COMMUNICATING WITH RURAL COMMUNITIES TO IMPROVE QUALITY OF LIFE

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Abstract

A knowledge and understanding of scientific concepts can mean the difference between life and death for rural people at the grassroots level. We, who are educated, take for granted that biological principles such as hygiene and nutrition are linked to health. The children of the rural poor may die of gastroenteritis and malnutrition before they are even old enough to go to school. This paper will summarise practical aspects of the communication of science and technology aimed at improving the quality of life of rural and peri-urban communities in South Africa. The impact of communication of science varies according to the socio-economic and environmental situation in which it occurs. Planning of interventions is important and knowledge of the characteristics of the community, its social and material assets, perceptions and traditional practices, the level of knowledge and technology and the cost/benefit ratio of the interventions can be determined through a situational (systems or holistic) analysis.

Using participatory methods and scenario-planning, objectives can be selected, evaluated and ranked. Long term sustainability is more likely if people are motivated and empowered through capacity building. It is asked: "Is skills training a part of communication with the rural poor?" If so it is a part often forgotten. The "deficit model " or " handout syndrome" is paternalistic and prescriptive and suppresses motivation and self-respect of the target audience who become passive recipients rather than active participants. This has a negative impact on the sustainability of a project - it falls away as soon as the funding vanishes.

This paper lists principles based on field experiences of successful veterinary extension, primary animal health care and small-scale farming. It discusses force field analysis as a method to promote change, describes adoption and diffusion curves and gives practical advice on interpersonal communication strategies to improve animal and human health and quality of life.

Introduction

According to Wade (1989), a developmental process starts from where people are and takes them to where they want to be. It is a series of forward looking or visionary processes he calls "anticipatory needs". In contrast, the definition commonly used for "felt needs" is the difference between where people are and where they should be. The difference is that the one is a process where the facilitator or agency acts as a "big brother", deciding what is the best route forward, whereas in the other case, the vision is that of a community, based on indigenous knowledge, practices and experience over many generations.

One of the problems with acceptance of science communication is that the scientist is seen, or may even desire to be seen as "big brother". Unfortunately the way in which scientists argue a point may also create distrust in the non-scientific community, who may not understand that there may be more than one answer to a question or more than one way forward. There are, however, many simple scientific facts in relation to the health of people and animals that are incontestable. For example, the very simple message "wash your hands" has a very sophisticated

scientific background that has to do with risk assessment, epidemiology, microbiology, culture, socio-economics and environmental pollution. Yet it was less than 200 years ago, in the time of Joseph Lister (Asimov, 1964), that hand washing was linked to health in the western world and it is not yet being universally practiced. Partly because of knowledge lack and cultural barriers, partly because clean water is not universally available.

The holistic approach

The effect of communication of science varies according to the socio-economic and environmental situation in which it occurs. Planning of interventions is important and knowledge of the characteristics of the community, its social and material assets, perceptions and traditional practices, the level of knowledge and technology and the cost/benefit ratio of the interventions can be determined through a situational (systems or holistic) analysis, where all the possible factors likely to influence the outcome are listed and assessed (Fig 1). Intrinsic factors are those that are within the system, extrinsic factors are those that are outside the system being investigated but have an influence on the interactions within the system (Amir and Knipscheer, 1989; Lazlo, 1983; Mettrick, 1993).

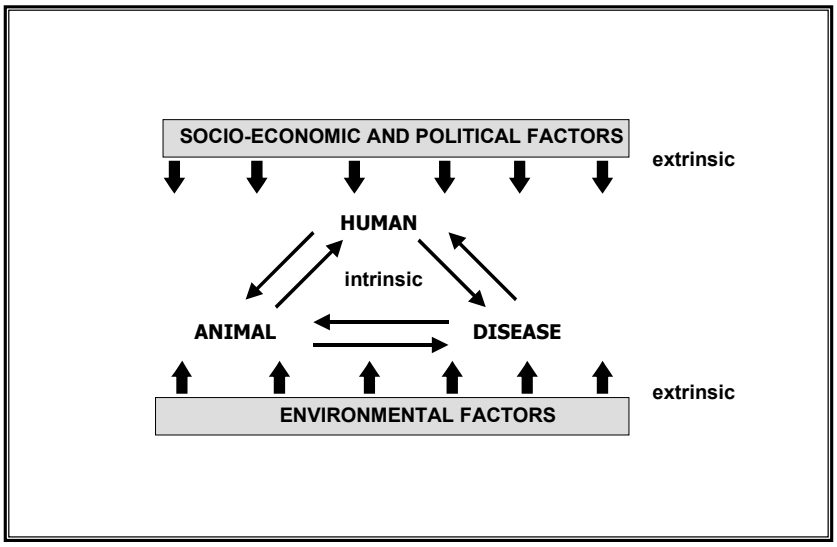

Fig 1: Holistic, systems approach in veterinary science, where the system being studied is the interaction between humans, animals and diseases.

Veterinary public health deals with safety of food of animal origin, environmental health and prevention of diseases that are common to both humans and animals. The emphasis is that it is structured in terms of the human target audience, rather than the animals or the diseases. It is recommended that the approach should be participatory and the veterinarian should be accepted and trusted by the target community, as the health and wellbeing of the animals is strongly linked to the health and wellbeing of their owners (McCrindle, 1994; McCrindle, 1998; Stewart *et al*, 1998). This approach is in contrast to one which is paternalistic, prescriptive and animal-centred and where the owner's interests are disregarded.

This paper is based on field experiences of participatory veterinary extension and communication with the objective of improving health and quality of life for people and their animals (McCrindle *et al*, 1997; McCrindle *et al*, 1999; Stewart and McCrindle, 1997).

In rural communities, successful communication strategies have the following characteristics, they:

- Define all characteristics of the "target group".
- Define a particular objective and key factors to be changed to reach the objective
- Are based on actual needs and of animals and owners (target group)
- Are affordable and the benefits outweigh the costs
- Show observable/ measurable benefits in a short space of time
- Are relevant to the environmental and socioeconomic situation
- Are linked to the available resources (asset mapping and social capital)
- Are at an appropriate level of technology
- Are participatory and include traditional methods and knowledge
- Have a simple but scientific approach
- Use minimal vocabulary - no jargon - and local language/ dialect
- Include practical, useful details
- Encourage self reliance through skills training rather than knowledge transfer
- Must be ongoing with constant evaluation and modification

Defining the target group:

Definition of a "target group" is a concept well understood by journalists. Sports news goes on the Sports Page, recipes go in the Entertainment Section. It is anticipated that although there may be people interested in both sport and cooking, a recipe for chocolate cake would probably not be of much interest to the majority of those who read the Sports Page. Besides interest, there is also specific jargon involved. "Cream the butter and sugar" may be totally incomprehensible to the dedicated cricket lover while "Googly" may be equally incomprehensible to the dedicated cook.

When communicating science this concept must be considered. In the case of science related to health issues, the target audience is not usually comprised of scientists but of those whose health will be affected positively by application of a scientific principle - such as "wash your hands". The target audiences for this particular message might be pre-school children being "potty trained"; catering workers; abattoir workers; or even aspirant surgeons and gaenecologists. For each target audience the message may be the same but the level of skill expected and channel of communication would be entirely different.

An example of application of this message in a rural community, would be women who have miscarriages, or deaths in newborn children as a result of toxoplasmosis.

A holistic situational appraisal is done (see Fig 1) and key factors identified that may have an impact on the interaction between human, animal and disease. Epidemiological studies may reveal that the organism is present in the mutton that the woman are cutting up to cook in a stew. A key factor in transmission is ingestion of raw meat or meat juices from an infected animal. In that hypothetical culture, food is eaten with the fingers. Clean water is not readily available - water is drawn from the river and it may be polluted with other diseases such as cholera and hepatitis virus. If the woman wash their hands after cutting up the meat, before they eat, they

may reduce their exposure to one disease while increasing their exposure to others. To suit this target audience, therefore, the message may have to be modified to: "after cutting up meat, wash with soap and dry your hands well before you eat". Using soap changes pH and surface tension and will reduce the survival of micro-organisms while removing the greasy meat residues from the hands and fingernails. Drying the hands physically removes microorganisms present in water and dessication reduces the viability of most micro-organisms.

Selecting and ranking objectives:

In communication of science it is necessary to decide what is to be communicated, when and how to whom. Something not often mentioned in the literature is "who benefits"? If the communicator benefits and the target audience does not - then what is being done is closer to advertising (if there is a monetary gain) or propaganda (if there is a political gain), than communication. Scientists and academics are sometimes guilty of this without realising it. It is one of the reasons why press releases from academic institutions land in the out basket instead of the front page.

Costs are an important factor. For example, although it would be ideal to pasteurise cow's milk to prevent transmission of bovine tuberculosis and brucellosis to people, the technology required would be too costly. It would therefore be better to advise communal farmers that all milk from their cows should be boiled. The message may, however, not be accepted as cultural preferences are for soured milk and boiling the milk will destroy the bacteria that cause souring. So it is important to reassess the impact of scientific knowledge imparted and discuss solutions with all the people concerned. This is known as a participatory approach (Chambers, 1992; Stewart and McCrindle, 1997).

The main objective in veterinary public health is to cause people to change the way they are doing something in such a way that health and wellbeing of both humans and animals improve. In low-income rural communities there are many problems and it is important to rank them so that one problem is addressed at a time. Scenario planning and risk assessment may have to be used to find out which information will be of most benefit to the target audience through ranking and cost-benefit analysis (Amir and Knipscheer, 1989; Mettrick, 1993; Thrusfield, 1988; van Schothorst, 1997; Yu *et al*, 1997). Scenario trees can be built and the outcome probabilities statistically compared using the scenario function in Microsoft Excel ®. Research data can often indicate the relative magnitude of a factor that contributes to a particular disease. For example, the eggs of the dog hookworm hatch into larvae, which infect children by creeping through their skin. A very itchy skin lesion results, which can become infected with bacteria when scratched. Although not fatal, it is difficult to treat.

There are several factors which play a role: wet patches from leaking taps, children walking barefoot and playing in the mud, unconfined dogs that defaecate in public places. Faecal sampling of the dogs shows that approximately 80% of them are positive for hookworm (McCrindle *et al*, 1996). The disease is most easily transmitted to people through young puppies as the larvae migrate from the bitch to the foetus before birth. There are cultural constraints involved in discussing the faeces of dogs, a complete lack of fences to prevent dogs from straying, financial implications involved in de-worming or sterilising the bitches and the children are too young to understand a message which stops them playing in the mud. Scenario planning can be used to evaluate each of these factors and their probable impact on the situation. The contribution of each factor to transmission of the parasite from

dogs to children can be estimated using literature references, work-shopping, focus group techniques, consultants with appropriate experience, detailed research and data gathering. This approach can be termed "risk assessment" (Yu *et al*, 1997).

Scientifically the problem and its solution are clear. The message from the scientists is "dog hookworm causes cutaneous larval migrans - tell everyone". It may be accompanied with pictures of the life cycle of the parasite and even its Latin name. Although the science is being communicated, the level of the infection in children does not change.

Change:

Before the situation can be changed there may have to be facilitation and management of change - something well-known in management theory (Hersey and Blanchard, 1973). To paraphrase Bembridge (1991), extension can only function effectively if scientific objectives and target audience objectives coincide. Getting them to coincide involves situational (systems) analysis and management of change.

Change is linked to perceptions and can consequently only be achieved by listening to people and observing the situation objectively. It is a systems approach (Lazlo, 1983), where all the variables intrinsic and extrinsic to a particular system as well as all the interactions are identified, analysed and evaluated in a participatory way. People capital (strengths and abilities), access to resources (asset mapping) as well as constraints should be included (Flora, 1997; Stewart *et al*, 1998).

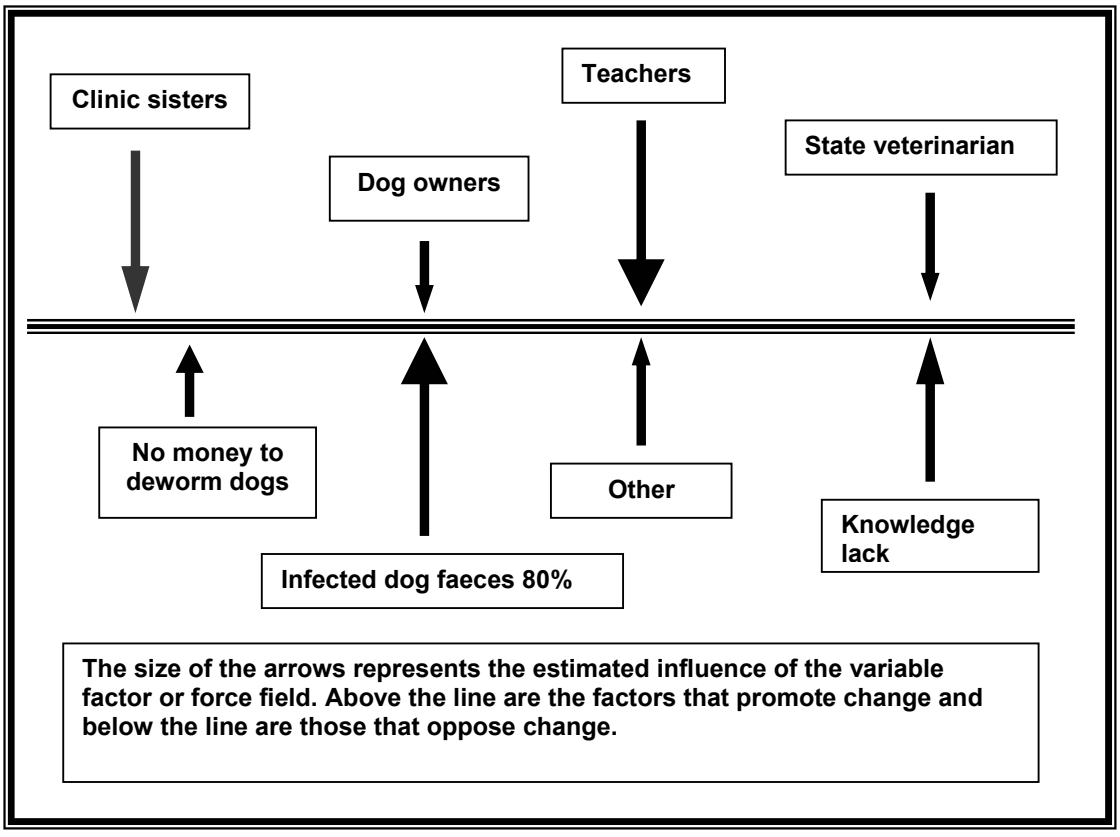

Fig 2: Force field analysis of factors promoting and preventing change, using an example of cutaneous *larval migrans* in rural children.

After investigation of the system within which change is desirable, analysis leads to identification of factors or variables (force fields) which are against change (sometimes called "constraints") and those in favour of change. Analysis can be done by using work-shopping, focus group techniques, consultants with appropriate experience, detailed research with ranking of variables, or computer modeling (if funds and time allow). Hersey and Blanchard (1973) have described an effective method which can be used to promote change as "force field analysis" (Fig 2)

If the skin infection of children caused by canine hookworm is taken as an example, factors likely to promote or prevent change can be identified. These are represented by larger or by smaller arrows, depending on the estimated magnitude of their effect on the situation. The factors against change include lack of knowledge about dog worms, lack of access to de-worming medication for dogs, lack of diagnosis by clinic sisters, leaking water taps, faecal contamination by free-roaming dogs. In favour of change are the following factors: clinic sisters anxious to learn how to diagnose and treat the condition; preschool teachers anxious to stop children scratching in class; dog owners willing to cooperate; state veterinarian was willing to cooperate.

Once these "force-fields" have been analysed and their relative importance recognised, the constraints are addressed. Then the positive factors will move the situation, through change, to the desired scenario (Fig 2). In this case, funding was obtained to subsidise purchase of worming medication and the dogs were de-wormed under the supervision of the state veterinarian and animal heath technicians. After de-worming the dog's grew fatter on the same food - this motivated the community to come to an information day where they were advised to fix the leaking tap and regularly remove dog faeces form the areas where children played. The clinic sisters and preschool teachers collaborated in maintaining this message and the skin lesions on the children disappeared (McCrindle *et al*, 1996).

Interpersonal strategies for communication

Interpersonal communication is closely linked to the perceptions of the listener or target audience. Perceptions are influenced by the age, educational level, culture, socio-economic circumstances and often, political viewpoint of the listener. These perceptions can be established within minutes or even seconds and are linked to verbal and non-verbal clues provided by the communicator. What you do and how you look influences how your message is accepted.

Verbal communication strategies are important and first of these is language, which includes fluency, politeness and correct use of words. Non-verbal clues like body language and clothes also have a lot to do with whether the message is accepted or not. So do gender, culture and age of the communicator (Bembridge, 1991; Jude, 1997). For example a young, pretty, female scientist wearing designer jeans may not fit the preconceived idea of wisdom in a culture which is patriarchal. This is not to say that the same scientist, wearing conservative clothing and listening respectfully to the elders opinions, could not successfully achieve acceptance of the scientific message.

Most rural communities throughout the world have a respect for tradition, so conservative clothes and behaviour are more readily accepted. Sometimes scientists talk to rural adults as though they are children and this "top-down" approach can alienate a whole community. The "halo effect" is well known - people are more inclined to believe what they hear from people they like and trust.

Skills training as part of communication

Verbal communication may not be enough. Even as simple a procedure as hand washing may not be effective unless done correctly. This may involve visual materials, or demonstrations and evaluation. It can be changed to a sort of game where there is a prize or recognition for the skill being performed correctly. The judging can be done by the participants themselves and recognition can be as little as a round of applause, led by the facilitator, once a pupil has achieved a sufficient level of expertise. Positive reinforcement (operant conditioning) is well described in the classic work of Skinner (1953), Ferster and Skinner (1957) and later Bandura (1969). A positive reinforcement will strengthen the response it follows and make that response more likely to recur.

Adoption and diffusion curves

Scientists and communicators who work with rural communities may become frustrated by how few people appear to adopt their scientifically based and scientifically proven suggestions. It is not often realised that new ideas have to pass through several stages before they are adopted. Bembridge (1991) describes this process for agriculture as an expression of interest, evaluation of the idea in terms of the farmers needs, trial - for instance planting the new crop, re-evaluation and then adoption of the method. At any stage of the process, the farmer may reject the idea or technology. If a new technique or technological advance is introduced to a farming community, the idea will slowly diffuse through the community. Initially the innovators will try it. If they are seen to be successful, the idea will diffuse to early adopters and then the majority. There will always be a proportion that will never adopt the technology (Rogers 1962). The time frame of this adoption of a particular innovation depends on the perception of how useful it is. A recent successful model of adoption of technology is the cellular telephone.

The dangers of paternalism and the handout syndrome

Scientists are sometimes inclined to be paternalistic about non-scientists. This can result in the target audience becoming totally dependent on inputs from aid agencies or another source of funding. The project is very impressive while the funding lasts but falls away as soon as the funding vanishes. This is sometimes called the "hand-out syndrome" and results in dependency. In contrast, sustainability is closely linked to the empowerment of the target community through capacity building (McKnight, 1985, 1987). Scientific concepts should be understood, so improving conceptual capacity, even if the technological capacity resides with the qualified scientist.

According to Stewart & McCrindle (1997) adults learn on the basis of "need to know". In very low-income communities, motivation for learning may be closely linked to individual survival. There is a very high risk for the individual that changes the way things are done and consequently people become risk-aversive. In traditional communities, where things have changed little over hundreds, or even thousands of years, methods of caring for animals are passed on though generations through encountering and solving practical problems.

Highly trained professionals, such as veterinary scientists, sometimes feel pressured to give the impression of having all the answers. There is a tendency to give solutions based on textbook knowledge and preconceived ideas or prejudices,

without discussion with the animal owner. Yet traditional knowledge should be considered and people are more likely to "buy in" to technological advances if they are consulted and made part of the decision making process (Mettrick, 1993). The best answers are frequently found in a compromise between those taught at tertiary institutions and those passed down from one generation to the next (indigenous practices). Perception of self is linked to past experience. If past experiences are ignored during training, people may perceive this as a rejection of themselves - a decrease in self worth. Empowerment of people is about increasing self-esteem, a sense of independence and personal competency. When these are suppressed, the person easily falls into a condition of dependency.

People are motivated by success and de-motivated by failure. Information and skills should be broken down into small pieces that people can assimilate. The classic description of this is the allegory of eating an elephant. Anyone can eat a whole elephant if it is done a mouthful at a time. No-one can swallow a whole elephant. Yet sometimes the impression is created that rural farmers, with little educational background, are expected to swallow the whole of veterinary science and animal management knowledge in one mouthful. It is very counterproductive to try and give a lesson, demonstration or talk, that includes everything. From experience, three to five concepts or a single skill, not more, should be taught at a time. Relate new experiences to the person's "life-world" - build on current knowledge and experience. This involves listening to people in rural communities, determining what they already know and expanding on this. If you start at too low a level they become bored. Too high a level and they become lost and uninterested.

Conclusions

The role of the academic or scientist should preferably be to facilitate capacity building, empowerment and self-reliance. This includes consultation with adult learners and recognition of their innate talents and capabilities, while enhancing skills and conceptual knowledge.

It is concluded that communication of science is best achieved if the objectives are clearly identified, the target audience well understood and a situational analysis done to identify key factors for change. Communication can be verbal, visual or through skills training. Sustainability is the measure of success, although memories in disadvantaged rural communities are short and the message has to be repeatedly updated and refreshed. If the spin-off is a respect for science and knowledge and people begin to consult with scientists to seek scientific solutions for everyday problems, then the communication of science has succeeded.

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