



Editorial

Big Ideas: New metaphors for nursing (3): The nurse as gardener



1. Introduction

This is the third in an occasional series of Big Ideas papers which propose new metaphors to explore alternatives to the technical rational model of evidence-based nursing. In this paper I begin by examining the origins of evidence-based practice in agricultural research, before looking at how the resulting ‘logic of the laboratory’ has influenced practice in the health professions. Drawing on a metaphor first used by the educationalist Lawrence Stenhouse, I introduce the idea of nurse-as-gardener, who rejects the factory farming methods of large-scale agriculture in favour of the cultivation of the individual.

Although the randomised control trial (RCT) is now widely considered to be the gold standard method for collecting evidence for the effectiveness of treatment in nursing and most other health-related disciplines, we should remember that it was not originally designed for that purpose. The idea of blinded experiments was first proposed in 1879 by the philosopher C.S. Peirce, and was further developed in the 1930s by the geneticist R.A. Fisher as a method for comparing crop treatments (Fisher, 1935). Fisher emphasised the importance of randomisation and described the use of ‘randomised blocks’ as follows:

We will suppose that our experiment is designed to test the relative productivity, or yield, of five different varieties of farm crop.... Our object is to determine whether, on the soil or in the climactic conditions experienced by the test, any of the varieties tested yield more than others, and, if so, to evaluate the differences with a determinate degree of precision. (Fisher, 1935, p.48).

The comparison was to be made by dividing the field into equal-sized plots and sowing different crop varieties in each. Control of extraneous variables was introduced, so that ‘apart from the differences in variety to be used, the whole area is to have uniform agricultural treatment’ (p.49). Sophisticated statistical methods were employed to allocate the crop varieties and treatments randomly and to interpret the findings which, if conducted rigorously, would guarantee that any differences found between the groups could only be the result of the different crop varieties and treatments.

The first published example of a true RCT being used in the discipline of medical research was in 1948 in a paper entitled ‘Streptomycin treatment of pulmonary tuberculosis’ (Streptomycin in Tuberculosis Trials Committee, 1948). However, it was not until the 1960s and ‘70s that Archie Cochrane and other medical practitioners began systematically to collate and organise the small but growing number of published studies, culminating in the founding of the Cochrane Library in the late 1980s. This was followed several years later by the publication of the seminal paper ‘Evidence-based medicine: A new approach to teaching the practice of medicine’ (Evidence-Based Medicine Working Group, 1992), which launched the evidence-based

medicine movement and argued for the RCT as the ‘gold standard’ method for collecting evidence.

2. The Logic of the Laboratory

Fisher (1935) had described randomised experiments as conforming to ‘the logic of the laboratory’ (p.7), based on statistical induction, and most of the early examples of randomised trials in medicine conformed to the laboratory-based model. However, whilst this approach was effective in situations where any individual from the sample could be expected to behave more or less identically to any other individual (such as the biochemical effect of a drug on the body), it has been widely criticised when applied to other less predictable human responses. For example, the educationalist Lawrence Stenhouse (1979) has observed that, when the RCT is applied to research in schools, ‘the assumption is that one teaching procedure or curriculum can be tested against alternatives as a seed strain or fertiliser can in agriculture, i.e. procedures can be tested against yield without a real theoretical framework’ (p.21). As he pointed out, there are a number of difficulties with this assumption. Firstly, ‘yield’ is problematic once we move away from simple counting procedures. Whilst it is relatively easy to count or weigh crop yield, educational yield (and, for that matter, health yield) is somewhat more complex and can only be reduced to an easily-measured quantity at the risk of over-simplification. We can, of course, gauge educational achievement in terms of exam results, and health improvements in terms of simple biometrics such as body-mass index (BMI) and self-rating scales, but these numbers provide only a partial and imprecise indication of education and health respectively. Furthermore, there is a danger that ‘yield’ takes on too great a significance and that the goal for teachers becomes improved test scores rather than educated students.

More significantly, it cannot be assumed that any individual subject will respond to the intervention in the same way as any other. Thus, whilst it is possible to derive and compare average scores between groups, these averages might not be representative of any particular member (nor, indeed, of any member *at all*). Furthermore, as Stenhouse pointed out:

A measure of gross yield is an appropriate basis on which to select a crop treatment in large-scale farming, where a standardised procedure in which some plants do not thrive is more acceptable than a diagnostic cultivation of each plant individually. (Stenhouse, 1979, p.22).

In other words, laboratory scientists are not usually concerned with the fate of individual subjects (even, arguably, when those subjects are living creatures such as rats or pigeons) since, by definition, the laboratory sample is removed and separated from the eventual

beneficiaries of the intervention or treatment and might not even be of the same species. And even when the intervention is finally applied in the real world of agriculture or farming, it is still acceptable for individual subjects to suffer or perish for the sake of an overall increase in yield. It matters little to the factory farmer whether 10% of the crop dies if the remaining 90% outperforms the control group, or whether battery hens are housed in uncomfortable conditions so long as egg yield is increased.

As Stenhouse observed, however, this will not do in educational setting, nor of course in healthcare settings. We must never sacrifice the minority for the overall benefit of the majority; we should not (although we often do) allow a few children to lose out educationally simply to improve overall test scores; we cannot allow the health of a few patients to deteriorate in order to reduce overall mortality rates and bed occupancy. This is not just a matter of fine-tuning the methodology; the RCT is designed to maximise the gross yield for large populations, whether that yield is a crop, an educational test score or a health indicator such as mortality rate or BMI, and where the individual fate of particular research subjects (whether plants or living animals) is outweighed by the collective fate of the cohort. Fisher's 'logic of the laboratory' is particularly inappropriate for situations such as clinical trials, where the experiment is conducted in real-life settings on real-life vulnerable human subjects with a wide variation in individual differences.

3. Diagnostic Cultivation of the Individual

At this point, Stenhouse introduced a metaphor into his argument in order to emphasise the difference between a large-scale 'agricultural' approach to education and a smaller, more personal one. In place of the so-called 'gold-standard' methodology which identifies the single most effective intervention for the overall benefit of the majority, Stenhouse proposed a 'diagnostic cultivation' that varies the intervention to suit the needs of each individual. Clearly, this approach is not suited to the laboratory, where we are dealing with a representative sample of the population which only resembles it on a macro level. We can only *know what is best* for each individual by *knowing* each individual. Thus:

The teacher is like a gardener who treats different plants differently and not like a large-scale farmer who administers standardised treatments to as-near-as-possible standardised plants. Under such conditions variation of treatment gives a better gross yield attempting to maximise the yield of every individual unit; and this is what is required in education. The teacher must diagnose before he prescribes and then vary the prescription. The agricultural model assumes the same prescription for all. (Stenhouse, 1979, p.22).

Person-oriented practices such as education and nursing resemble gardening more than agriculture and require a new gold standard designed to address questions that account for the needs of each unique individual recipient of care rather than questions of 'gross yield' which assume the same treatment for all. Gardeners do not call in outside researchers when certain plants fail to thrive. Rather, they practice diagnostic cultivation by varying the growth conditions in a series of on-the-spot single case experiments. When the gardening metaphor is applied to nursing, it suggests that research is not something to be conducted separately from, and then applied to, practice, often by career researchers who have little experience of providing healthcare. Research findings should arise *from* practice as part of *doing* practice by a skilled practitioner who is able to diagnose specific individual problems rather than merely follow a research protocol. As Stenhouse pointed out, practitioners become researchers in their own practice setting who rely on their own professional judgment rather than the 'adoption of uniform procedures' (Stenhouse, 1978, p.28).

The gardening metaphor therefore has several benefits, not only for teachers and their pupils, but also for nurses and their patients. Firstly, as we have seen, it strengthens professional judgment and places it at the top of the hierarchy of methods for generating evidence for best

practice. Secondly, it is more ethical than the laboratory or farming model, since as it addresses the diagnostic cultivation of each student or patient rather than globally imposing a single 'best' intervention based on 'best' evidence from the 'gold standard' research methodology. Thirdly, it is, according to Stenhouse, also more effective insofar as it gives a better gross yield since it maximises the benefit to each individual. That is not to say that the nurse-as-gardener metaphor is always the most appropriate or effective for every situation. The RCT remains the gold standard method for selecting the most appropriate medical or surgical intervention for any particular generic condition. However, the role of the nurse is not primarily the technical task of medical or surgical diagnosis and treatment, but the human endeavour of designing, providing and evaluating an individual and unique package of care for each individual and unique patient. Nurses use their clinical judgment to diagnose individual problems and prescribe one-off solutions, and in order to do so, they must *cultivate* a relationship with each patient in order to understand the situation from their perspective. As the Italian thinker and author Italo Calvino observed:

The concerns of the cultivator, for whom what matters is that given plant, that given piece of ground exposed to the sun from this hour to that hour, that given disease of the leaves which must be fought in time with that given treatment, are alien to the mind modelled on the processes of industry, led to make decisions, in other words, along general lines, according to prototypes. (Calvino, 1985, p.48).

As the emphasis on demonstrating measurable outcomes grows, both in nursing practice and nurse education, practitioners and educators are being driven to what Calvino above calls 'the processes of industry' in an attempt to meet their performance indicators and other institutional targets. These processes represent the very opposite of cultivation, just as the processes of industrial-scale factory farming are the very opposite of gardening. Factory farmers are technicians or engineers who apply the latest large-scale generalisable research findings across the board to entire fields of crops or sheds of animals. Gardeners, on the other hand, do not separate research from practice. Gardening is an ongoing process of practical experimentation in order to discover what is the best course of action for the cultivation of each individual. In the face of demands and pressures to industrialise our practice, we would do well to follow the advice of the French philosopher Voltaire in a letter to a friend: 'Life is bristling with thorns, and I know no other remedy than to cultivate one's garden.' (Voltaire, 1769).

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