

CHAPTER THREE

Perceiving Risks

Both risks and benefits have to be considered when seeking to understand what drives some behaviours and why some interventions are more acceptable and successful than others. Social, cultural and economic factors are central to how individuals perceive health risks. Similarly, societal and structural factors can influence which risk control policies are adopted and the impact that interventions can achieve. Preventing risk factors has to be planned within the context of local society, bearing in mind that the success of preventive interventions is only partly a matter of individual circumstances and education. In designing intervention strategies, it cannot automatically be assumed that the diverse groups which make up the general public think in the same way as public health professionals and other risk experts. In addition, estimates of risk and its consequences, presented in scientific terms based on a risk assessment, have to be communicated with particular caution and care. The best way is for well-respected professionals, who are seen to be independent and credible, to make the communications. An atmosphere of trust between the government and all interested parties, in both the public and private sectors, is essential if interventions are to be adopted and successfully implemented.

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PERCEIVING RISKS

CHANGING PERCEPTIONS OF RISK

Given the research on the global burden of risks to health, together with the analysis that underpins the choice of cost-effective interventions, what lessons have been learned about risk perceptions? For high priority risks, how can we implement more effective risk avoidance and reduction policies in the future?

This chapter starts with an overview of how the study of risk analysis has developed since the 1970s. It then draws attention to the need to have a broad perspective on how risks are defined and perceived in society, both by individuals and by different groups. Next, emphasis is given to the importance of improving communications about health risks if successful strategies are to be adopted to control them. However, risk perceptions all over the world are increasingly being influenced by three other trends. First, by the power and influence of special interest groups connected to corporate business interests and the opposition being organized by many advocacy and public health groups. Second, by the increasing influence of the global mass media. And third, by the increase in risk factors within many middle and low income countries as a consequence of the effects of globalization.

Until recently, risks to health were defined largely from the scientific perspective, even though it has been recognized for some time that risks are commonly understood and interpreted very differently by different groups in society, such as scientists, professionals, managers, the general public and politicians. Assessment and management of risks to health is a relatively new area of study that has been expanding steadily since the early 1970s. It began by focusing on developing scientific methods for identifying and describing hazards and for assessing the probability of associated adverse outcome events and their consequences. Particular attention has been given to the type and scale of the adverse consequences, including any likely mortality. In the early years, risk analysis, as it was then called, was seen mainly as a new scientific activity concerned with environmental and other external threats to health, such as chemical exposures, road traffic accidents, and radiation and nuclear power disasters. The early study of risk developed mainly in the USA and Europe (1).

During the early 1980s, risk analysis evolved into the two main phases of risk assessment and risk management, as more attention was given to how hazards or risk factors could be controlled at both the individual level and by society as a whole. The emphasis moved from determining the probability of adverse events for different risk factors to assessing the scale

and range of possible consequences. Deaths are commonly seen as one of the most important consequences. Attempts were also made to reduce any uncertainties in making the scientific estimates (2). An important consequence of this change was that individual people were now seen as being mainly responsible for handling their own risks to health, since many risks were characterized as behavioural in origin and, therefore, largely under individual control. This in turn led to the lifestyles approach in health promotion. For instance, a great deal of attention was paid to combating coronary heart disease through health promotion aimed at high-risk individuals, such as increasing exercise and lowering dietary cholesterol, while policies for combating cigarette smoking also emphasized the importance of individual choice.

The need for stronger government regulatory controls also became more apparent, with two other important developments. First, governments in many industrialized countries saw their role as law enforcers and passed legislation to establish new and powerful public regulatory agencies, such as the Food and Drug Administration (FDA) in the USA and the Health and Safety Executive (HSE) in the United Kingdom. Second, increased attention was given to deriving minimum acceptable exposure levels and the adoption of many new international safety standards, particularly for environmental and chemical risks. This included, for example, risks associated with air pollutants, vehicle emissions, foods and the use of agricultural chemicals.

QUESTIONING THE SCIENCE IN RISK ASSESSMENT

The so-called scientific or quantitative approach to health risk assessment aims to produce the best possible numerical estimates of the chance or probability of adverse health outcomes for use in policy-making. Although high credibility is usually given to this approach, how valid is this assumption? Why is this approach often seen as more valid than the judgements made by the public or social scientists?

Although risk assessment appears to follow a scientifically logical sequence, in practice there are considerable difficulties in making “objective” decisions at each step in the calculations. Thus the risk modeller has to adopt a specific definition of risk and needs to introduce into the model a series of more subjective judgements and assumptions (3, 4). Many of these include implicit and subjective values, such as the numerical expression for risk, weighting the value of life at different ages, the discount rates and choice of adverse health outcomes to be included. For instance, scientific judgements may be needed on the effects of different levels of exposure or which outcomes to include, particularly which disease episodes should be counted among the adverse events.

During the 1980s, scientific predictions were seen to be rational, objective and valid, while public perceptions were believed to be largely subjective, ill-informed and, therefore, less valid. This led to risk control policies that attempted to “correct” and “educate” the public in the more valid scientific notions of risk and risk management. However, this approach was increasingly challenged by public interest and pressure groups, which asked scientists to explain their methods and assumptions. These critical challenges often revealed the high levels of scientific uncertainty that were inherent in many calculations. Such groups then became more confident, enabling them to argue strongly for the validity of their own assessments and interpretation of risks.

EMERGING IMPORTANCE OF RISK PERCEPTIONS

By the early 1990s, particularly in North America and Europe, it became apparent that relying mainly on the scientific approaches to risk assessment and management was not always achieving the expected results. It also became clear that risk had different meanings to different groups of people and that all risks had to be understood within the larger social, cultural and economic context (5–7). In addition, people compare health risks with any associated benefits and they are also aware of a wide array of other relevant risks. In fact, it has been argued that concepts of risk are actually embedded within societies and their cultures, which largely determines how individuals perceive risks and the autonomy they may have to control them (8). In addition, it became apparent that public perceptions of risks to health did not necessarily agree with those of the scientists, whose authority was increasingly being questioned by both the general public and politicians. Although there was considerable agreement between the public and scientists on many risk assessments, there were also some, such as nuclear power and pesticides, where there were large differences of opinion (see Box 3.1). These differences of perception often led to intense public controversy.

At the same time, there was also increasing disillusionment with the “lifestyles” approach to health promotion and education strategies, that relied on improving the health knowledge and beliefs of individuals. These approaches were not achieving sufficient behavioural change for the interventions to be judged cost-effective. For instance, the rapid emergence of HIV/AIDS demonstrated that relying on the health beliefs model for behavioural change was largely ineffective in reducing the high-risk sexual behaviours that increased transmission in the epidemic. In addition, as the general public and special interest groups, particularly those in the environmental movements, became better organized they also began challenging the motives of the large corporate businesses, such as the tobacco industry (10).

By the mid-1990s, improving risk communications was seen as essential for resolving the differences between these various positions, as it became more widely accepted that both the scientific approaches and public perceptions of risk were valid. It was also generally accepted that differences in perceptions of risk had to be understood and resolved. This in turn led to the conclusion that governments and politicians had a major role to play in handling conflicts over risk policies by promoting open and transparent dialogue within society, in order to have high levels of public trust in such dialogue. A very important lesson is that high levels of trust between all parties are essential if reductions in the future global burden of risks to health are to be achieved (11, 12).

Box 3.1 Perceptions of risk by scientists and the general public

“Perhaps the most important message from this research is that there is wisdom as well as error in public attitudes and perceptions. Lay people sometimes lack certain information about hazards. However, their basic conceptual-

sation of risk is much richer than that of experts and reflects legitimate concerns that are typically omitted from expert risk assessments. As a result, risk communication and risk management efforts are destined to fail unless they are structured as a

two-way process. Each side, expert and public, has something valid to contribute. Each side must respect the insights and intelligence of the other.”

Source: (9). p.285.

RISK PERCEPTIONS

The assumption made in this report is that risk factors, risk probabilities and adverse events can be defined and measured. This is a valid starting point for the quantification of the adverse effects of a range of risk factors and for health advocacy. However, as we have seen above, when interpreting the global burden of risks to health and using this to design intervention strategies, wider perspectives are needed. Evaluating these risks must take place within a much broader context.

People's risk perceptions are based on a diverse array of information that they have processed on risk factors (sometimes called hazards) and technologies, as well as on their benefits and contexts. For instance, people receive information and form their values based on their past experience, communications from scientific sources and the media, as well as from family, peers and other familiar groups. This transfer and learning from experience also occurs within the context of a person's society and culture, including references to beliefs and systems of meaning. It is through the organization of all this knowledge, starting in early childhood, that individuals perceive and make sense of their world. In a similar way, perceptions of risks to health are embedded within different economic, social and cultural environments.

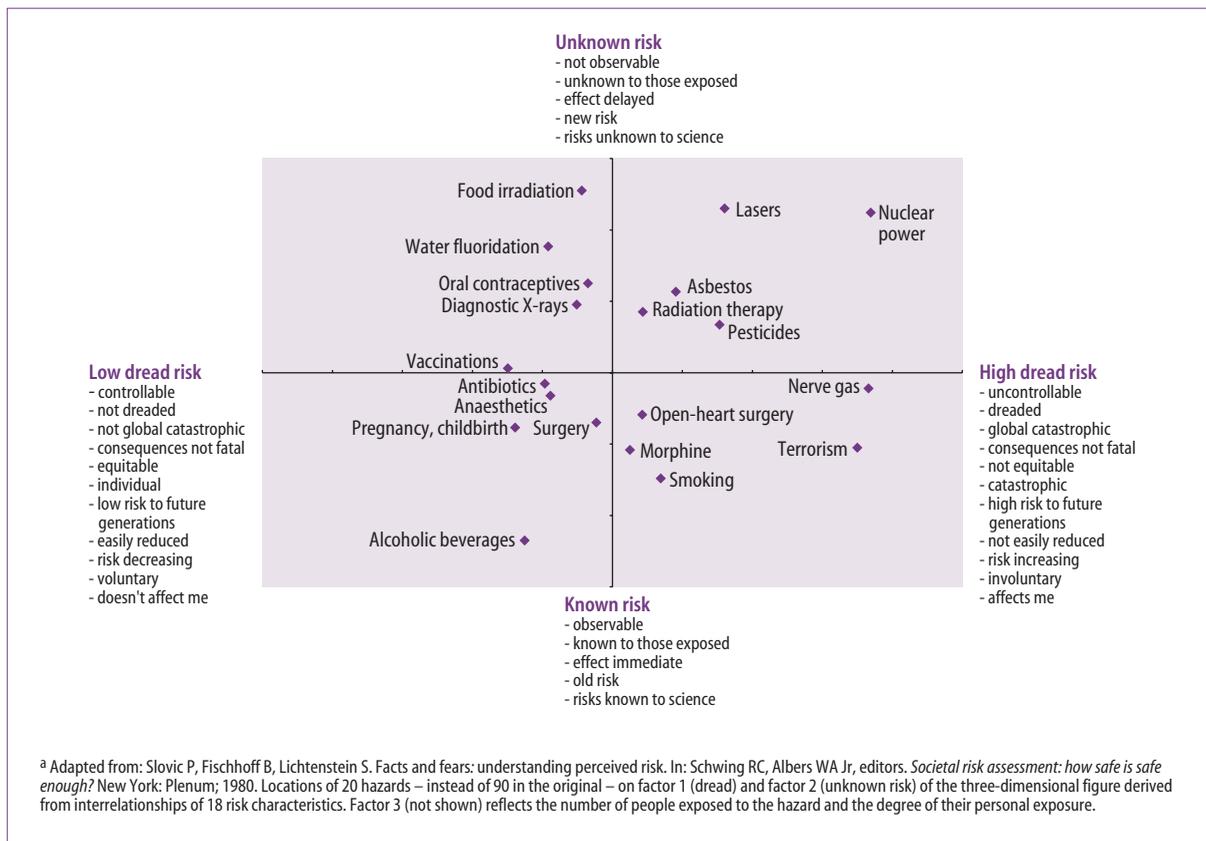
Much of the original impetus for research on perceptions came from the pioneering work of Starr (13) in trying to weigh the risks from technologies against their perceived benefits. Empirical studies of individual risk perceptions had their origins mainly in psychological studies conducted in the USA (4, 14). A major early discovery was of a set of mental strategies or rules, also called heuristics, that people use to understand risks (15). An early approach to study and map people's understanding of risks was to ask them to estimate the number of deaths for 40 different hazards and to compare these with known statistical estimates (16, 17). This showed that people tend to overestimate the number of deaths from rarer and infrequent risks, while underestimating considerably those from common and frequent causes, such as cancers and diabetes. This finding has obvious implications for control strategies that are focused on many common and widely distributed risks to health. In addition, rare but vivid causes are even more overestimated. Familiarity and exposure through the mass media tend to reinforce these perceptions. However, people's rank ordering by the total number of deaths does usually correspond well overall with the rank order of official estimates.

Risk factors have many dimensions, including a variety of benefits, and certainly risk means far more to most people than just the possible number of deaths. Another pioneering research study, which is relevant to the present analysis of global risks to health, used psychometric testing to measure perceptions of 90 different hazards using 18 separate qualitative characteristics (18). Following factor analysis these hazards were scaled depending on their degree of "dread" and their degree of "unknown risk" (see Figure 3.1, which shows 20 risks selected from the original 90). A third factor (not shown in the figure) related to the number of people involved. Figure 3.1 clearly shows that the most highly uncertain risks, such as nuclear power and pesticides, are the most dreaded, while risks associated with many health interventions and clinical procedures have more acceptable values. For instance, antibiotics, anaesthetics, childbirth and surgery are perceived as being much safer. The higher the dread factor levels and the higher the perceived unknown risks, the more people want action to reduce these risks, including through stricter government regulation and legislative controls. It appears that people often do not make a simple trade-off of benefits against perceived risks. Rather, they want stronger controls against many risks.

Risks that are both highly uncertain and highly dreaded are also clearly the most difficult to predict and control. Two very important factors for dread were found to be global catastrophe and risks that involve members of future generations. The advent of global terrorism and the development of genetically modified foods are two recent examples. Less dreaded risks tend to be those that are individual, controllable and easily reduced. The more acceptable risks are those that are known, observable and have immediate effects. In addition, the more equitable the risks, the more likely they are to be generally accepted.

It is useful to consider perceptions of dread and unknown risk in relation to public health interventions for reducing risks. If risk factors are to be controlled, the interventions should be perceived to have low dread and a low risk of adverse events. Higher risks from such interventions will normally only be accepted by individuals in the higher risk groups. However, population-wide interventions to reduce risk typically have to cover all people, even those at low risk. Thus interventions used in public health programmes need to have low dread and known low and acceptable levels of risk, combined with high safety levels. Typically, vaccination and screening programmes fall into this category, particularly as they are usually targeted at whole populations and involve many healthy people who are at low risk of getting ill and dying. The favourable perception of the public to prescribed medicines, for example, has been attributed to the direct benefits of such medicines and to the trust people place in their safety, achieved through research and testing carried out by medical and pharmaceutical professionals.

Figure 3.1 Hazards for dread and risk^a



DEFINING AND DESCRIBING RISKS TO HEALTH

Risk assessment and management is a political as well as a scientific process, and public perceptions of risk and risk factors involve values and beliefs, as well as power and trust. For policy-makers who are promoting intervention strategies to lower risks to health, it is obviously important, therefore, to understand the different ways in which the general public and health professionals perceive risks (19). As described in Chapter 2, use of the term “risk” has many different meanings and this often causes difficulties in communication. This report uses the notions of the probability of a subsequent adverse health event, followed by its consequence which is mainly either morbidity or mortality.

While many scientists often assume that risks can be objectively verified, many social scientists argue that risk measures are inherently much more subjective. In addition, other members of the public have yet other notions of risk. How do people define and describe risk factors? How do they estimate risks? Answers to such questions obviously alter people’s perceptions. Such information is needed, therefore, to improve communications and to predict public responses to public health interventions, including the introduction of new health technologies and risk factor and disease prevention programmes. Box 3.2 illustrates male perceptions of sexual health risks and the need to use preventive measures against HIV infection and pregnancy.

A complicated question is how the mortality outcome associated with a particular risk factor should be expressed. Even choosing or framing the end-point as death is surprisingly complex and can make large differences in the way risk is both perceived and evaluated. The following is a well-known example from occupational health, which shows how the choice of risk measure can make a technology appear less or more risky to health (21). Between 1950 and 1970, coal mining in the USA became much less risky if the measure of risk was taken to be accident deaths per million tons of coal produced, but it became more risky if risk was described in terms of accident deaths per 1000 miners employed. Which measure is more appropriate for decision-making? From a national perspective, and given the need to produce coal, deaths of miners per million tons of coal produced appears to be the more appropriate measure of risk. However, from the point of view of individual miners and their trade unions the death rate per thousand miners employed is obviously far more relevant. Since both measures for framing the risks in this industry are relevant, both should be considered in any risk management decision-making process.

Each way of summarizing deaths embodies its own set of inherent and subjective values (7). For example, an estimate based on reduction in life expectancy treats deaths of young people as more important than deaths of older people, who have less life expectancy to lose. However, counting all fatalities together treats all deaths of the young and old as equivalent. This approach also treats equally deaths immediately after mishaps and deaths that follow painful and lengthy debilitating diseases. Such choices all involve subjective value judgements. For instance, using “number of deaths” may not distinguish deaths of people who engage in an activity by choice and benefit from it directly, from those of people who are exposed to a hazard involuntarily and who get no direct benefits. Each approach may be justifiable but uses value judgements about which deaths are considered to be the most undesirable. To overcome such problems, information should be framed in a variety of different ways so that such complexities are revealed to decision-makers.

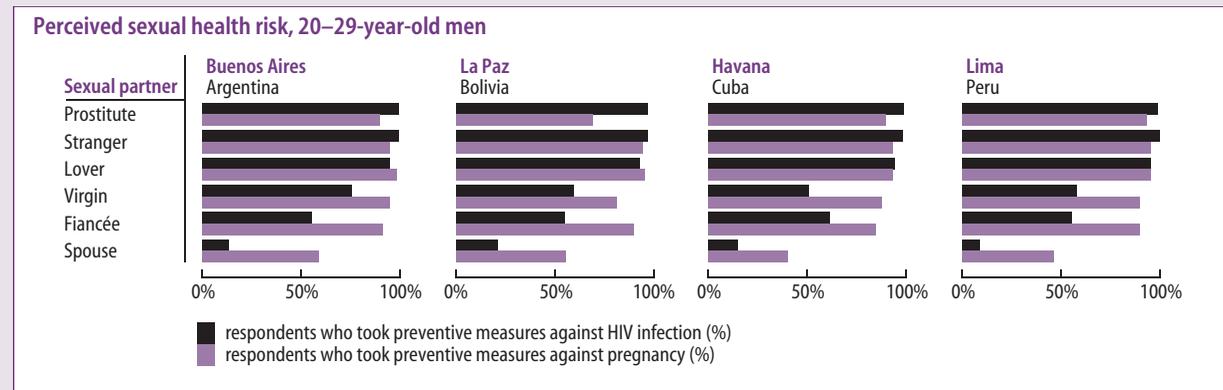
Box 3.2 Men's sexual behaviour related to risk of HIV infection and pregnancy

A greater understanding of men's perceptions of sexual risk and their risk-taking behaviour is necessary if interventions are to be more successful in improving the reproductive health of both men and women. In a questionnaire survey of reproductive risk behaviours in the capital cities of Argentina, Bolivia, Cuba and Peru, young adult males (aged 20–29 years) were asked whether they would take measures to prevent HIV infection and pregnancy during sexual intercourse with different categories of

female partners. Samples of 750–850 men were selected randomly in each city. The percentages who reported having taken preventive measures – usually the use of condoms – to reduce the risk of HIV transmission or pregnancy are shown below.

The findings were very similar in all four cities, though the men clearly perceived the risks as being different with different partners. Preventive measures against HIV infection were believed to be highly necessary for sexual intercourse with

prostitutes, strangers and lovers, but considerably less so with married partners. However, just over half the young men said they would use such measures when having intercourse with a virgin or a fiancée. The need for measures to prevent pregnancy was perceived, however, to be higher than that for HIV infection. To avoid pregnancy, such measures were commonly used with all sexual partners and even with about half the spouses.



Source: (20).

INFLUENCES ON RISK PERCEPTIONS

Two important factors that influence risk perception are gender and world views, with affiliation, emotional affect and trust also being strongly correlated with the risk judgements of experts as well as lay persons. The influence of gender has been well documented, with men tending to judge risks as smaller and less problematic than do women. Explanations have focused mainly on biological and social factors. For example, it has been suggested that women are more socialized to care for human health and are less likely to be familiar with science and technology. However, female toxicologists were found to judge the same risks as higher than do male toxicologists (22, 23). In another study dealing with perception of 25 hazards, males produced risk-perception ratings that were consistently much lower than those of females (24). To the extent that sociopolitical factors shape public perception of risks, gender differences appear to have an important effect on interpreting risks.

The influence of social, psychological and political factors can also be seen in studies on the impact of world views on risk judgements. World views are general social, cultural and political attitudes that appear to have an influence over people's judgements about complex issues (25). World views include feelings such as fatalism towards control over risks to health, belief in hierarchy and leaving decisions to the experts, and a conviction that individualism is an important characteristic of a fair society, or that technological developments are important for improving our health and social well-being. These world views have been found to be strongly linked to public perceptions of risk (26). These views have also been

the subject of a few international studies, for example comparing perceptions of risks to nuclear power in the USA with those in other industrialized countries (27).

FRAMING THE INFORMATION ON RISKS

After defining a particular risk problem, determining which people are at risk, measuring exposure levels and selecting the risk outcomes, all this information has to be presented to decision-makers. How the information is presented usually depends on whether it is meant to influence individuals or national policy-makers. The way the information is presented is often referred to as “framing” (see Box 3.3).

Numerous research studies have demonstrated that different but logically equivalent ways of presenting the same risk information can lead to different evaluations and decisions. A famous example is the study which asked people to imagine that they had lung cancer and had to choose either surgery or radiation therapy (29). The choices were strikingly different, depending on whether the results of treatment were framed as the probability of surviving for varying lengths of time after the treatment or in terms of the probability of dying. When the same results were framed in terms of dying, the choice of radiation therapy over surgery increased from 18% to 44%. The effect was just as strong for physicians as for lay persons.

All presentations of risk information use frames that can exert a strong influence on decision-makers. However, if all information is equally correct, there are really no “right” or “wrong” frames – just different frames. How risk information is framed and communicated to individuals or policy-makers, scientists or the general public can be of crucial importance in achieving maximum influence over public perceptions. It can also be very important in convincing the public health community and high-level policy-makers about the importance of risks to health and the value of adopting different interventions.

SOCIAL AND CULTURAL INTERPRETATIONS OF RISK

While the cognitive psychological approach has been very influential, it has also been criticized for concentrating too much on individual perceptions and interpretations of risk. Some psychologists, anthropologists and sociologists have argued that, since individuals are not free agents, risks can best be understood as a social construct within particular historical and cultural contexts and within groups and institutions, not only at the individual level (8). These disciplines start from the belief that risks should not be treated independently and separately from the complex social, cultural, economic and political circumstances in

Box 3.3 Framing risks to health: choosing presentations

- Positive or negative framing? Striking changes in preference can result from framing the risk in either positive or negative terms, such as lives saved or lives lost, rates of survival or mortality, improving good health or reducing risks of disease.
- Relative or absolute risks? Although relative risks are usually better understood, it can be very important to present absolute changes as well.
- Percentages or whole numbers? Probabilities are better understood as percentage changes than by comparison of whole numbers.
- Whole numbers or an analogy? Whole numbers may be less well understood than an example or analogy for the size of an adverse event.
- Small or large numbers? A small number of deaths is more easily understood than a large number, which is often incomprehensible.
- Short or long periods? A few deaths at one time or over a short period, as in a tragic accident, often have more impact than a larger number of deaths occurring discretely over a longer period of time.

Source: (28).

which people experience them (30, 31). Different groups of people appear to identify different risks, as well as different attributes, depending on the form of social organization and the wider political culture to which they belong (32).

Although it is widely accepted that the political and economic situation at a macrolevel is a strong determinant for many risk factors, microlevel studies can examine how such factors are perceived and interpreted rationally within a given local context. Microlevel studies can also be very useful in explaining certain apparent behaviours that do not appear to be rational to the “external” public health observer. For instance, although lay people may be well aware of risk factors for coronary heart disease, they also have their own “good” and rational reasons for not following expert advice on prevention (33). Thus the context in which people find themselves also largely determines the constraints they face in trying to avoid risks and the length of time over which risk can be discounted. It is an irony, however, that people living in wealthy and safer societies, with their high living standards and longer life expectancy, appear to be even more highly concerned about risks to health than people living in poorer and less safe communities. This is particularly the case with highly uncertain and highly dreaded risks.

From the cultural perspective, therefore, the type and kind of risks, as well as a person’s ability to cope with them, will vary according to the individual’s wider context. For instance, risk perceptions and their importance can vary between developing and developed countries, as well as with such variables as sex, age, household income, faith and cultural groups, urban and rural areas, and geographical location and climate (for example, see Box 3.4).

PERCEPTIONS OF HEALTH RISKS IN DEVELOPING COUNTRIES

Risks to health, as an area for further study, have only recently begun to receive attention in developing countries. The need to view such risks in their local context is obvious when analysing perceptions of risk in these countries, especially when risk factors are considered alongside life-threatening diseases such as tuberculosis, malaria and HIV/AIDS. There are also other daily threats, such as poverty, food insecurity and lack of income. In addition, families may face many other important “external” risks, such as political instability, violence, natural disasters and wars. Thus every day there is a whole array of risks that have to be considered by individuals and families.

Models of individual risk perception and behaviour were, however, mainly developed in industrialized countries where people have considerably higher personal autonomy and freedom to act, better access to health information, and more scope for making choices for better health. These models may be less appropriate in low and middle income countries, where illnesses and deaths are closely associated with poverty and infectious and communicable diseases (35). In industrialized countries, studies of HIV/AIDS and, to a lesser extent, noncommunicable diseases such as cancer (5) and coronary heart disease (33) have been carried out using the perspectives of applied medical anthropology and sociology (36). However, in developing countries where communicable diseases still cause a high proportion of the avoidable mortality, these disciplines have most frequently been coopted to help evaluate the effectiveness of disease control programmes. Perceptions of disease, use of health services and reasons for non-compliance are some areas often studied (37).

For communicable diseases, it is important to differentiate perceptions of the risk of a disease from those concerned with the risk of acquiring the infection, particularly as not all

infections, such as sexually transmitted infections and tuberculosis, will develop into symptomatic disease. Interrupting transmission of infections, for example through the use of measles vaccine or bednets in malaria control, is the main way in which control programmes reduce risk. In such situations, risks are often determined from the point of view of whether an effective response exists in practice. Thus effectiveness evaluation is based on such indicators as early recognition of signs for severe illness (for example, acute respiratory infections), symptoms requiring self-referral for treatment (for example, leprosy and schistosomiasis), or use of impregnated bednets to prevent malaria transmission. Much of this anthropological research for effectiveness evaluation has been supported by multilateral agencies and bilateral donors, including WHO and UNAIDS.

Because of the effects of the demographic and epidemiological transitions, many middle and low income developing country populations face existing risks from communicable diseases, as well as rapid increases in risks to health from many risk factors and noncommunicable diseases. Although avoidance of risks of infection, often perceived as risk of disease, are implicit in most biomedical and public health models of disease control in developing countries, more research from the anthropological point of view is clearly needed to place these risks in perspective among a whole array of other risks to life. Given competing risks, it cannot be assumed that if people are better informed on their exposures to risk factors they will necessarily act to change their health behaviours.

IMPORTANCE OF RISK COMMUNICATIONS

As previously discussed in this chapter, risks and risk factors can be defined more narrowly by using technical means or more broadly by using sociopolitical parameters. Experts tend to prefer a focused and narrower approach, while public groups often prefer more comprehensive definitions. How risks and risk factors are defined therefore needs to be determined by the purpose of the risk communication. Risk communication can be seen as having six main components: the aims and objectives; framing of the content and messages;

Box 3.4 Perceptions of risk in Burkina Faso

Social scientists frequently argue that risks can not be considered "real" outside their sociocultural context. However, research on health risk perceptions and behaviours has often focused only on a particular disease, such as HIV/AIDS, tuberculosis or malaria, and has only rarely looked across several domains and development sectors. For example, as well as risks from diseases, inhabitants in rural Burkina Faso live constantly with risks from drought, food insecurity, endemic poverty, and lack educational facilities and health services.

A study in 40 villages examined risk perceptions in relation to health, health care, economics, agriculture and climate. Subsistence agriculture and pastoralism were the main economic activities of the mixed ethnic population. Using qualitative research methods

and focus group discussions, 12 important risks were identified; their perceived severity and people's vulnerability, i.e. the chance of their happening during the coming year, were assessed.

As one focus group participant said: "We have two main sources of risk: hunger and illness. In the dry season, November–February, we face soumaya (malaria) which is due to the wind and cold. Cough is due to the Harmattan winds and dust. In the hot season, March–April, we face headache due to the heat. In the rainy season, May–October, we face diarrhoea and stomach-ache due to hunger."

HIV infection was ranked as the most severe risk but it was placed twelfth in terms of personal vulnerability. In terms of perceived severity, the next four risks were a lack of rain, becoming mentally ill, being struck by lightning, and a lack of funds to buy medicines. Malaria was ranked

lowest for severity but first for the chances of it happening during the next year. After malaria, the next four perceptions of vulnerability were a lack of funds for medicines, snake-bite, becoming ill from tobacco smoking, and a lack of rain.

The study found an elaborate knowledge of risks in a number of domains for which the local people felt themselves to be personally at risk. Given the complexity of living conditions in the African Sahel, health risks cannot be seen in isolation from other domains such as climate, the economy and society. These all form part of a larger local discourse on the problems, difficulties, dangers and risks related to life in general.

population and target audiences; sources and presentation of information; the distribution and flow of communications; and mechanisms for dialogue and conflict resolution. Risk communication has come to mean much more than the mere passing on of information, as in the older style health education messages. It should also include the promotion of public dialogue between different stakeholders, resolution of conflicts, and agreement on the need for interventions to prevent the risks (38).

The topic of risk communications became prominent in the mid-1980s, when it was realized that the risk management policies proposed by experts and specialized agencies were not necessarily acceptable to the wider public (9). Efforts to prevent risks therefore expanded to include the improved handling of risks through better risk communication. The term “risk communication” is, however, still often used to refer to the narrower role it has played in conventional risk management, specifically relating to the communications emanating from scientists who wish to convey their technical recommendations. In this more restricted interpretation, risk communication is frequently designed for a health programme that is to be implemented by an expert regulatory body and directed at a particular population or target group, and which aims to achieve certain specified, often behavioural, outcomes (39). Experience has shown that this expert-driven approach often did not live up to expectations. In addition, such communication approaches were not possible for some of the newer technologies, such as genetically modified foods, for which there was limited scientific knowledge on the potential risks and consequences. Such new technologies have revealed the importance of being more cautious and, if necessary, adopting the so-called “precautionary principle”. (A fuller explanation of this principle is given in Chapter 6.) This has been found to be particularly true when the potential risks and future consequences are highly uncertain, when there are high levels of public dread and when future generations could be affected.

It is now generally accepted that if risk communication is to be more successful there has to be better dialogue and trust between all parties, particularly government officials, recognized experts and other legitimate groups in society and the general public (6, 7). This change in perspective has meant that risk communication has had to become more integrated into the democratic and political processes, which in turn has forced decision-making on risks, particularly by governments, to become more open, transparent and democratic. This change acknowledges that success in handling risks needs to involve many more groups in society, the wider sharing of political power and more public accountability for the use of government and private resources. This in turn has raised such important issues as public trust in governments and expert agencies, freedom and availability of information in the public domain, mechanisms for public consultation, and roles of scientific experts and advisory committees (see Box 3.5).

INFLUENCE OF SPECIAL INTEREST GROUPS ON RISK PERCEPTIONS

Perception, understanding and framing of risks are affected, both positively and adversely, by the influences of powerful interest groups outside of government, including private for-profit corporations and public health campaigning organizations. Since scientific data do not “speak for themselves”, special interest groups can play a critical role in interpreting the scientific information and hence in the framing of public perceptions of risks and risk factors. In this way such groups aim to influence public debate and government policies against or for the control and prevention of known risks.

Box 3.5 The Bovine Spongiform Encephalopathy (BSE) Inquiry, United Kingdom

“Our experience over this lengthy Inquiry has led us to the firm conclusion that a policy of openness is the correct approach. When responding to public or media demand for advice, the government must resist the temptation of attempting to appear to have all the answers in a situation of uncertainty. We believe that food scares and vaccine scares thrive

on the belief that the Government is withholding information. If doubts are openly expressed and publicly explored, the public are capable of responding rationally and are more likely to accept reassurance and advice if and when it comes.”

Source: (40). p. 263.

While communicating accurate information on risks is essential to risk perception and better risk management, it is scientific information and research findings that provide the basis for risk assessment. Such information or “known facts” are nevertheless subject to interpretation and the social construction of the evidence, which largely determines how the risks are defined, perceived, framed and communicated in society (30, 41). In addition, scientific uncertainties allow for widely different understandings of the same data, including distorting their interpretation in order to suit the interests of special groups. Although private for-profit and public health campaigning organizations often use similar tactics, businesses commonly promote public controversy as a means of avoiding greater government controls over risks. This strategy can be costly, as evidenced by the large financial resources that corporate interest groups commonly allocate to such activities. The tactics of industrial special interest groups, such as in the asbestos and tobacco industries, largely came to light when companies were forced to release a large number of internal documents after legal challenges by groups attempting to show that they had suffered because of these industries (42, 43) (see Box 3.6).

Special interest groups, whether public or private or for-profit or not-for-profit, are basically organized to promote and protect their own interests and it should be expected, therefore, that they will construct the evidence about health risks so as to support their position and interests (44). Industrial special interest groups are primarily motivated to protect profitable products or services and thus tend to frame and communicate associated risks by hiding or minimizing their harm. They therefore do not in any way support such actions as increased regulation or greater import–export restrictions. Disputes about the regulation of risks, particularly environmental and industrial risks, frequently involve legal

Box 3.6 Strategies for fuelling public controversy

Policy-making is facilitated by building consensus in society, while scientific research is often characterized by uncertainties. Thus scientific debates on risks to health, particularly focusing on any assumptions and uncertainties, usually slow down policy decision-making after risk assessments have been carried out. Corporate and private-for-profit special interest groups can often benefit, therefore, by generating public controversy so as to prevent or delay regulation and control of their products. This is commonly done by emphasizing uncertainties in the original data, the methods, or the quality of the scientific conclusions.

On the other hand, public health groups campaigning for greater control of risks tend to emphasize ethical considerations and the need for stronger government policies and regulation. Both kinds of special interest groups use a number of strategies to support their position, for example by:

- setting up independent but sympathetic policy think-tanks and research funding organizations;
- encouraging and supporting experts who are sympathetic to their position;
- funding and publishing research that supports the interest group’s position;
- disseminating supportive research studies in scientific publications;

- criticizing and suppressing research that is unfavourable to their cause;
- disseminating positive or negative interpretations of the risk data in the mass media, particularly the lay press;
- using lobbying groups and advertising campaigns to encourage greater public support;
- communicating favourable conclusions directly to politicians, government officials and bureaucrats;
- drawing attention to political and economic benefits, such as electoral support, employment and export opportunities.

Source: (43).

proceedings at national level (45), while many risks related to international trade may come under the jurisdiction of the disputes procedure of the World Trade Organization.

By comparison, public health interest groups have the difficult task of trying to achieve greater consensus in society in order to make government risk control policies more acceptable. These groups tend to communicate and frame risks by emphasizing their harm and hence encourage policies and strategies that aim to reduce risk, including better regulation. Although public health groups tend to act independently, they are often less well coordinated at national and international levels than corporate groups; they are also more accountable to the public than are private businesses. In addition, they usually have fewer financial resources to support their activities.

The tobacco industry is a prime example of how global business operations can be promoting cigarette consumption while at the same time distorting public perceptions of the risks involved (42, 46). However, many anti-smoking groups also oppose both the tobacco industry and the coordinated international action contained in the Framework Convention for Tobacco Control (FCTC) promoted by the World Health Organization (see Box 3.7).

Besides private industry and public health campaigning groups, there are many other kinds of special interest groups that aim to influence policies to control risks. With the rapid growth in global media and communications, particularly those using the Internet, many informal global networks now exist, including links between specialist groups and community-based organizations. A constant danger is that private organizations may attempt to coopt and divert such public groups and networks. Although special interest groups are often better organized in industrialized countries, similar groups in developing countries can now benefit from faster international links, easier access to published information, and membership of related trade or professional organizations. For instance, the multinational pharmaceutical companies attempt to control the development, licensing, availability and costs of many patented drugs; national family planning associations and the International Planned Parenthood Federation (IPPF) disseminate information on risks to reproductive health and promote modern methods to control fertility; special groups exist to protect people with particular diseases, such those suffering from HIV/AIDS, diabetes and cancers; and other special groups aim to avoid new risks, such as those from greatly increased global trade in manufactured products, for example, food and pesticides.

Another important aspect of policy-making occurs at the international level. Besides special interest groups that can operate on a global basis, there are a number of

Box 3.7 Junking science to promote tobacco

"The goal of the tobacco industry's "scientific strategy" was not to reveal the truth but to protect the industry from loss of revenue and to prevent governments from establishing effective tobacco control measures. The industry's goals of creating doubt and controversy and placing the burden of proof on the public health community in policy forums have, therefore, met with a certain degree of success. Tobacco control policies are not being implemented worldwide at the rate that current scientific knowledge about the dangers of tobacco warrants. But this

scenario is changing as the negotiations for the Framework Convention on Tobacco Control continue to advance. The convention marks the first time that WHO has used its treaty-making right to support Member States in developing a legally binding instrument in the service of public health. Negotiations are progressing well, and it is likely that Member States will vote on ratification of the convention in mid-2003.

"What do the revelations about tobacco company actions mean for public health policy? In general terms, they call for policy-makers to

demand complete transparency about affiliations and linkages between allegedly independent scientists and tobacco companies. Academic naivety about tobacco companies' intentions is no longer excusable. The extent of the tobacco companies' manipulations needs to be thoroughly exposed, and students of many disciplines (public health, public policy, ethics, and law, to name a few) should be provided with the evidence that is increasingly available through the tobacco industry documents [in the Minnesota and Guildford archives]."

Source: (46), p.1747.

international organizations that clearly aim to be influential in public health, including the World Health Organization, other multilateral and specialized agencies of the United Nations, and bilateral donor agencies. In addition, many international nongovernmental organizations do play a major role in gathering evidence, disseminating information and advocating risk control policies in such areas as child labour, dangerous chemicals and the dumping of waste products.

IMPORTANCE OF MASS MEDIA IN RISK PERCEPTIONS

Understanding common risks to health is crucial for the future well-being of many people in all countries, but information on risks, risk factors and uncertainty are inherently difficult to communicate. However, the mass media clearly do have a powerful influence on people's perceptions of risks and, in a global world, information on risks can be disseminated very rapidly through satellite technologies. Although newspapers, magazines, radio and television are often criticized for inaccurate and biased reporting, in industrialized countries they remain the most influential sources for everyday information on risks to health (12). The rapid spread of these media in developing countries, together with improvements in literacy, means that this is also increasingly true in low and middle income countries.

How should the media evaluate and communicate the information on health risks such as HIV/AIDS or new vaccines, particularly if these are associated with scientific and ethical controversies? Such situations challenge the media to be responsible when dealing with complicated scientific issues and conflicting political goals (47). What information should be conveyed? How fully should uncertainties and controversies be explained to the public?

With regard to health matters, the media perform two major functions – they can interpret scientific information and government policies to the public, and at the same time they reflect the concerns of the general public to a wider national audience. Media are also very much a part of the larger society in which they operate (47). The way the different media outlets report risks to health reflects their biases and organizational constraints, such as whether they are private entities or government agencies and whether they are a free press or allied with particular political or business interests.

Since the media are organized to cover newsworthy events, they often seek out sensational and dramatic health episodes such as chemical accidents, exciting research discoveries, epidemics of communicable diseases, and safety defects in new medicines. Other controversial debates, such as those between the pharmaceutical industry and the medical profession over access to treatment for HIV/AIDS, often gain international attention. Media coverage tends to focus on human interest stories and news about dreaded diseases. In contrast, attention is not often given to common, chronic and low-level risks to health, such as passive exposure to tobacco smoke or poor levels of physical exercise. In addition, the media tend to avoid issues that may threaten prevailing social and cultural norms or moral and economic values.

Given the complex nature of many risks to health, media reporting has to rely on a variety of expert sources as well as on representatives of government ministries, private companies and special interest groups. Government press releases, national scientists and international scientific journals are often the main sources of information for the media. Journalists tend to use the best organized sources and those which provide technical information simply in the form of non-technical press releases. In addition, international news organizations frequently syndicate risk stories around the world. Special interest and

advocacy groups aim to influence risk perceptions and are, therefore, often well organized to “help” the media in such complex areas as alcohol and tobacco use. A checklist of questions to use as a guide to the media understanding of risk issues has been published (28).

IMPORTANCE OF PERCEPTIONS IN SUCCESSFUL RISK PREVENTION

Discussions of risk perceptions are often still bedevilled by a number of simplistic and polarized views, such as between expert (scientific) understanding and general public (lay) perceptions; between quantitative (objective) and qualitative (subjective) assessment of risks; and between rational analytical and “irrational” emotive responses. Such stereotyping, reflected in the debates about nuclear power in the 1970s and 1980s, is unhelpful today in considering risks to health and how risk factors can be prevented. In addition, policy recommendations are likely to be resisted if they attempt to define the “correct” definitions of risk and support only the so-called “true” and objective measures of risk factors. Risk acceptability depends upon many different aspects of perceived risks of technologies and interventions, as well as any perceived benefits. Both risks and benefits have to be considered when seeking to understand what drives some risk behaviours and why some interventions are more acceptable and successful than others.

Moreover, social, cultural and economic factors are central to how individuals perceive and understand health risks. Similarly, structural factors can influence which risk control policies are adopted and what impact interventions for risk factor prevention can finally achieve. A focus on individual perceptions, particularly when considering communicable diseases in the developing world, essentially considers the risk from the point of view of personal health services and individual people. This approach ignores, however, the constraints on the autonomy or control that individuals have to act in their societies. Preventing risk factors thus has to be planned within the context of the local society, and prevention through interventions is only partly a matter of the individuals’ circumstances and education. In addition, because of the great lack of risk research in developing country populations, the transferability of research findings on risk perceptions from developed nations should also be treated with caution. This suggests a need for a concerted agenda for international research.

It is widely agreed that before interpreting risks and planning any communications or health interventions, people’s basic perceptions and frames of reference for interpreting risks must be well understood. It cannot be assumed that the general public thinks in the same terms and categories that are routinely used by public health professionals and other risk experts. Although obvious, this is a common mistake in designing intervention strategies. The boundary between “experts” and “public” is not as straightforward as it might at first seem. The general public in fact consists of many different “publics”, such as young and old, women and men, and poor and vulnerable. Each group can hold valid and different risk perceptions and frames of reference for similar risks factors.

Estimates of numerical risk and its consequences, presented in scientific terms based on a risk assessment, therefore have to be communicated with particular caution and care. Communicating information on risk frames and perceptions, and risk prevention, is best done by independent and creditable senior professionals. They can help create the atmosphere of trust between the government and all interested parties, in both the public and private sectors, that is essential if interventions are to be adopted and successfully implemented.

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