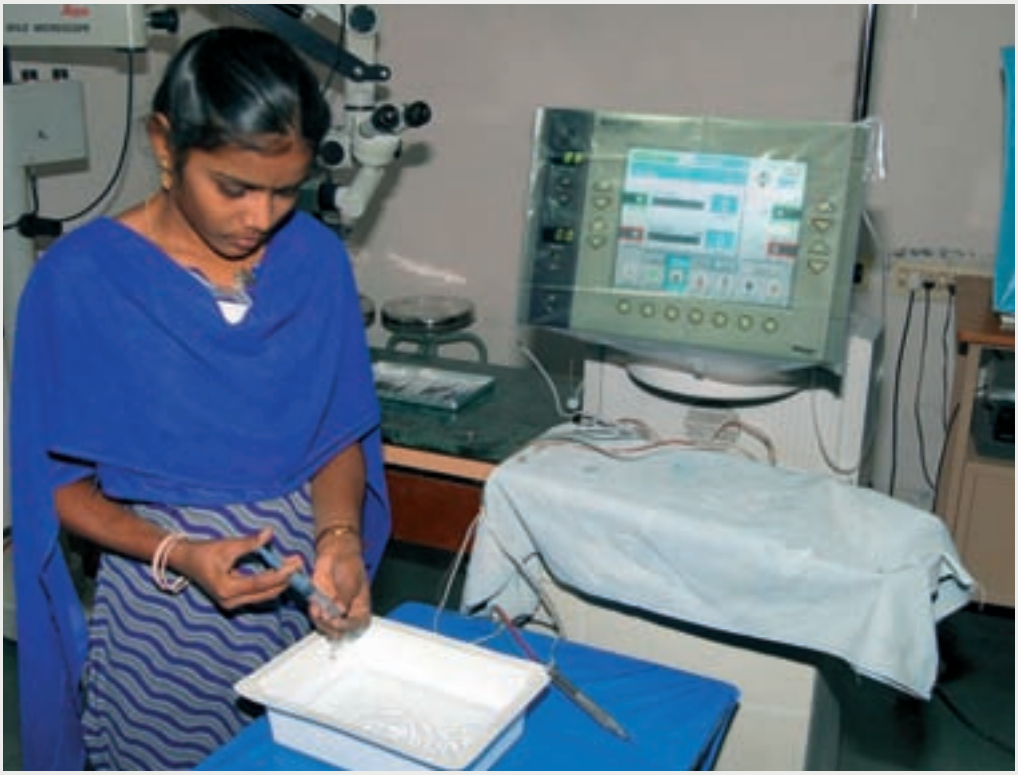

Aravind Eye Hospital

Miss Sathya, a technician, cleans the phaco machine after the day's operations are done. INDIA

Care of instruments and equipment: a success story

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"When a person is hungry and you give him a fish, his hunger is satisfied for that occasion. If you teach him how to catch a fish, it can take care of his hunger for the rest of his life." This is a teaching principle that is often repeated, and one that is also very useful in the maintenance of medical equipment.

The instruments and equipment used in modern eye care have become very sophisticated and expensive. Keeping them in good working condition can become a nightmare, especially if hospitals are located in places where there is little service support from manufacturers or suppliers. These items can fail to work unexpectedly and the resultant downtime can compromise outcomes and patient safety.

An important fact about instruments and equipment is that, when manufactured by well-established firms and supplied by reliable dealers, they seldom fail, provided they are maintained as described in the user manual.

A machine is more likely to fail when it is first set up, often due to shortcomings in its installation, use, or handling. For this reason, most manufacturers usually offer a free warranty contract for the first year. Machines should be used often during that period; any malfunction, however trivial, should be brought to the attention of the supplier and rectified immediately. If this is done, the machine will usually work well for the rest of its lifespan.

Aravind Eye Hospital

Miss Sugitha, a technician, cleans the delicate instruments used in vitreo-retinal surgery. INDIA

It is generally believed that doctors and/or paramedical staff who use an instrument or machine will take care of it, but this cannot always be expected. The patient is the primary concern of doctors or paramedical staff. If there is a conflict, patient care will take precedence – so instrument care is bound to suffer. Also, some equipment is too complex to maintain for a person who is not technically trained.

At Aravind Eye Hospital, we took these factors into account and devised a scheme whereby a technically trained person is responsible for a sophisticated instrument or piece of equipment. This person's responsibility is to take care of it: to turn it on or off, and to go meticulously through all the stipulated steps before it is ready to be handed over for use by doctors and paramedical staff. This considerably lightens the workload of doctors – they can devote their full attention to the procedure and the patient. When a procedure is over, doctors and paramedical staff may be tired. Shutting the machine off in the sequence suggested by the manufacturer is then the responsibility of the technically trained person.

There is no need for a fully fledged biomedical engineer to do this job, as it is always possible to train a person with some engineering background on the various aspects of a particular instrument or machine. That person can in turn train others to keep equipment running in good condition. We find that graduates of our polytechnics (technical colleges) do such jobs well.

We use such trained persons to maintain our phacoemulsification (phaco) machines, ERG machine, fundus cameras, and expensive surgical instruments used in operations. We have had great success with our LASIK machines: they are being used regularly and have functioned, without any hitch, for the last seven years, which has surprised the supplier!

It is difficult to train many people within an organisation to look after sophisticated instruments and equipment. Not all will have the competence or the aptitude required to understand the technical details. Training one or two persons with the right aptitude and making them responsible for looking after instruments and equipment will ensure better maintenance and performance in the long term.

Awareness about eye diseases among diabetic patients: a survey in South India

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Diabetes mellitus (DM) is reaching epidemic proportions in many countries, including India. Currently, there are 171 million diabetic patients worldwide. By 2030, this figure is projected to increase to 366 million people, 79 million of whom will be in India.

This is likely to have major implications for India, which is estimated to be home to a quarter of the world's blind population. Awareness about the eye complications of diabetes can play an important role in encouraging people to seek timely eye care.

We conducted a survey using a 20-point questionnaire among 1,000 diabetic patients who attended our out-patient department between October 2001 and March 2002. We assessed awareness about the eye complications of diabetes and asked patients how awareness could be increased.

Eighty-six per cent of patients were aware that DM could affect many parts of the body; 84 per cent knew that DM could affect the eye. Among those who were aware that DM could affect the eye, 36 per cent learnt this through the media, 32 per cent from other eye specialists and 30 per cent from their general practitioners or physicians. Among those who were aware that DM could affect the eye, 51 per cent did not know exactly which part of the eye could be affected, 28.3 per cent thought that cataract was the main eye complication, and 19 per cent thought that DM mainly affected the 'nerves in the eye' (presumably retinopathy). Around 50 per cent of the patients knew that routine eye checks were necessary even if DM was well controlled, while the remainder thought that routine eye examinations were not necessary in that case. To increase knowledge, better media coverage was suggested by 36.8 per cent. The rest suggested better communication from physicians (32.7 per cent), eye specialists (19.8 per cent), and health and paramedical workers (10.7 per cent).

Awareness is not the same as knowledge. Hearing about a problem is awareness, but understanding the causes or treatment of a disease, for example, is knowledge. Eighty-four per cent of the patients were aware that DM could affect the eye, so awareness is quite high. But knowledge levels were lower: only 46.9 per cent of those interviewed knew that retinopathy was related to the control of DM, and only 40.3 per cent knew that it was related to the duration of DM. Among those who were aware that DM could affect the eye, 51 per cent did not know what the eye complications could be. As this study was done in an eye hospital, knowledge levels amongst diabetic patients in the general population are likely to be lower.

The control of visual impairment from diabetes requires good disease control and regular eye examinations. Screening diabetic patients for retinopathy poses considerable challenges, particularly in a country like India where the numbers are large and many diabetic patients are unlikely to be aware that they need regular eye examinations. This study shows that, as a first step, there is a need to increase awareness and knowledge of the potentially sight-threatening complications of diabetes.

GLOSSARY

Glossary: research and training

Case-control study: a study in which people who already have a certain condition are compared with people who do not

Cross-sectional study: a study in which a population or sample is assessed at one point in time

Curriculum (pl. curricula): the subjects taught in a course of study (e.g. an MSc in community eye health)

Dissertation: a long, written essay or report describing research that is submitted as a requirement for an advanced academic degree; also called a thesis

Endemic: describes a disease that is constantly present, to a greater or lesser degree, in a population living in a particular area

Ethical approval: independent review of the scientific merit and implications of a study regarding the dignity, rights, safety, and wellbeing of research participants

Field work: research done in the real world (i.e. not in a laboratory)

Focus group discussion (FGD): a qualitative method to obtain in-depth information on concepts and perceptions about a certain topic through spontaneous group discussion of approximately 6–12 persons, guided by a facilitator

Incidence: the number of deaths or new cases of a condition, symptom, or injury that arises during a specific period of time, such as a year

In-depth interview: a face-to-face conversation to explore issues; conducted without using a structured questionnaire

Literature review: a summary and explanation of key studies relevant to a proposed project

Logbook: a notebook used to record the dates when decisions were made or actions were taken

Methodology: the precise design of a study, including the methods used

Multi-stage cluster sampling: constructing a sample from a population by first creating and selecting clusters (stage one), and then choosing elements from within the selected clusters (stage two)

Narrative data: verbal answers that take the form of a story or explanation, or which describe a series of events

Pilot study: a smaller version or trial run of a larger study that is conducted in preparation for that study; can involve pre-testing or 'trying out' a research tool such as a data-collecting form

Population: the group being studied, e.g. children of school age in Zimbabwe

Population-based survey: a survey where the sample is representative of the population being studied

Prevalence: a measure of the frequency of a disease or condition at a particular point in time, usually expressed as the number of cases per 100 people examined

Prospective study: a study in which events or cases are observed or studied as they occur, or in which human subjects are identified and followed forward in time

References: a short note detailing the source of information or a quoted passage

Reflexivity: an awareness of the researcher's contribution to the construction of meanings throughout the research process, and an acknowledgment of the impossibility of remaining 'outside of' one's subject matter while conducting research

Research protocol: a document describing in detail how a research study is to be conducted in practice, including the methodology, a plan for analysing the results, and a budget

Research question: the main question a research project aims to answer

Retrospective data/study: a study that looks at events that took place in the past; can involve extracting information from medical records or interviewing patients about past events or behaviour

Sample: a group of people or elements selected from the population being studied

Supervisor: the person who is responsible for guiding the individual(s) doing a research project

Variable: a broad term encompassing what is measured in a research project; demographic variables, for example, describe participants' age, sex, and socio-economic status; outcome variables might include visual acuity after cataract surgery or the number of people accessing services after a health education intervention.