

The occupational health nurse's contribution to epidemiology

by Jennifer M Barnard¹

BARNARD JM. The occupational health nurse's contribution to epidemiology. *Scand j work environ health* 8 (1982): suppl 1, 172—175. Epidemiologic studies usually require a team approach. The value of involving occupational health nurses in epidemiologic studies is the basis of this paper. Examples of epidemiologic studies to which nurses have contributed substantially are presented. The trained occupational health nurse who is responsible for a defined population of workpeople has a unique position in the workplace. Her (or his) training and experience as an observer, and knowledge of toxicology and environmental health effects, should enable her (or him) to identify groups of workers requiring specific health monitoring and surveys and to assist in epidemiologic studies. The potential contribution of the occupational health nurse to the work of the team conducting epidemiologic surveys, or as an independent health practitioner undertaking studies on her own, is discussed. Better opportunities for training should be made available in order for the occupational health nurse to contribute to epidemiologic studies in the workplace.

Key terms: communications, employees, observer, populations, questionnaires, studies, surveys, team, training, workplace.

In the past epidemiologic studies have often been considered the prerogative of physicians. However, today's greater awareness of the effects of the workplace upon health and disease is causing many people concerned with occupational health to take a closer interest in epidemiology and to take personal initiatives by undertaking studies themselves. Experienced physicians and nurses are now also beginning to recognize the importance of epidemiology in planning, developing, and evaluating health care.

Unfortunately, many of the occupational health studies undertaken to establish morbidity and mortality are costly and time-consuming. It may not always be possible for physicians or epidemiologists wishing to carry out a specific study to

afford to undertake it alone, since other demands on their time may be heavy. Frequently, of course, they need the experience and expertise of others to assist them. In many cases the most satisfactory studies result from a team effort. An occupational health nurse can be an important member of that team.

It is well known that a nurse pioneered studies in occupational epidemiology. During the Crimean War, Florence Nightingale studied military mortality, publishing the results of her survey in 1859 (5). Subsequently she also undertook epidemiologic studies of the health of soldiers in peace-time Britain.

Since those early days, however, relatively few nurses have been involved in epidemiology, but there are now signs that an increasing interest is developing among nurses working in community medicine and occupational health. In a few centers nurse epidemiologists are active independently, or are working as members of study teams.

Karhausen (4) has defined epidemiology as "the study of the factors determining

¹ Occupational Health Nursing Consultant, Occupational Health Advisory Service, Basingstoke, Hampshire, England.

Reprint requests to: Ms JM Barnard, Occupational Health Advisory Service, The Granary, Manor Farm, Vyne Road, Sherborne St John, Basingstoke, Hampshire RG24 9HX, England.

the frequency, distribution or course of diseases, injuries, disabilities or other manifestations of a medical nature [pp 2—3].” This definition seems to provide considerable scope for research by and with occupational health nurses. They can be very useful research colleagues or assistants.

I have found evidence of both published and unpublished studies in which occupational health nurses have participated in Britain. In many of these studies nurses have made a significant contribution. The nature of their input has varied according to their training and experience. However, in most cases, the physicians with whom they were working acknowledge that they could not have achieved a satisfactory outcome without the help of the nurses concerned. Unfortunately, this enthusiasm from a number of physicians, with whom I have spoken, is not always reflected in the written acknowledgments of published studies. At times scant recognition is given to the nurse’s contribution, which may have been substantial. This situation is unfortunate since it stifles initiative, dampens enthusiasm, and may reduce the desire to participate in future studies.

Many epidemiologic investigations are now being undertaken in industry, and occupational health nurses have been active in the initiation and execution of some of them. A number of examples of surveys undertaken in Britain may serve to illustrate the potential of the occupational health nurse’s contribution.

Within the British Health & Safety Executive’s Employment Medical Advisory Service (EMAS), employment medical and nursing advisers have initiated and participated in formal and informal surveys at the local, regional and national level. The involvement of employment nursing advisers has been considerable, for example, in a prevalence study of virus warts on the hands of workers in a poultry processing and packing station (7), a nursing adviser was involved at all stages of the study. Nursing advisers also provide valuable assistance in the various mortality investigations being undertaken by the Employment Medical Advisory Service by identifying suitable populations for study during their visits to workplaces.

In a study of squamous cell cancer in

the northwest of England, an occupational health nurse was specifically employed by the University of Manchester as a member of the study team (8). Occupational health nurses have also been involved in other studies undertaken by the University’s Department of Occupational Health.

In a study by the British Rubber Manufacturer’s Association, the Medical Research Council, and the International Isocyanates Institute, 2,400 people are being followed for 7 a in 14 different factories. Occupational health nurses are administering questionnaires, recording in detail job functions and changes, and undertaking lung function tests. They are also looking for specific cases of respiratory disorder. Nurses were especially recruited for this study, which has established 10 new nursing posts in the industries concerned. I hope the nurses will stay and develop occupational nursing services in these companies on completion of the study, an occurrence which would be an additional benefit of epidemiology.

Many multinational companies are concerned with epidemiologic research, and the Imperial Chemical Industries, Ltd (ICI) is a good example. A survey of Dupuytren’s contracture (1) was initiated as a result of the occupational health nurses’ observations of several cases. The doctor conducting the study organized a program of relevant in-service training for the nurses participating in it.

In another ICI study of vitiligo (3), occupational health nurses were again responsible for identifying a problem which required further research, in which they subsequently participated fully.

The senior occupational health nurse in an electronics manufacturing company was coauthor of the final report in a survey of the effects of exposure to soldering fumes on employees (2). This senior nurse contributed not only to the design of the study and the questionnaire, but was also entirely responsible for its planning and organization. She gave further training to the nurses in the four factories, and thereafter they were able to undertake respiratory function tests and to administer the questionnaires. These nurses also undertook the organization of the study population in each factory and negotiated

with management for the release of employees for interviews and testing. On completion of the study it emerged that four out of the five nurses concerned had become so interested that they indicated that they would like to participate in further studies, if an opportunity arose.

A prevalence study of laboratory animal allergy was recently undertaken in a pharmaceutical company (6). The occupational health nurse made a major contribution and was responsible for achieving a 100 % response from the study group.

A few nurses are undertaking studies on their own. I know of one occupational health nurse who has chosen to undertake a 5-a mortality study of all the 5,000 workers for whose health she is responsible.

Another experienced and senior occupational health nurse, working some years ago with other nursing colleagues in a well-known food industry, undertook numerous studies on her own initiative, seeking help where necessary from a physician and a statistician. Her studies included tenosynovitis, alcohol consumption and absenteeism, and the extent of the need for stool tests among food handlers after *Salmonella* and *Shigella* infections. As a result of her work, measures were adopted which improved employee health and productivity, and also saved the company money.

Now I would like to analyze the nurse's contribution in a little more detail.

The trained occupational health nurse employed to care for a defined work population is in a unique position to observe employees. Nurses are trained to develop their powers of observation and to take account of the environment in which people live, work, and receive care. In general the occupational health nurse is at the workplace daily. She (or he) knows the people, processes, and environment well and is also likely to be in receipt of much general and confidential information, which for various reasons employees may not mention to the physician. She will be seeing people during treatment and counseling, as well as during workplace visits and following absences due to sickness. The alert and experienced nurse working in industry will often develop hunches about individuals and about the

underlying causes of ill health and disease. She (or he) may identify groups of workers whose health may be at risk and wish to obtain more information about them and their work.

Most nurses in industry and commerce maintain records of some kind. Some establish complex and unwieldy systems. Others devise comprehensive, personal, and environmental health records (including medical and work histories). These systems can prove very useful for epidemiologic purposes. Occupational health nurses may also develop records of employee movements and exposure to hazards, as well as specific registers, in cooperation with the personnel department or departmental managers.

The alert nurse with some knowledge of environmental health effects and toxicology will often generate hypotheses arising from her deductions as she receives and records information and links it with her observations of employees and their work environment. As a result of her precise knowledge of those who are genuinely exposed to hazards, she can frequently advise on the selection of suitable people to be included in study and reference groups.

During the development of protocols and questionnaires, knowledge of the workforce and local conditions can be invaluable. The nurse may not only generate ideas for questions, but may also use her communications experience to recommend phraseology that is clearly understood by those employees who have comprehension problems. Additional training can also equip her to be a survey interviewer and enable her to administer questionnaires effectively and objectively.

Many nurses are well able to undertake many of the physical measurements, tests, and observations necessary in epidemiologic studies and can be taught about the problems of observer variability. If necessary they can undertake additional training in order to perfect and standardize techniques. In those cases requiring biological specimens, the nurse may prove the most efficient in organizing the timing, collection, and dispatch or storage of samples. She may also be prepared to undertake venepunctures.

The nurse who knows the employees well, and fully appreciates the purpose of

the study to be undertaken, is often one of the best people to obtain their consent to participate and to explain the various stages to them. She can often provide reassurance by allaying anxiety and clearing up misunderstandings. In doing so, she may be able to persuade nonresponders to cooperate.

A few occupational health nurses with some training in epidemiology and statistics may also be prepared to undertake or assist with the collation of data at various stages or on completion of the study.

Many occupational health nurses are intelligent, conscientious and persevering, with inquiring and analytical minds. If they are to make a really useful contribution in this field, they must be involved in more than collecting data, administering questionnaires, or conducting tests. To be really competent in this area much more training is needed. Depending upon her ability and interest, the nurse's contribution to epidemiology may range from identifying situations requiring further investigation or research from her base in the workplace, to full involvement as a specially employed team member at all stages of a study. In certain circumstances, especially if the nurse has had some training in epidemiology, she (or he) should be able to undertake simple studies alone or together with other nursing colleagues.

The nurse who has received training and experience in occupational health and epidemiology within a developed country could also make a useful contribution in the developing and newly industrialized countries. She could assist with studies undertaken to identify and evaluate the nature and extent of occupational disease and injuries and with the subsequent planning and development of occupational health services.

In Britain opportunities for occupational health nurses to undertake training in epidemiology are limited at present, although a few 3- to 5-d courses have been available and some occupational health nursing courses are now including epi-

demiology and related subjects. Nurses in countries such as the United States and Canada are more fortunate in having graduate studies in epidemiology also available. In Finland epidemiology is introduced in basic general nurses' training and is included in public health and occupational health training courses. Many nurses are quite capable of assimilating some knowledge of epidemiology and biostatistics, especially if they have a background in science and mathematics. I hope opportunities will be created for them to do so.

If those nurses who are interested and willing are given the opportunity and the training, I am sure that the results will be more and better studies of work-related diseases, injuries and disabilities, better planned occupational health services, and an improvement in the health of individual workers.

References

1. Bennett B. Dupuytren's contracture survey. *Br j ind med* (in press).
2. Courtney D, Taylor B. Occupational health: No major hazard seen in solder fume exposure. *Vitalograph's respir news bull* 23 (1981): 1, 1-3.
3. James O, Mayes RW, Stevenson CJ. Occupational vitiligo induced by p-test-butylphenol, a systemic disease? *Lancet* 2 (1977) 1217-1219.
4. Karhausen L. Introduction. In: Holland WH, Karhausen L, ed. *Health care and epidemiology*. H Kimpton Publishers, London 1978, pp 1-6.
5. Nightingale F. A contribution to the sanitary history of the British army during the late war with Russia. John W Parker & Son, London 1859.
6. Slovak AJM, Hill RN. Laboratory animal allergy: A clinical survey of an exposed population. *Br j ind med* 38 (1981) 38-41.
7. Taylor SWC. A prevalence study of warts on the hands in a poultry processing and packing station. *J soc occup med* 30 (1980) 20-23.
8. Whitaker CH, Lee WR, Downes JE. Squamous cell skin cancer in the north-west of England 1967-69 and its relation to occupation. *Br j ind med* 36 (1979) 43-51.