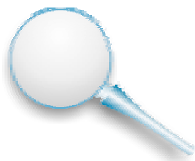
Taking Barefoot Research Further



For more ambitious Barefoot Researchers, this Section helps you to go further with the Barefoot Research techniques described in the main part of this manual. Terms used for the first time in this Section are defined in the Glossary at the back of the manual.

Collaborative research

Larger more ambitious research projects may require a core group of individuals who will take primary responsibility for the co-ordination of the research and another general group of individuals who can provide assistance.

Core Research Team

A core research team should be established to define, design and oversee the research. The core team can be as small as one person (not recommended) or as large as is practical. What is important is that the basic philosophy and goals of the team members should be fully compatible. Additions can always be made to the team if needed, as the project begins to take shape. Keep in mind that it is much easier to add to the team than to subtract.

A worker-based project can also include outside collaborators or consultants. The decision regarding whether or not to involve outside researchers should be based on a number of factors: the degree of complexity of the research, the existing skills of the worker-researchers, the need for some degree of neutrality or objectivity, and access to funds and other resources.

Co-operative research relationships

The following are essential conditions for a co-operative research relationship with outside research collaborators:

1) The research aims should be of genuine interest to both the workers and researcher. The success of participatory research is due partly to developing mutually dependent and cooperative relationships;
2) The outcomes of the study should be relevant to the needs of all those involved in the research.

From: Reinharz S. 1983. "Experiential analysis: a contribution to feminist research"

Rather than treating people as the subjects of study by a detached and neutral researcher, collaborators, in keeping with the principles of participatory action research, join the so-called "subjects" in a partnership.

It is important to distinguish between collaborators, who by definition will be part of the research team, and consultants who will be retained in some manner to provide assistance and advice. Caution must be taken to ensure that those in either category are not able take control or dilute the goals of the workers by imposing their own needs or philosophies.

Barriers to the involvement of outside researchers

You should be aware that there may be some resistance from outside researchers to participate in a study that they do not fully control. Barefoot Research is, after all, about identifying and recognising the power structures that exist within institutions and economic systems. It is about understanding, analysing, involving, empowering, and taking action in ways that may challenge those very structures. It is often about taking sides and of challenging dominant ideologies. The action component can be troubling and even threatening for potential allies in academia and in professions which are financially dependent on the good will of the very institutions and existing economic structures being challenged though the research.

Barefoot Research is often qualitative, which is not the standard approach for conducting health studies. The more common biomedical model of health research is based on laboratory experiments, and clinic-based scientific studies. It can be a stretch for some academics and health professionals to understand the value of Barefoot Research. The fact that the health data collected using Barefoot Research is often self-reported may offend those who are accustomed to the usually stringent protocols for collecting clinically diagnosed and confirmed health data. The Barefoot approach to identifying hazards may be objectionable to occupational hygiene professionals, toxicologists, and industrial environmental consultants who are used to relying on sampling and measuring and published scientific literature to establish causal connections.

Nevertheless, there are individuals, often connected to liberal institutions, who recognise the value of Barefoot Research and who are eager to lend support and guidance, without taking over the leadership role of the worker-researchers.

General Research Team

After the core research team has been established, a larger, general research team can be organised to support the core research team. It can include workers who are acting as research assistants or data gathers. It can also include outside consultants. Once again, however, if outside consultants or research assistants are used to gather data or help with analysis, their role should be clearly defined as providing support to the core research team and they should not have undue control or influence.

Additional methods of mapping

Body Mapping

When body mapping is used as a research tool, data collection can be enhanced through the use of colour-coding. There are many ways to organise and categorise data. Here are two options:

1. Participants can categorise their health problems using coloured stickers or markers rather than marking an X on the body map indicating they have a health complaint. The following legend is a suggestion which you can adapt to fit your research needs (and whatever stickers or coloured markers you have available). Categorising by colours helps you to group similar types of health complaints.

COLOR	HEALTH PROBLEM
Red	Musculoskeletal / Strain
Orange	Respiratory
Blue	Neurological / Hearing
Purple	Traumatic Injury
Yellow	Cardiovascular / Heart
Black	Skin
Green	Digestive
Brown	Cancer
White	Stress Symptoms

2. Another option is to colour-code by some meaningful participant characteristic. For example, it may be useful to have participants use a colour which represents their occupation, department, age, gender, seniority or some other demographic category. If, for example, the group includes workers from a variety of occupations, it might be useful to colour-code the participants according to their occupations. Kitchen workers may be asked to use green stickers, for instance, to distinguish their health problems from those of the cleaners who are asked to use blue, or the office workers, who are asked to use yellow.

Hazard Mapping

When hazard mapping is used as a research tool, data collection can be enhanced also through the use of colour-coding. Here are some options:

1. Hazards can be grouped into categories and colour-coded accordingly. You may want to consider using the following legend:

COLOR	HAZARD CATEGORY
Blue	BIOLOGICAL *(germs, moulds, bacteria, etc.)*
Green	CHEMICAL and MINERAL *(second-hand smoke, solvents, asbestos, etc.)*
Red	PHYSICAL *(noise, radiation, heat, cold, etc.)*
Black	PSYCHOSOCIAL *(stress, shiftwork, job insecurity, harassment, etc.)*
Brown	WORK DESIGN *(poor ergonomics, overcrowding, etc.)*

2. Another option is to colour-code by some meaningful participant characteristic. For example, women might use green stickers or markers, and men might use red.

“Your World” Mapping

When “Your World” mapping is used as a research tool, data collection can be enhanced as well through the use of colour-coding. There are many ways to organise and categorise data.

One option is to colour-code by some meaningful participant characteristic, such as occupation, seniority, or gender. If the participants used colour-coding according to a participant characteristic during body mapping or hazard mapping exercises prior to doing the “Your World” mapping, the same colour-coding scheme should be used throughout. The participants can place their colour-coded stickers beside the data (words or pictures) they have added to the “Your World” map or add their data using a colour-coded marker.

Obtaining occupational histories

Work-related diseases and injuries do not always have a clear cause and effect. When workers seek medical attention for a health problem, it is good practice that they are asked about their working conditions. Some workers' clinics will take a full occupational history of their patients. Unfortunately, most medical clinics and physicians do not.

Ideally, work histories will be gathered and recorded using an interview format. A health care provider, compensation representative or researcher can lead the worker through a standard set of questions to avoid missing important details.

An occupational history should include:

- the various jobs held by a worker throughout his or her working life
- the dates and duration of the jobs
- any known or suspected hazards, descriptions of their intensity and duration of exposures
- any abnormal exposures, for example, a maintenance worker exposed to a "one-off" event when the controls fail and a contaminant is emitted in larger than normal quantities
- work-induced stress and psycho-social disorders caused or made worse by work-related factors including insecurity such as involuntary job loss, income insecurity, lack of training for jobs performed and so on
- descriptions of work processes
- types of raw materials used and products produced
- periods of ill health and whether there was access to medical care
- whether co-workers complained of similar health problems

Any available material safety data sheets or industrial hygiene reports can supplement this information.

Standard work history questions

"A standardised set of questions asked of every patient is the single most important method of recognising a link between illness and occupation."

Screening questions include:

1. What type of work do you do?
2. Do you think your health problems may be related to your work?
3. Are your symptoms different at work and at home?
4. Are you currently exposed to chemicals, dusts, metals, radiation, noise or repetitive work?
5. Have you been exposed to chemicals, dusts, metals, radiation, noise or repetitive work in the past?
6. Are any of your co-workers experiencing similar symptoms?

From: Lax MB, Grant WD, Manetti FA, Klein R. 1998. "Recognizing Occupational Disease—Taking an Effective Occupational History," in American Family Physician.

It may be difficult for workers to convince medical practitioners to consider their work histories. To save time and make the task easier for the health care provider, workers can prepare their own histories in advance and present them to their physicians to consider. The history should be kept on file. The following self-administered occupational history form can be used.

Date	Employer name: product or service provided	Job title and specific duties	Major exposures (such as dusts, chemicals, noise, repetitive motion, stress)	Protective equipment (such as respirator, ear plugs, gloves)

(Lax MB et al, 1998)

Occupational cancer registries

Occupational cancer registries have been established in a number of countries. Some gather full work and exposure histories; others simply list cancer patients' occupations. Although such registries are not generally considered to be within the realm of Barefoot Research, they do provide important information regarding the association between workplace exposures and disease. Workers can promote the establishment of such registries and request access to findings, which can then be used to support their own research and action plans.

Sampling and testing

The traditional tools for assessing health and safety problems in the workplace include such procedures as air sampling and testing, collection of dust or biological samples, measuring noise levels, radiation monitoring, personal sampling and visual inspections. Although such methods can add to our understanding of how particular hazards might impact on the health and well being of workers, they do have their limitations. One particular problem is that hygiene investigations often occur without the workers' direct participation and may not reflect conditions as they normally exist. Air sampling, for instance, may take place after some of the machines have been shut off, or a bay door has been left open increasing air-flow and reducing normal exposure levels. Without worker input, a hygienist would probably not know that these are unusual working conditions and exposure levels.

Threshold limits unproven

"The very concept of "safe" exposures to any chemical is inherently unscientific. Indeed, the term "threshold limit" embodies this unproven and probably unprovable concept that there is some known level of exposure which does not adversely affect the organism. Discarding the term "threshold limit" is a necessary first step in correcting this false ideology of the past."

From: Castleman B. and Ziem G. 1988. "Corporate Influence on Threshold Limit Values". In American Journal of Industrial Medicine (13): 556.

Air testing alone can seldom provide the full picture. Air testing is often done for only a few substances rather than the full range of possible exposures. It may miss the risks faced by workers who are exposed to substances in other ways. For example, many workers have direct contact with toxic substances that may be absorbed through the skin. They may ingest hazardous dust when they swallow. These other routes of entry are generally not well documented in hygiene reports. As a result, the overall toxic burden on workers is not reflected in the traditional tests.

Industrial hygienists not always right

Industrial hygienists can be extremely helpful to workers by identifying, evaluating and recommending controls for health hazards on the job.

Experience has shown, however, that the personal exposure monitoring and exposure limits of industrial hygiene have been used to 'scientifically prove' that working conditions are 'safe' when they were not, even when workers were getting sick.

From: Senn E. 1991. "Playing Industrial Hygiene to Win," in New Solutions, Spring, 1991, pg. 72-80.

Furthermore, hygiene tests are usually done to establish whether or not exposures fall within the legally allowable limits. Unfortunately, the allowed "threshold limits" are often too high to protect workers' health. What is legal or even "acceptable" is not necessarily safe.

Industrial hygiene associations often provide exposure limits for toxic substances, which are then adapted by governmental bodies. Corporations have had tremendous influence in determining at what levels the threshold limits are set. [Castleman and Ziem, 1988]. In fact, researchers have found that chemical producers often have a major role in setting the legal limits for toxic substances their own companies produce. They argue for levels that are readily achievable rather than those that protect the health of workers. [Roach S and Rappaport S, 1990] In some cases, the recommended limits are worse than those used by a company in its in-house production of the substance.

Despite the questionable accuracy of industrial hygiene and its reliance on threshold limits, it is still one of the most common approaches for evaluating workplace hazards. But it has understandably mixed reviews when it comes to helping workers prevent injuries and disease. When done well, it can help point to the potential for problems and the processes or tasks which put workers at risk. It can also help indicate where controls may be most effective. For monitoring to be done well, it must include careful observation and talking with workers to identify when problems occur and to get ideas for solutions. A good industrial hygienist can help workers realise that their observations have great value.

Sampling Report

A hygiene sampling report should include the following information:

√ Who performed sampling
√ Date
√ Time
√ Operation
√ Location
√ Worker's name
√ Job title
√ Personal Protective equipment worn
√ Ventilation in use
√ Sampling method
√ Analytical method
√ Instruments
√ Contaminants
√ Number of samples
√ Results for each sample
- Sample I.D. number
- Time: to/from
- Raw Results
√ Overall results
√ Calculated time weighted average
√ Ceiling limit
√ Short-term excursion limit

From: UAW Health & Safety Fact Sheet: Questions for Industrial Hygiene Surveys. 1984.

Barefoot hygiene approach

As described in this manual, workers need to talk to one another; they need to use their senses to see, hear, and smell the hazards; they need to use their instincts and “gut” feelings to help direct them in their efforts to determine the causes of work-related ill-health. They also need to consider alternatives to traditional hygiene, such as conducting their own Barefoot Research using surveys, mapping, group discussions, and interviews rather than relying on testing or sampling. In fact, the results of a workers’ survey, mapping exercise or literature search may provide important counter arguments when hygiene testing is inconclusive or concludes there is no problem.

How to read and interpret health studies

In many countries, studies are regularly reported in the news showing how a particular population is found to have some degree of risk for contracting a disease from some causative factor. A study may show, for example, that rubber workers have a 40% greater chance of developing bladder cancer because of their exposure to chemicals related to the production process. Such scientific studies can provide important information about the risks faced by particular groups of workers.

Some terms used in scientific or “epidemiological” studies

Learning a few scientific concepts can help workers to interpret and evaluate health studies and help determine whether the results might be applicable to their own situation.

A ***cohort*** is a group of people with similar exposures who are studied over a period of time. Researchers need to know the age, sex, work history, lifestyle, and exposures of members of the cohort so that they can compare them with people in the general population who have similar characteristics. Comparing an exposed group to an unexposed group can help identify health problems caused by exposures at work.

A ***confounder*** is a variable (such as age or smoking, which varies from individual to individual) that has the potential to make the results of an epidemiological, or “epi” study, incorrect or unclear. Since a number of different variables can potentially contribute to a person’s risk of developing diseases, such as cancer or heart disease, health studies must consider, or control for, these other factors to get a more accurate picture of what is causing the disease in the study population. If researchers set out to determine whether a group of foundry workers had more lung cancer and heart disease than the general population, they would want to know the workers’ smoking histories, because smoking alone can cause these diseases. To control for this kind of possible confounder, researchers will attempt to obtain the smoking histories of people in both the study group and a comparison group.

How do we know it is not just by chance that a group of workers is developing a particular health problem? A calculation determining ***statistical significance*** allows researchers to decide whether a finding was likely to have occurred by chance. Epidemiologists like to use a 95 per cent standard of certainty, which is called a ***confidence interval.*** This means that if the study population had the same risk as the comparison population, finding a difference in rates of death or disease would have occurred by chance only 5 per cent of the time. It is worth emphasising that the confidence interval standard of 95 per cent is completely arbitrary. While a 95 per cent limit guards against a chance finding, an 80 or 90 per cent certainty might be sufficient to demonstrate a probable connection. By maintaining such a “high” standard of probability (the 95% confidence interval), many “real” findings may never be recognised or acknowledged and a truly preventive approach to protecting workers’ health is not applied. One direct result is that around the world, workers’ health remains at risk from many work processes and substances.

HOW TO INTERPRET AN "EPI" TABLE

This column records the **Cause of Death**, which in this case are the types of cancer suffered by the "cases" or subjects. *In another study it might show types of diseases or injuries*

This column gives the actual **Number of Deaths** for each specific type of cancer. *(This particular table is based on a large study; there were 797 deaths within the cohort.)* Another study might show the number of diseases or injuries.

Cause of Death	Number of Deaths	Standard Mortality Ratio (SMR)	95% Confidence Interval (CI)
All Cancers	797	1.02	0.96-1.04
Oesophagus	22	1.18	0.74-1.79
Stomach	37	1.47	1.04-2.03
Larynx	23	1.98	1.26-2.98
Lung	251	1.72	1.02-2.15
Leukaemia	38	1.25	0.88-1.71

This column shows the **Standard Mortality Ratio (SMR)** which is the ratio of the **observed** number of deaths divided by the **expected** number of deaths. An SMR of one means the number of observed cases equals the number of expected cases. Any number greater than one indicates a higher number of deaths than expected. In this table, each of the cancers is elevated. For example, the figure of 1.72 for lung cancer means that there is a 72% greater number of observed cases than expected. In a study examining incidence of disease or injury rather than death, this column might show a **Standard Incidence Ratio (SIR).** The table might also show the risk of exposure by comparing the rates of disease or death among the exposed to the non-exposed. **Relative Risk (RR)** may be calculated in comparison to a control group or the general population. The difference between the exposed and non-exposed can also be shown as an **Odds Ratio (OR).**

This column contains the **Confidence Intervals (CI).** If the first number in the range, called the lower confidence interval, is one or greater, the findings are considered to be ***statistically significant.*** With a 95% CI, that means that there is only a 5% chance the findings occurred by chance alone. In this table, the SMRs for cancers of the stomach, larynx and lung were considered to be statistically significant. *(Therefore, there is a strong probability they were related to the exposures suspected.)*

People who are working are healthier than the non-working population. Workers, especially those in unions, generally have a higher standard of living, with better diets and access to medical care than the non-working population, which includes those who are differently abled, the elderly, and people too unhealthy to work. Many epidemiologists believe that when workers are compared to the non-working population certain diseases, like heart disease and cancer, are underestimated because of this so-called ***healthy worker effect.***

Evaluation of research

The process of evaluating your research can be illuminating and can lead to ideas for improvement of the process and a better understanding of how the next critical steps should be carried out. Evaluation can take place at several levels. Participants can be asked to give their feedback, either verbally or in writing, after an interview, during a small or large group discussion or mapping session, for instance. A participant evaluation can be as simple as asking three questions:

What did you like?

What did you not like?

How would you change it?

After the Barefoot Research data gathering and report stages have been completed, the core research team should review its original goals to see how well they have been met. The research process can be evaluated by asking and discussing a series of questions:

What worked and why?

What did not work and why did it not work?

What could be done to improve the process and add to its effectiveness?

What still needs to be done?

Evaluation of the effectiveness in achieving the ultimate goal of change may have to wait until some intended action has taken place and its impact can be measured.

Case Study:
Health Survey of Former Vinatex Workers - United Kingdom

The hazards of workplace exposure to vinyl chloride (VCM), first used in 1927, have been known for decades. Reports of occupationally related disease in those exposed to VCM include:

- *1949 - damage to workers' livers;*
- *1965 - acro-osteolysis, a degenerative bone disease;*
- *1969 - neurological effects;*
- *1974 - the first liver cancer cases in VCM workers.*

A wide range of other diseases linked to VCM exposure has since been reported.

In 2000, a survey was developed through a partnership between a support group of former Vinatex workers in Britain and university researchers. 229 former Vinatex workers were identified and contact was made with as many as possible. 162 workers ultimately participated in the research. A questionnaire, which was sent out by mail, explored the employees' work history. Once the questionnaires had been returned, an interview was arranged to document the health status of the participants.

The research produced interesting findings:

- *levels of breathlessness in the former Vinatex workers was found to be much higher than those reported in the general Health Survey for England*
- *the former Vinatex workers also revealed greater problems than expected with concentration, state of mind, irritability and various cognitive processes.*

When the researchers examined the existing literature, they discovered that respiratory and cognitive impairment are, in fact, consistent with studies involving workers exposed to VCM.

The workers' support group is now demanding:

- *that the British government play an active role in formally documenting the health problems of the former Vinatex workers through a registry; and*
- *that the workers have a direct role in this process.*

Adapted from: Watterson, A. Pickvance, S. Cairns, M. Wingfield, M. 2000. Report on a Health Survey of Ex-Vinatex Workers. (Centre for Occupational and Environmental Health, De Montfort University, Leicester, England)