Chapter Three

Materials and Methods

3.1 Introduction

This chapter deals with the collection of data and the research methodology used. The process of statistical analysis is also discussed.

The primary data is the data collected from the questionnaires / participant responses and the data obtained once the statistical analysis was complete. Secondary data is the data in the literature, internet, books, and journals and so on, with which the outcome of the results in the research study are compared.

3.2 Methods

3.2.1 Study Design

This was a demographic / epidemiological, cross-sectional survey-type, quantitative study, based on a pre-validated questionnaire that contained coded questions. Each questionnaire was personally handed to each participant and was personally collected from them as soon as it was completed in full.

3.2.2 Advertising

No advertising was done due to the fact that each questionnaire was personally given to each participant to complete in full.

3.2.3 Telephonic/Personal Interview

The contact details of all chiropractors and homeopaths were obtained from the Allied Health Professions Council of South Africa (AHPCSA), which is responsible for managing the government registers for these two professions. In addition this information is accessible by the public for any reason, thereby allowing the researcher to access the said information without it constituting an unethical act in obtaining the information.

Each prospective participant was telephoned and at this time the study was explained to the prospective participants in order that they could agree or disagree to participate in the study. Thereafter an appointment was set up in order to formalise the prospective participant's participation in the study.

Thereafter the study was explained to the participant and the participant was then requested to complete the questionnaire in full. If the participant had any questions regarding any aspect of the questionnaire, the researcher was available in the waiting room to assist and answer any questions.

3.2.4 **Sampling Procedure**

3.2.4.1 **Sampling Size**

3.2.4.1.1 **Participants**

Sixty two participants took part in the study, thirty one chiropractors and thirty one homeopaths (out of a total population of 120). This is well above the 20 of each group that were required in order to allow for generalisation of the statistics as well as to allow them to be significant, where significance is calculated by the sample being representative of 20 % or more of the total population in the area under study (i.e. one needs 20% of the total population for results to be representative (Hicks, 2004)).

3.2.4.2 **Sample Allocation**

As a result of the structure of the study and the need for comparison, the participants were allocated into 2 groups (i.e. chiropractors and homeopaths).

The participants were selected from the list of contact details, such that all practitioners residing within the greater Durban area (defined by the telephone dialling code 031) were separated from the original master list obtained from the AHPCSA. This is referred to as purposive sampling (Hicks, 2004).

From the newly formed list (practitioners in the greater Durban area), the practitioners were then further selected for purposes of participation. This was done whereby every second practitioner was selected from the list, which was arranged in alphabetical order. If the contact details were not available, then the next immediate practitioner was selected. This was also the case if those selected practitioners were not prepared to participate. This was in order to achieve the sample size required.

3.2.4.3 **Sample Method**

3.2.4.3.1 **Practitioners**

Once practitioners agreed to participate in the study, the questionnaire was given to them directly to complete in full.

A process of self-selection then followed which is embodied by the responses of the practitioners to participation in the study as not all questionnaires were returned. In total sixty two questionnaires were received that complied with the requirements above in order that they could be used for data recording, analysis and reporting.

Thus, although 20 questionnaires were required from each group, the more

data that was received, the better the representation of the total population (Esterhuizen, 2005). As a result questionnaires in excess of the minimum number complying with all the requirements were also analysed constituting the 31 questionnaires analysed per group in this study.

3.2.4.3.2 **Questionnaires**

The participants needed to answer all the questions on each of the questionnaires.

Purposive sampling (Hicks, 2004) was used because on data capture, the selection process for the questionnaires was based on the amount of data omitted from the questionnaires. Any information omitted made the questionnaire invalid. This procedure increased the stability and consistency of the information gathered from the questionnaire and minimized the human reactivity (Mouton, 1996), which could bias the results.

3.2.4.4 **Sample Characteristics**

3.2.4.4.1 **Practitioner Inclusion Criteria**

- All participants were registered with the Allied Health Professions Council of South Africa so that the sample remained homogenous (Mouton, 1996). This was accomplished by the researcher asking for the participant's registration number, and checking it against the list provided by the AHPCSA.
- All participants were residents of the Republic of South Africa living in the greater Durban area so that the sample was homogenous (Mouton, 1996), and this was accomplished by asking each participant for their registration number and checking it against the list provided by the AHPCSA.

- All participants had a full compliment of contact details so that each

participant could be contacted, informed what the research was about, and asked whether they were interested in participating in the research (Mouton, 1996). This was accomplished by asking each participant for their registration number and checking it against the list provided by the AHPCSA.

- The questionnaire had to be returned fully completed so that it could be used for statistical purposes (Mouton, 1996).

3.2.4.4.2 **Practitioner Exclusion Criteria**

- Any chiropractor or homeopath who was not registered with the Allied Health Professions Council of South Africa was excluded so that homogeneity could be maintained.

- Any chiropractor or homeopath who was not a South African resident and not living in the greater Durban area was not considered for the sample to maintain homogeneity.

- Any chiropractor and homeopath not familiar with the English language was excluded as the questionnaire was validated in English. This could have made interpretation of the questionnaire incorrect because if one translated the questionnaire into the other official languages, there would have been misunderstanding of certain questions, since direct translation is not possible, but one has to modify questions in order for translation to occur.

- If the questionnaire was returned incomplete or not filled in at all, it was excluded from the sample and was regarded as a non-respondent because that questionnaire did not follow the trend of completeness that all other questionnaires followed (Mouton, 1996), and did not meet the inclusion criteria.

- Non-responses were not included (ie. incomplete questionnaires were acknowledged by the researcher, but not used in statistical analysis) because it would have altered the results negatively (Mouton, 1996).

- Members of the focus group were not allowed to participate in the study since their knowledge regarding the background of the research would negatively bias the results (Mouton, 1996).

- Members of the pilot study were not allowed to participate in the study since their knowledge regarding the background of the research would negatively bias the results (Mouton, 1996).

3.2.5 **Procedure for Data Collection**

3.2.5.1 **Study Protocol and Design**

3.2.5.1.1 **Questionnaires and their Validity**

A questionnaire having two sections, namely a demographic section and an epidemiological section, was utilised to gather the relevant information (Appendix 1).

In general, questionnaires are a good source of information, provided that the questionnaire had been proven reliable and valid (Mouton, 1996). Questionnaires are the tool of choice for a project such as this as it ensures bias, on the side of the researcher, is kept to a minimum, and there is less chance of misinterpretation of results (Mouton, 1996).
The questionnaire that was used was shown to be a valid and reliable instrument in previous studies of a similar nature completed by Jamison (1995), Drews (1995), Moys (1998), Simpson (1998), Easthope (2000), and Langworthy (2001).

Validity refers to the extent to which an empirical measure (questionnaire)

adequately reflects the real meaning of the concept under consideration. There are numerous yardsticks for determining validity (face validity, criterion-related validity, content validity and construct validity) (Scollen and Scollen, 1995; Mouton, 1996; Babbie, 2001).

Reliability is when a research tool (questionnaire) is applied repeatedly to an objective, and the resultant outcome would yield the same result each time. This shows that the tool is reliable (Baynham, 1995; Mouton, 1996 Babbie, 2001).

3.2.5.1.2 **Questionnaire Identification for Purposes of this Study**

In order to utilize surveys two objectives must be met namely, reliability[1] and validity[2]. This is applicable whether one is using a self-administered questionnaire or a supervised / semi–supervised administered questionnaire (Neuman, 2000).

3.2.5.1.3 **Focus Groups**

The tool that was used was a pre-validated questionnaire (Appendix 1). This tool was developed from a previously used questionnaire (Moys, 1998; Simpson, 1998). It was tested for face validity using a focus group.

Focus groups provide validity by way of providing additional detail and context for a survey. Focus groups complement surveys and are used to design questionnaires. A focus group can discuss the wording of a question or offer advice on how the whole questionnaire comes off to respondents. Focus groups are also used to help interpret the results of surveys. Focus groups

[1] Reliability is a technique applied repeatedly to the same object, would yield the same result each time. (Babbie, 2001; Mouton, 1996; Baynham, 1995)

[2] Validity refers to the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration. There are numerous yardsticks for determining validity (face validity, criterion-related validity, content validity, and construct validity). (Babbie, 2001; Mouton, 1996; Scollen and Scollen, 1995)

provide ethnological data (data that is related to social science) and by transcription, that data can become very useful when designing the questionnaire (Bernard, 2000).

Once the questionnaire is designed, a focus group is then assembled. Streiner et.al. (1993) describe a focus group as a discussion in which a small group of informants (six to twelve people), guided by a facilitator, talk freely and spontaneously about themes considered important to the investigation. The participants are selected from a target group whose opinions and ideas are of importance to the research and the interests of the researcher with respect to the study.

Combining both practical and substantive considerations helps to clarify the basis for the rule-of-thumb-size that specifies a range between six to ten people focus group. Below six, it may be difficult to sustain a discussion and above ten, it may be difficult to control one (Morgan, 1998(a)).

The focus group for this study consisted of nine participants, excluding the researcher and a camera operator / witness (sessions are usually tape-recorded (Morgan, 1998(b)) and an observer (recorder) also takes notes on the discussion. The members of the focus group had a vested interest in the results that the questionnaire would ultimately capture.

This composition was necessary to maintain homogeneity of the group because it is vital for the group's ability to share a discussion on the research topic (Morgan, 1998(c)).

There were nine members of the focus group (three chiropractors, three homeopaths, and three chiropractic students). Each member was given an informed consent letter (Appendix 2), a letter of information (Appendix 3), a confidentiality statement (Appendix 4) and a code of conduct (Appendix 5) form to sign. These nine members were then given the questionnaire, and were allowed to discuss whether each question was valid or not, or whether each

question needed some modification so that it could be used in the final questionnaire. The entire session was video taped. The focus group made suggestions pertaining to the epidemiological questions. The final questionnaire then developed from discussions of the focus group.

3.2.5.1.4 **Pilot Study**

A pilot procedure followed the focus group. This entailed having persons not involved in the focus group complete the questionnaires as though they were respondents in the actual study. After completion of the questionnaires the pilot respondents completed a pre-research questionnaire which isolated problems / errors or omissions with respect to the grammar, sentence structure, ambiguity or other linguistic parameters, as well as problems of a more logistical nature (e.g. time, appropriateness of procedure utilized).

A minor change was made in response to these pre-research questionnaire outcomes. This change regarded the spelling of homeopath.

3.2.5.1.5 **Analysis of Final Questionnaire**

This study used the face validated questionnaire. The data collected from the questionnaires (Appendix 1) was then entered into SPSS version 12 and then given to a statistician for analysis.

3.2.6 **Data Collection Procedure**

Each selected chiropractor and homeopath received an envelope containing:

a) A letter of explanation and introduction,
b) A consent form, and
c) A questionnaire,
d) A return, stamped, self addressed envelope.

to ensure maximum compliance from respondents by making the return of the questionnaire as simple as possible.

3.2.7 **Data Collection Frequency**

The data collection process, in terms of each participant completing questionnaires, occurred only once, as it was not necessary to collect the data over a period of time.

3.2.8 **Data Analysis**

The objective of data collection was to produce reliable data. Thus the tool used met the criterion of validity and reliability so that the correct data was obtained and analysed (Mouton, 1996).

The analysis of all completed questions consisted of simple frequency counts (simple descriptive analysis) with results analysed as percentages. The data was analysed to demonstrate demographic and epidemiological factors, and cross-tabular analysis and chi square statistical evaluation was employed. The data was displayed using frequency tables and bar graphs. A p-value equal to or less 0,05 was considered statistically significant. The programme that was used to process the data was the SPSS version 12.

Responses to each question were compared between chiropractors and homeopaths using Pearson's chi square (used for correlation designs that compare two sets of data for their degree of association), or Fisher's exact tests (a procedure used for data in a two by two contingency table and is an alternative to the Chi-square test), where appropriate.

Small sample size and large number of categories for some questions invalidated the results of the chi square test in some instances, thus trends

were compared graphically using clustered bar charts.

Referral scores for each type of practitioner (chiropractors and homeopaths) were compiled using the sum of scores for questions 9, 11, 12, 13, 14 and 21. A higher score indicated a lower referral rate and vice versa because of the coding system used. Since cross-referrals between chiropractors and homeopaths were the focus of the research, only referrals between chiropractors and homeopaths were analysed in this way. Referral scores were examined separately for chiropractors and homeopaths (intragroup).

Factors affecting each type of referral score were analysed non-parametrically due to the skewness of the referral scores. Mann-Whitney tests (used to analyze results from research that have compared two different unmatched groups of subjects and to see if the results from each group differ significantly) were used to compare scores between two groups and Kruska-Wallis tests (used when different subject groups are involved, when data are ordinal or interval/ratio, when the conditions for its parametric equivalent cannot be fulfilled) were used to compare between three or more groups. Spearman correlation (used when one set of scores is only ordinal, and thus cannot fulfil the conditions needed for parametric testing) was used to assess relationships between scores and quantitative variables.