

## **CHAPTER 3**

### **Research methodology**

#### **3.1 INTRODUCTION**

The aim of this study was to investigate the knowledge levels of clients on long-term TB treatment. The objectives of the study were to:

- assess the knowledge levels of clients on TB treatment regarding their medical condition and treatment regimen.
- determine how registered nurses contribute to the knowledge levels of clients on TB treatment.

This chapter describes the research methodology, delimitation of the study, geographical area, research design, target population, sampling design, data collection, data analysis, validity and reliability of the study and ethical considerations.

Cohen, Manion and Morrison (2000:44) state that methodology in research refers to a systematic way of gathering data from a given population so as to understand a phenomenon and to generalise facts obtained from a larger population. Methodology embraces the research design, population, instruments used to collect data, ethical considerations, data analysis and its interpretation. Methodology therefore helps the researcher and the reader to understand the process of the research thus giving it scientific merit.

#### **3.2 DELIMITATION OF THE STUDY**

The focus of this study was on the TB out-patients clinic at Kwekwe General Hospital, which is a referral centre for all TB clients in the Kwekwe district in the Midlands Province, Zimbabwe.

### **3.3 GEOGRAPHICAL AREA**

The Kwekwe Hospital is situated in the Kwekwe district, and is one of the eight districts found in the Midlands Province. Kwekwe covers a geographical area of 8 625 square kilometres. The population of Kwekwe at the 2002 census was 286 039 and the growth rate is projected at 1,1%. The projected population for 2005 was 295 582. Fifty-two percent of this population lives in the urban area while 48,0% live in the rural area. Adults make up 56,0% of the population. There are 45 942 males and 47 130 females in the urban setting and 78 054 males and 82 567 females in the rural setting (Zimbabwe, Ministry of Home Affairs 2002:242-250).

### **3.4 RESEARCH DESIGN**

Brink and Wood (1998:100) state that the purpose of a research design is to provide a plan for answering the research question and “is a blueprint for action”. It is the overall plan that spells out the strategies that the researcher uses to develop accurate, objective and interpretative information.

A quantitative, descriptive research design was chosen for this study in order to give a detailed description of the knowledge levels of clients on TB treatment. Quantitative research is a formal, objective and systematic process for generating information about the world. The specific questions addressed will generate knowledge, which will directly improve clinical practice (Burns & Grove 1997:40).

According to Brink and Wood (1998:289), a descriptive survey design may be utilised “to study characteristics in a population for the purpose of investigating probable solutions of a research problem”.

A survey was chosen for this study for the following reasons:

- it is appropriate for the research objectives of this study as the aim of the study is not to infer cause and effect but to describe the nature of the research topic (Brink & Wood 1998:139).
- there is no active intervention on the part of the investigator that may produce researcher bias (Cohen et al 2000:171).

- according to Brink and Wood (1998:289), a survey design may be utilised to study characteristics in a population to investigate probable solutions of a research problem. In this study, the survey design was used to investigate the knowledge levels of clients on TB treatment in order to find out if lack thereof might lead to defaulting. It is impartial; there is no prejudice in the selection of units participating in the research. The research data can be collected in the natural setting and in a short time, using an interview or observation (Brink & Wood 1998:103). In this study, the study setting was at Kwekwe General Hospital where clients and registered nurses were questioned. Data were collected using two questionnaires.

The survey, however, has its own limitations. According to Burns and Grove (1997:301) and Cohen et al (2000:173), the following are some of the limitations:

- the person who responds to a survey is aware of being studied and can be responsible for biased data. Sometimes the information collected tends to be relatively superficial because survey questionnaires rarely probe deeply into complexities such as contradictions of human behaviour and feelings. The design also requires the cooperation of the respondents, which might not be forthcoming.
- surveys can be costly, time consuming and tedious because they are very demanding of personnel.
- sometimes the data collected is too much, making data coding and analysis difficult in the absence of a computer.
- problems of generalisability might occur if the sample is poorly chosen, resulting in the survey not correctly representing the population. This did not apply to this study because findings were only applicable to Kwekwe General Hospital.

Despite the limitations, in the researcher's view, the strengths outweighed the weaknesses and the survey was the appropriate design to adopt.

### **3.5 TARGET POPULATION**

The target population is "the entire aggregation of respondents that meet the designated set of criteria" (Burns & Grove 1997:236). The target population in this study constituted all adult outpatients between 18 and 59 years with TB at Kwekwe General Hospital. For

the health workers, the target population was all registered nurses working in the medical wards and the TB clinic at Kwekwe General Hospital.

### **3.5.1 Inclusion criteria**

According to Rees (1997:134), inclusion criteria are “the characteristics we want those in our sample to possess”. The clients chosen were all adult clients in the continuation phase of their treatment, attending the TB clinic on Wednesdays between 08:00 and 16:00 who could speak Shona, Ndebele or English, the languages the researcher is well conversant with. The registered nurses were chosen on the basis that they are registered nurses who had worked in the medical wards and the TB clinic for more than six months.

### **3.5.2 Exclusion criteria**

Talbot (1995) (cited in Rees 1997:134) defines exclusion criteria as “characteristics, which a participant may possess, that could adversely affect the accuracy of the results”. In this study, clients in the intense phase were excluded because the researcher felt that at this stage of their treatment, they might probably not have enough information on their condition and treatment and might still be overwhelmed by their illness. All registered nurses who had worked for less than six months in the medical wards and TB clinic were excluded as the researcher felt they might lack experience.

## **3.6 SAMPLING DESIGN AND PROCEDURES**

Sampling involves a process of selecting a sub-section of a population that represents the entire population in order to obtain information regarding the phenomenon of interest. A sample is a sub-section of the population, which is selected to participate in a study. There are two methods of sampling, one yields probability samples in which the probability of selection of each respondent is assured. The other yields non-probability samples in which the probability of selection is unknown (Polit & Hungler 1995:279).

This study used a convenience sampling method of the non-probability sampling design to select the clients used as respondents and a simple random sampling of the probability sampling design was utilised for the selection of the registered nurses. A convenient sample consists of using the most readily available or most convenient

group of subjects for the sample (Cohen et al 2000:102). This method was chosen because it provided easy access to the respondents. It was simple, practical, economical, quick and did not require an elaborate sampling frame, which was not available (Nachmias & Nachmias 1998:87). The respondents were chosen from clients who were attending the TB clinic when the researcher was present at the clinic. The researcher checked the TB cards to identify the clients on the continuation phase. From the identified clients, every third client was selected after obtaining their consent to participate in the study. The first client was randomly chosen. The sample consisted of sixty clients who met the inclusion criteria.

The parameters of generalisability in this samples is negligible, the study did not seek to generalise to the wider population. The study simply represents itself (Cohen et al 2000:102).

Simple random sampling of the probability sampling design was utilised for the selection of the registered nurses. This method was chosen because the sampling frame was readily available from the unit change list. Random samples are most likely to yield a sample that truly represents the population as each subject has an equal and independent chance of being selected (Brink 1996:136).

The researcher used the unit change list to identify the registered nurses who had worked in the medical wards for more than six months. The fish bowl technique was then used to select the nurses for the study. Consent to participate in the study was obtained from the nurses sampled.

The sample consisted of ten nurses who met the inclusion criteria.

### **3.7 DATA COLLECTION**

Data collection is “a systemic way of gathering information, which is relevant to the research purpose or questions” (Burns & Grove 1997:383).

Data was collected in November and December, 2004. Data was collected using a structured questionnaire in a face-to-face interview. The prospective respondents attending the TB clinic were approached and requested to participate in the study. Detailed information about the study was given to the clients, using their own home

language before consent to participate was obtained. Both verbal and written consent was obtained before the face-to-face interviews.

Face-to-face interviews (N=60) were carried out in a private room. Data was collected on Wednesdays between 08:00 and 16:00.

### **3.7.1 Research instrument**

Individual interviews were done and a structured questionnaire was used as the data-collection instrument (N=60) and (N=10). The questionnaire was selected because it enabled the investigator to be consistent in asking questions and data yielded was easy to analyse with the help of a statistician and using the Epi Info 6 Version 3 computer program (Polit & Hungler 1995:345). Research respondents were interviewed directly to avoid misinterpretation and to ensure clarity on all issues. Saunders, Lewis and Thornhill (1997:243) maintain that a questionnaire is the best method of collecting data especially if the survey strategy is used and if the respondents cannot read or write.

The researcher designed an interview schedule with both open-ended and closed questions. The questionnaire was divided into six parts.

Section A comprised the demographic data, which sought to obtain respondents' details such as age, sex, marital status, and educational status.

Section B sought to determine the relevant knowledge clients had about the condition of TB.

Section C was aimed at finding out the clients' opinion on the DOTS strategy.

Section D elicited the clients' attitudes towards and knowledge of the treatment of TB.

Section E sought to find out factors that could influence treatment of TB.

Questionnaire 2 was directed at registered nurses (N=10) to determine what and how they teach clients and what is restricting or facilitating the process of health education (see Annexure **C** for examples of the questionnaires).

### **3.7.2 Validity**

According to Polit and Hungler (1995:353), validity refers to “the degree to which the instrument measures what it is supposed to be measuring”. The researcher mostly focused on content validity, which refers to the accuracy with which an instrument measures the factors under study. Therefore content validity was concerned with how accurately the questions asked tended to elicit the information sought. The research instrument was tested for content validity by giving the questionnaire to the supervisors, and to clinical staff experienced in the treatment of TB.

### **3.7.3 Reliability**

Reliability relates to the precision and accuracy of the instrument. If used on a similar group of respondents in a similar context, the instrument should yield similar results (Cohen et al 2000:117). Accurate and careful phrasing of each question to avoid ambiguity and leading respondents to a particular answer ensured reliability of the tool. The respondents were informed of the purpose of the interview and of the need to respond truthfully.

### **3.7.4 Pilot study**

A pilot study is a trial run of the major study. Its purpose is to check the time taken to complete the questionnaire, whether it is too long or too short, too easy or too difficult and to check the clarity of the questionnaire items, and to eliminate ambiguities or difficulties in wording (Cohen et al 2002:600).

A pilot study was conducted to test the questionnaire for reliability. Six respondents (N=6) with similar characteristics to the research sample who were not part of the main study were interviewed. Following the pilot study, some ambiguous questions were rephrased to give greater clarity and some questions were discarded, as they proved irrelevant. Time for interviewing each subject was approximated.

## **3.8 DATA ANALYSIS**

Data analysis is “the systematic organisation and synthesis of the research data and the testing of research hypotheses, using those data” (Polit & Hungler 1995:639). It also

entails “categorising, ordering, manipulating and summarising the data and describing them in meaningful terms” (Brink 1996:178). The completed questionnaires were given to a statistician who used the Statistical Package for Epi Info 6 Version 3 computer program to analyse the data. Most of the questions included in the questionnaire were closed questions. These were coded for easy analysis by computer. The open-ended questions were categorised by hand by the researcher. The findings are discussed and the data presented in the form of frequency tables and bar graphs in chapter 4.

### **3.9 ETHICAL CONSIDERATIONS**

Pera and Van Tonder (1996:4) define ethics as “a code of behaviour considered correct”. It is crucial that all researchers are aware of research ethics. Ethics relate to two groups of people; those conducting research, who should be aware of their obligations and responsibilities, and the “researched upon”, who have basic rights that should be protected. The study therefore had to be conducted with fairness and justice by eliminating all potential risks. The respondents must be aware of their rights. Ethical issues observed in a study may include “informed consent, right to anonymity and confidentiality, right to privacy, justice, beneficence and respect for persons” (Brink & Wood 1998:200-209).

#### **3.9.1 Permission to conduct the study**

Permission to conduct the study was obtained from the Provincial Medical Director (PMD) of Midlands Province and the Medical Superintendent of Kwekwe General Hospital. The permission was communicated to the Provincial Nursing Officer (PNO) (see Annexure A for a copy of the letter of permission).

#### **3.9.2 Respect for persons as autonomous individual**

Respect for persons is a basic human right. Respondents as autonomous individuals have the right to choose to either participate or not, in the research. *Collins English Dictionary* (1991:286) defines *choice* as “the act or an instance of choosing or selecting; the opportunity or power of choosing”. The decision is to be made without coercion. Respondents were allowed to act independently by giving their informed consent to participate in the study. In this study it was ensured that respondents gave informed consent to participate in the study. Prior to the respondents’ giving consent, the

purpose of the study was fully explained to them in the language they were well conversant with. Risks and benefits were highlighted. The respondents were informed that participation was voluntary and they were free to withdraw should they so wish. The respondents were assured that neither participation, withdrawal nor refusal to participate would affect their entitlement to health services. Prior to signing the consent, there was a period of question time to ensure that the participants fully understood the explanations. At the end of the explanations, the respondents were asked to sign a written consent. The same applied for the registered nurses (see Annexure **B** for an example of the consent form).

### **3.9.3 Confidentiality and anonymity**

Confidentiality is “a basic ethical principle while anonymity is one way in which confidentiality is maintained. To ensure anonymity, steps are taken to protect the identity of the individual by neither giving their name when presenting research results, nor including identifying details which may reveal their identity such as work place, personal characteristics and occupation” (Rees 1997:71). In this study, anonymity was achieved by not putting names on the questionnaire. The researcher at the end should not be able to link any information to any participant. The interview was conducted in a private office where no third person could hear the conversation.

### **3.9.4 Avoiding harm**

Avoiding harm is another basic human right to be considered when conducting research on human beings. According to Burns and Grove (1997:206), risks that may be encountered in research include physical, psychological, emotional, social and financial ones. In this study, psychological harm through periods of long waiting and maintaining confidentiality and anonymity was the probable risk the patients could have encountered. The researcher minimised the time of interviewing the participants. Maintaining privacy, confidentiality and anonymity during the interview also prevented psychological harm.

### **3.9.5 Justice**

Justice relates to “the fair treatment of those in the study” (Burns & Grove 1997:705). In this study, the participants were treated fairly by giving them information prior to

participation and by giving them the option to withdraw from the study if they wanted to without any negative consequences regarding entitlement to health services. Selection of the sample following the guidelines of the inclusion criteria also ensured that all those who met the criteria had a fair chance to be chosen to participate in the study.

### **3.9.6 Informed consent**

Informed consent is “a legal requirement before one can participate in a study” (Brink & Wood 1998:200). After a full explanation of the nature of the study, participants were asked to give either verbal consent for those who could not read or write or written consent of their willingness to participate in the study.

### **3.10 CONCLUSION**

This chapter described the research methodology and the ethical considerations. Chapter 4 presents the data analysis and interpretation of findings.