yellow journalism. It is a policy of reactions, with a lot of attention paid to public image. We lose the sense that our work is programmed and directed.'

This fear of interest group pressure was acknowledged to limit the State's role in research. In fact, one decision-maker

championed the role of non-governmental organizations in research in AIDS specifically because of this, saying, '... NGOs must do the research that the State does not because it is compromising.'

In summary, Mexico presents a number of unique categories of actors promoting the use of research in policy-making. Unlike many other countries, Mexico has functioning groups that set priorities for health research at the national level. International donors' financial support is less important in Mexico than their role in establishing norms and external standards. Finally, Mexico's investments in State-supported health research units are seen as important contributors to integrating research into decision-making.

Some of the impediments to this integration seem more generalizable beyond Mexico. Complaints about insufficient technical background, favouring experience over research, and worries about outside interest group pressure are all commonly articulated impediments to research-policy connections.

3. Process

The research/policy process comprises actions and outcomes over time. Process variables describe what actors do, and why. Some examples of process variables would include what types of communication channels exist and how they are used, how research results move within and across organizations, what opportunities arise to make use of research, and what types of unexpected events intervene to promote or impede the use of research in policy.

3.1 Promoting factors

Many interviewees remarked that informal communication was a critical channel between research and decision-making. In AIDS, they described researchers personally approaching decision-makers to raise consciousness about the seriousness of a problem or the importance of research results. For example, a decision-maker said that personal ties were important in alerting him to the presence of HIV-contaminated blood:

'It was circumstantial: I knew this person because he had worked in my hospital. He's a chemist and he had been trained in the hospital. He said, 'I don't know what to do with this problem [slang *boleto*] [referring to the finding on the part of his company that a disproportionately high seroprevalence was found in the commercial products from some private blood banks], I leave it in your hands, to see what you do with it.' It isn't easy for a company's medical director, or someone who works in the pharmaceutical industry, to get in contact with a subsecretary in the Ministry, it isn't easy. ...'

In cholera, research and decision-making interests seemed to coincide more often, but informal channels of exchange were nonetheless seen as critical. One researcher in a State organization explained that: 'More than a defined and formal strategy, what was most influential was our involvement and

good relationship with the Minister of Health. It was the personal effort of [Dr X, a researcher] that brought us together to have a good relationship with the Minister. The existence of a group that was behind him was also influential. These three elements greatly influenced our ability to introduce these new ideas.' These quotes illustrate many others: phrases like 'people know me', or 'we had a good relationship' were common components of interviewees' stories explaining why and how they came to bring research and decision-making together.

A second set of facilitating process factors identified by our interviewees could be called a search for 'interest group equilibrium'. This refers to a balance among the demands of various interest groups involved in a decision. Use of research results is more probable if they include solutions that do not conflict with programme operation and feasibility, or if decision-makers do not perceive researchers as actively interposing themselves in the decision-making process. Use is also more likely when a decision or policy does not pose a conflict to other governmental sectors or private industry. Our AIDS case study reported, 'Some researchers complained that decision-makers are excessively cautious, and this brings them in some circumstances to minimize or even in some circumstances to throw out those data that come from researchers whom they identify as conflictive.'

A third process that facilitated exchange was the development and use of formal communication channels, e.g. monthly bulletins that circulated among both researchers and decision-makers. For example, AIDS researchers in Mexico produce a 'Monthly AIDS Bulletin' which informs decision-makers about AIDS issues and describes the most recent research results. Formal documents like these sensitize decision-makers about the importance of research, and provide a context for assessing the relative novelty and impact of specific research findings. But these types of formal documents did not seem to be as important as informal exchanges in bringing particular research findings to the attention of decision-makers.

3.2 Process impediments

Various processes impeded the use of research by health decision-makers in Mexico. Though language has already been discussed under 'Content' factors above, we referred there only to the words used to describe substantive research findings or policies. We can also refer to the words researchers customarily use to communicate or convey their research and bring it to the attention of decision-makers.

Researchers attributed some of their communication trouble to a difficulty in 'selling' their questions and results to policy-makers or the general public. An AIDS researcher reported: 'If anyone is guilty it is both sides (researchers and decision-makers), to the same extent. On one side the researcher who limits his communication to habitual pathways, in an international journal if the work is very good or in a national medical journal if it isn't, and the functionaries in Health who don't take the time to read a scientific article.' But some of the communication problems could also be attributed to lack of

desire. One AIDS researcher who did not see a need to communicate with decision-makers inadvertently revealed his prejudices: 'I don't see the need to make them [decision-makers] dizzy with statistics. Just like I don't see the need for them to bore me with norms, I won't bother them with statistics.'

In summary, our informants reported that informal ties, balanced interests, and formal communication channels promoted the use of research in policy-making, while narrow professional interests were an impediment. Many of these are themselves a product of the Mexican scientific and policy context explored below.

4. Context

The context of the research/policy process includes a large and complex array of forces. At the level of the State, some examples of relevant context variables could include political and economic stability, level of centralization, roles of the executive and legislative branches, the role and status of health services in the government, and levels of research support. At the level of civil society, context variables could include the power and prestige of the scientific community, levels of popular participation in politics, and public knowledge about, and engagement in, scientific debates.

4.1 Promoting factors

Decisions about health policy in Mexico are made largely by the State, though the private sector's influence and power are increasing. The more than 70-year rule of the PRI, or Institutional Revolutionary Party, has given rise to a policy context in which there has been relatively little conflict between the legislative and executive branches. As a result, the Mexican Ministry of Health, and the large State providers of care such as the IMSS (Mexican Social Security Institute) or ISSSTE (Social Security Institute for State Workers), play critical roles in establishing national health policy, while the influence of the legislative branch has to date been relatively minor.

The stability of the PRI has also increased the ability of researchers to rotate into and out of government. In fact, Mexico's successes at integrating research into decision-making are often attributed to that rotation between positions as researchers and as decision-makers. As one decision-maker (and former researcher) put it, '... I would say that the most rapid and efficient mechanism [for applying research in policy] is to incorporate researchers in decision-making. Mexico's case is illustrative. ...' This phenomenon has intensified since the early 1980s, when it became increasingly common for individuals trained as researchers to take on decision-making positions while maintaining their informal contacts with other researchers. For example, the Ministers of Health for the past three presidential terms have been drawn from the research community. The same protagonists alternate between academic and political/administrative positions, and therefore share similar training and interests. As one policy-maker and former researcher put it, 'There are no recipes, the rapid way would be to play a game of musical chairs where one could change positions. A decision-maker,

a classic politician is not going to be converted into a researcher because he doesn't have the training. A researcher does not have many of the elements of the professional politician, but if I had to make a guess, I would say that incorporating researchers into the political process is easier than the reverse and much more desirable.'

Research-policy links are also promoted when researchers and decision-makers are members of the same elite. While this is partly attributable to the long life of the PRI, it is also because there are relatively few Mexican health researchers. The Mexican national research system, a government-supported strategy of monetary supplements for active researchers, includes a total of only 2051 health-related researchers among 6350 researchers in the system. The relatively small size of this scientific community increases the likelihood that any single researcher has a chance to become a policy-maker, and that researchers and policy-makers will know one another.

Our informants also mentioned a very different type of contextual factor, namely the urgency of a health problem, as promoting the use of research in policy-making. For example, cholera arrived in Mexico just when the negotiations for the North American Free Trade Agreement (NAFTA) were underway:

'In June, 1991, cholera arrived. In August, the first Iberoamerican meeting of heads of State was held in Guadalajara. All attention was focused on Mexico, the negotiations for the Free Trade Agreement, and commercial openings. Cholera arrived and wasn't hidden. This is why it received so much money, and directly from the President of the Republic. This was due to the abilities of the Minister of Health, who knew how to negotiate at the right moment.'

A second decision-maker talked about the need in cholera 'to put the fire out first; then we began to get into more details'. Similar urgency was expressed by those with early concerns about the AIDS epidemic in Mexico. Here the relevance of research to problem-solving became a critical component of its importance in policy-making. One decision-maker spoke of the usefulness of research at that point in the epidemic: 'I think that there was an exercise almost of humility in the particular case of AIDS, being so new a disease, about which we really knew nothing. I think that then there was much more interest in looking for information. At that time research wasn't being undertaken in the country, but yes we did try to look for information in publications of research studies that were taking place elsewhere, and to be really up to date in that sense.'

Another aspect of cholera's urgency was not so much that it could kill so many so quickly, but also that its control was seen as a measure of national accomplishment. A researcher attributed the importance of cholera to the fact that 'diarrhoea diseases have represented a field of special attention for government policies. They have come to measure the success or failure of national health policies, and to illustrate the level of a country's development.'

4.2 Context impediments

Other aspects of the Mexican context were said to impede links between research and decision-making. For example, centralization of power and information is a common complaint. As one AIDS researcher put it, 'The apparatus of the State is like a black box where on one side the researchers and activists propose, organize, and invite decision-makers, but finally one doesn't see results in the short term.' A cholera decision-maker in one of the States outside Mexico City complained that:

'A researcher at INDRE [the main federal reference laboratory] developed an agglutination technique that produced a good diagnosis in eight hours. Unfortunately, those techniques were implemented only at the central level and not in the states. In this sense there was a divorce between the central laboratory and ourselves.'

Centralization also facilitates the hierarchical management of information. This sometimes means that research results do not arrive at operational levels, where they could have greater impact and usefulness. For example, epidemiological information is not available for decision-making at the local level. Similarly, researchers sense they are at the very bottom of a hierarchy of power. An AIDS researcher said, 'We explained why they [the authorities] had to change the types of [AIDS] notifications and they didn't pay us any attention. They make decisions from above, but they didn't take into account we people below.'

Mexican political life has progressed in six-year increments, the length of presidential terms. Despite the continuity of the PRI, the arrival of new authorities within the executive branch has historically involved a sweeping change of personnel within the top levels of the health system. This constant change of administrations can impede links between researchers and decision-makers, because of the potential discontinuity in priorities between administrations and the fragility of personal relationships. (On the other hand, such change can also facilitate links, if obstructionist decision-makers depart and are replaced by others more sympathetic with research.)

Another important impediment to research-policy links consisted of restrictions on economic resources. Restricted resources impede most policy changes, and serve as a barrier to change more generally. Nonetheless, serious analysis of the financial implications of research recommendations is not common in Mexico. Concern for economic resources is manifested at a broader level, as a source of political pressure upon decision-makers. One decision-maker put it in these terms: 'There are various flashpoints in the formal economy and in the informal economy of marginalized populations. The problem there would be very different from whether research is or is not incorporated into decisions. It would be whether you are given time to make decisions, of any kind.'

In summary, some contextual factors promoting the use of research in policy-making in Mexico included the long life and stability of the PRI, the rotation of researchers into policy-making positions, the small size and relative homogeneity of

the research community, and the urgency of a particular health problem. Our informants mentioned some impediments common to all programmes: excessive State centralization, hierarchical management of information, changes in top-level management of the health system with each sexennial change of government, and restricted economic resources.

Differences across programmes

Despite the many commonalities across the four programmes illustrated above, some distinct differences also emerged. For example, formal communication channels, a process factor we discussed above, were mentioned as important in both the AIDS and the cholera programmes, while they were not noted as important in the family planning and immunization programmes. This may reflect the relative urgency of these first two programmes, and the resulting kinds of informational needs highlighted above.

A second difference across the programmes concerned the role of the mass media, particularly the press. Because of their portrayal of the value of cholera and immunization programmes to the nation as a whole, their coverage of these two programmes was thought to build social consensus that action was appropriate and needed. In contrast, media portrayal of the AIDS and family planning programmes was thought to portray and create discord.

Levels of interest group polarization and social conflict were a third difference across the programmes. Polarization and conflict were high in the AIDS and the family planning programmes, because topics like homosexuality, prostitution, contraception, and sexual behaviour in general engage the strong and divergent opinions of many different social groups. In contrast, the cholera and immunization programmes presented relatively little conflict, because all people were equally at risk; the risk behaviours comprised innocuous tasks like eating, drinking, and breathing; and the outcome was often deadly. In fact these latter two programmes appeared to have had mutually reinforcing effects. Speaking about the success of the cholera campaign, one researcher said, 'Another element that played in favour of cholera was that the immunization programme had already sensitized the population to prevent and control diarrhoeal diseases. In the case of cholera it had to be said that here it was important to act not because you might get sick, but to prevent the patient from dying.'

A fourth difference across the programmes concerned the perceived role of foreign donors in supporting local research and policy initiatives. Most informants characterized foreign donors as having little role in research to policy initiatives. Their influence, however, was acknowledged to be high in demographic surveillance, and in bringing demographic data to bear on national decision-making. In the other programmes, however, financial support from foreign donors was thought to complement strong local support.

A final difference across the programmes could be seen in the types of research they support and use. AIDS was the primary programme in which social research played a significant role.

Biomedical or clinical research was thought to be a critical resource for decision-making in each of the four programmes, while epidemiological research was thought to be particularly important in immunization and in cholera. Social research was important for AIDS, and was seen as a lost opportunity for follow-up by immunization researchers. A researcher in the family planning programme mentioned that different research approaches are important at and to particular times and events: 'Each of the different types of research . . . has begun to exert influence on decision-making in different times. In the case of family planning, operations research was done before clinical research, and this last was done in a more direct way than biomedical research. The importance of demographic research has varied at different moments. Thus, the research developed by each of these relevant approaches has had its own peculiar trajectory of engagement in decision-making.'

Conclusions

How do these results compare to other studies about this topic? Ideal parameters for comparison do not exist, because this study is one of very few which provide empirical information about health policies in a developing country. Nonetheless, some policy research experts have developed dimensions of comparison of studies in different sites. For example, Weiss (1989: 4) refers to three essential topics for international comparisons, which appear systematically in the four topics touched upon in our study:

- *State centralization*, which in Mexico represents a barrier to linking research and decision-making at the local and operative level;
- *Professional training* of officials which, in our study, appears to be essential for creating both interest and ability to establish links with researchers;
- State structure and, specifically, the *relationship between the executive and legislative branches*. This point is particularly relevant in Mexico, where decision-making power is concentrated in the executive branch, with a weak legislative branch. Additionally, advisory commissions in the Mexican congress (the health commission, in this case) play a secondary role in decision-making.

A passive approach toward research in many developing country governments is attributed by Weiss to a *lack of information and analysis systems*. In Mexico, however, acceptable information does now exist about health quality and access to services, especially in relation to the topics analyzed here. In fact, Mexican officials with training as researchers have invested a great deal of effort in the last two decades to modernize and improve information systems.

A comparative international study about educational research and policies in industrialized countries (Husén and Kogan 1984) identified other essential factors, most of which were also found to be important in our study. These included decision-makers' willingness to consider research results as input for decision-making, and political stability, which in Mexico has promoted links between research and decision-making. Other factors they mention, which we have discussed

above, include state centralization, and the existence of research networks or commissions which provide a favourable arena for interaction between research and decision-making.

Our study in Mexico showed other elements that may also be important in other developing country contexts. Some of these are characteristic of countries in which the research and decision-making communities are small. These include alternation of the same individuals between both functions, belonging to the same elite social group, and presence of informal communication routes. Other elements seem to be more closely linked to culture and custom than size. Some examples of these would be the emphasis on personal ties, the valuation of experience over information, and the reduced significance attached to publications as an index of research quality.

Our results allow us to characterize the process of linking health research and decision-making in Mexico. They also permit us to identify certain important deficiencies in this process. Thus, explicit and well-defined communication channels between research and decision-making do not seem to exist in all of these vertical programmes. Such channels, for example, could allow legislators or members of the executive branch to receive advice about specific problems that they face.

It is remarkable that few of the interviewees mentioned the public. The public's role was highlighted only as a part of interest group pressures in the AIDS and family planning programmes, and in the formation of specific immunization policies. Though the public should have a clear role in the decision-making process in Mexico, it often does not even receive information that would allow opinions to be formed. Few traditions or organizations exist for disseminating results to a general audience. Simultaneously, the public's opportunities to influence decision-making are practically nonexistent given the deficiencies of the Mexican democratic system. Recent changes in electoral processes may give the public a stronger voice in decision-making.

Can recommendations about how to strengthen links between research and decision-making in health be derived from this study? This question tempts us to rephrase as recommendations those factors identified as facilitators, and to imagine concrete ways to overcome those which appear to be impediments. It may be possible to improve communication between researchers and decision-makers. But it is more complex to increase the probability that scientific research results will be used to develop and apply policies.

In the first category – improving communication – some recommendations can be suggested. These could include training of both parties: assisting researchers to communicate their findings to decision-makers in an understandable and stimulating way, or sensitizing decision-makers about the usefulness of research results as an input for decision-making. They could also include establishing formal and stable forums for encounters between researchers and decision-makers, and carrying out periodic exercises to bring research and action agendas closer.

Some of these recommendations have already been put into practice in Mexico (see, for example, Frenk 1992), although generally without sufficient continuity or careful evaluation of their impact. Many others remain to be tried. To progress in this area it will be necessary to reach a deeper understanding of the role of the protagonists in the processes involved in linking research and decision-making. These participants include professionals (researchers and decision-makers) and consumers, funders (governmental and private, national and international), the private sector, legislators and members of the executive branch, religious organizations and the media. The design of pertinent interventions will be important, as will evaluating their impact.

Proposing recommendations to increase use of research results in the development and implementation of policies and programmes is a much more difficult task. In the first place, we have emphasized that research is only one input among many other equally legitimate elements to be considered by decision-makers. This fact limits consensus about the possibility and obligation of politicians and programmers to take research results into account when making decisions. In the second place, even the most attractive results of high quality research should be evaluated in terms of their cost and effectiveness before they can be considered as the basis for a policy or programme. This type of evaluation is still under-developed internationally. Assuming an interest group called 'researchers' is influential in a specific issue, and that research recommendations are relevant and cost-effective, it should be possible to identify or construct moments of opportunity for exchange. Ultimately, however, the possibility of increasing use of research results in policy development depends on changes at the 'macro' level, which cannot be influenced by specific recommendations that emerge from a partial perspective. Additional democratic progress in Mexico might help to establish mass media interested in and prepared to provide scientific coverage and discussions about policies and programmes. It would also provide the public with the ability to support their opinions, express their points of view, and demand to be heard.

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