CHAPTER THREE: RESEARCH METHODOLOGY

3.1 INTRODUCTION

The purpose of this chapter is to address the methods used in this study. Aspects of these methods that were addressed include the research design, population and sampling, instrumentation, reliability and validity of the instrumentation, scoring techniques, data-gathering procedures and statistical analysis methods used.

3.2 RESEARCH DESIGN

Often the best and sometimes the only way, to learn what people think or how they act, is to ask them. Manheim and Rich (quoted by Booysen, 2003:127) argue that the acceptance of this fact has made survey research one of the most fully developed and extensively used methods in the social sciences. Virtually all surveys aim at describing the characteristics or opinions of a population using a representative sample. According to May (1997:82-83), one can distinguish between factual, attitudinal, social psychological and explanatory surveys. Tredoux and Smith (2006:167-170) identified two research design types, namely, descriptive research and relational research. The key aim of descriptive research is to describe, for example, the distribution of attributes in a population or the social practices of a particular group. Relational research investigates the relationships between things for example, between cigarette smoking and heart attacks or between obesity and diabetes. Survey research captures a fleeting moment in time, much as a camera that takes a single-frame photograph of an ongoing activity (Leedy & Ormrod, 2005:184). The current study is a relational survey that seeks to explore the relationship between the wellness behaviour levels of managers and their risk for current and future wellness problems.

3.3 PARTICIPANTS

The population for this study were managers (heads of academic departments, directors of support services and members of the rectorate) at an academic university and a technology university. The impact of the incorporation of a small campus of a previously existing academic university had a minimal impact on the status quo. The technology university is a new institution that came into being on 1 January 2004 because of the merger between three former technikons. Therefore, the academic university represents an existing institution that only incorporated one small institution, while the technology university represents a total transformed institution consisting of three former independent technikons.

3.3.1 The sample

In the present study, the population were managers (academic section heads; directors of support services and rectorate) at the academic university and the technology university. The sample frame was the list of names of managers that were provided by the respective human resource departments of the two institutions. The total population of managers at the academic university were one hundred and sixty-four (164) and at the technology university one hundred and sixty (160). In view of the relatively small number of managers, a census was done on the whole population. The list of managers provided by the respective human resource departments included their e-mail addresses. The researcher created two separate e-mail address lists, one for each participating university. The self-administering questionnaires were sent by way of e-mail attachments to all the listed respondents. Three hundred and twenty-four (324) questionnaires were sent out to the listed managers at the two institutions. The returned number of questionnaires from the technology university was 57 (36%). Of these, four (2%) were not usable, as several items were not answered. The returned number of questionnaires from the academic university was 42 (26%). Of these 6 (4%) were not usable, as several items were not answered. This brought the average response rate to 28% (N = 89).

3.3.2 Respondents' characteristics

The demographic and health risk assessment variables of the respondents are presented in order to obtain a clear picture of the research group. The demographic and health risk assessment information of the respondents is indicated in table 3.1.

Table 3.1: Demographic and Health Risk Variables of the Respondents

At which university you are employed
Academic university participants indicate at which campus are you employed
Technology university participants indicate at which delivery site you are employed
Which faculty (academic) or division(support services)
Gender
Race
Age
Level of education
Job title
Number of staff responsible for
Total number of years in current institution
Number of years in current position
Body weight and height
Tobacco smoking status
Number of cigarettes/pipes/cigars per day
Frequency of doctor or health care professional visits
Number of hours sleep at night
Overall physical condition
Level of systolic and diastolic blood pressure
Family medical conditions such as high blood pressure, diabetes, heart attack or angina, stroke and high blood cholesterol
Diagnosed with medical conditions such as high blood pressure, diabetes, heart attack or angina, stroke and high blood cholesterol
Frequency of alcoholic beverages consumed
Number and types of alcoholic drinks per day

For the purpose of the study, nine (9) health risk indicators were included in the questionnaire such as a Body Mass Index (BMI); smoking status; number of doctor or health professional visits; total sleeping hours per night; reported health status; elevated blood pressure; family history of medical conditions such as high blood pressure, diabetes, heart attack or angina, stroke and high blood cholesterol; self-reported (diagnosed with) medical conditions such as high blood pressure, diabetes, heart attack or angina, stroke and high blood cholesterol and alcoholic

drinks consumed per day. These identified health risk factors were based on the Behavioral Risks Surveillance System and the National Health Interview Survey that were designed for the assessment of health risk behaviours (Thompson, Nelson, Caldwell & Harris, 1998:50-53). Of the nine health risk factors, only 6 were utilized to determine the health risk score of the respondents (BMI in view of unreliable self-reported values; high blood pressure in view of too many missing values and number of alcoholic drinks consumed per day in view of too many missing values, were excluded). To determine the high health risk category amongst the respondents the following health risk indicators were included, namely, all current and ex-smokers; those who paid more than five visits to a doctor or health professional per year; those sleeping for less than 7 hours a night; those who reported fair or poor physical health status; those with an indication of a family history of high blood pressure, diabetes, heart attack or angina, stroke, high blood cholesterol and those diagnosed with medical conditions such as high blood pressure, diabetes, heart attack or angina, stroke, high blood cholesterol. The statistician and researcher decided that for each condition indicated by the respondent, a score of one was to be allocated. A maximum score of 14 was attainable. The health risk factors are summarized in table 3.2.

Table 3.2: Health Risk Factors

HEALTH RISK FACTORS	RISK SCORE
Smoker or ex-smoker	1
More than five visits to a doctor or health professional	1
Sleep > 7 hours per night	1
Fair or poor physical health status	1
Family history of:	
High blood pressure	1
Diabetes	1
Heart attack or angina	1
Stroke	1
High blood cholesterol	1
Diagnosed with a medical condition such as:	
High blood pressure	1
Diabetes	1
Heart attack or angina	1
Stroke	1
High blood cholesterol	1
Total risk score	14

3.4 MEASURING INSTRUMENT

The main aim of this study was to determine the relationship between the wellness behaviour levels of managers and the scale of risks involved in terms of their current and future wellness problems. The TestWell Wellness Inventory for Adults was used in a survey to measure the extent to which wellness behaviours reflect wellness risks and problems. The instrument, the TestWell Wellness Inventory for Adults, was designed by the National Wellness Institute in the United States of America and is based on the six dimensional wellness model of Hettler (National Wellness Institute, 2005). The TestWell Wellness Inventory reportedly measures the extent to which lifestyle behaviours reflect potential risks and hazards (National Wellness Institute, 1992). The TWI (A) is a 100-item inventory divided into 10 subscales of 10 items each (National Wellness Institute, 2005).

The pre-structured questionnaire included demographic information, a health risk assessment and also focused on the perceived wellness of managers covering the physical, emotional, intellectual, social, occupational and spiritual dimensions (see annexure A). The physical, social and emotional dimensions were divided into subcategories by the developers of the questionnaire. The subscales physical fitness and nutrition, medical self-care and safety and lifestyle belong to the physical dimension. The social dimension was subdivided into the subscales of environmental wellness and social awareness. The subscales emotional awareness and sexuality and emotional management were placed under the emotional dimension, while the intellectual, occupational and spiritual wellness were not subdivided. Therefore, the 10 subscales were physical fitness and nutrition, medical self-care, safety and lifestyle, environmental wellness, social awareness, emotional awareness and sexuality, emotional management, intellectual wellness, occupational wellness and spirituality and values (Stewart, Rowe & LaLance, 2000:160). Each item in the questionnaire is a statement to which the participant responded using the 5-point Likert scale ranging from 1-5 (1. Almost never - less than 10% of the time; 2. Occasionally - approximately 25% of the time, 3. Often - approximately 50% of the time; 4. Very often - approximately 75% of the time and 5. Almost always - 90% of the time). The totals for each subscale can range between a minimum of 10 to a maximum of 50. The total scores for the questionnaire may thus range from 100 to 500. According to Wright (2006), TestWell was designed primarily as an educational

and awareness tool. The cut-off points are: 0-59 (shows a need for improvement); 60-79 (good) and 80-100 (excellent) (Wright, 2006). The National Wellness Institute (2005) states that the wellness group results provide an overview of the strengths and weaknesses while scores lower than 60% may need careful attention in the design and implementation of interventions through an organisational wellness programme.

Owen (1999:181-182) used Cronbach's coefficient alpha and split-half reliability statistical tests to determine TestWell's reliability. The split-half reliability of TestWell was 0.87, while the reliability of the full TestWell scale, determined by Cronbach's coefficient alpha, was 0.92 (Owen, 1999:181). The reliability of TestWell was also confirmed in a study conducted by Stewart *et al*. (2000:161), in which Cronbach's alphas ranging between 0.67 to 0.89 were obtained for the 10 subscales, while Jones and Frazier (1995:834) calculated an average Cronbach's coefficient alpha of 0.84 for TestWell. The construct validity of TestWell was determined by computing Pearson product moment correlation coefficients between the total TestWell score and TestWell's 10 subscales. Correlations between TestWell's subscales and the total TestWell score ranging from 0.44 (safety) to 0.72 (medical self-care), were all statistically significant at the 0.001 alpha level (Owen, 1999:182). Owen (1999:182) also determined construct validity by using Pearson product moment correlation coefficients to correlate TestWell item scores with the total TestWell score. Twenty (20%) of the 100 items correlated 0.24 or less with the total TestWell score. According to Owen (1999:182), there were no negative correlations between TestWell item scores and the total TestWell score. All 10 TestWell subscale scores significantly correlated with the total TestWell score at the 0.001 alpha level. Palombi (1992:222-225) investigated the psychometric properties of TestWell and in terms of reliability the alpha coefficient for the total score was 0.93. Coefficient alphas above 0.74 were obtained for 8 of the 10 subscale scores (nutrition, drugs and driving, emotional awareness, emotional control, intellectual, occupational, social and spiritual).The exceptions to these were the subscale scores concerning physical fitness (0.64) and medical self-care (0.68), which, although having statistically significant correlations with the other subscale scores, demonstrated observably lower inter-scale reliability. The inter-correlations among the total score and 10 subscale scores ranged from 0.42 to 0.68. Each was significant at a 0.001 alpha level, which suggests that the instrument could be

measuring a multidimensional construct. The content validity indicated a coefficient alpha of 0.93 that confirms internal consistency validity.

Based on previous research results, it may be concluded that TestWell is measuring a multidimensional construct wellness. Wellness is an observable and measurable behaviour. Therefore, TestWell is a reliable and valid instrument for use by researchers in assessing the wellness levels of individuals or groups and also indicating the areas in which improvement may be needed.

3.5 PROCEDURES FOR DATA COLLECTION

3.5.1 Questionnaire administration

The researcher designed a self-administered questionnaire, based on the TestWell Wellness Inventory for Adults. A section on demographics was added for gathering background, personal and health-related information. This format could be completed as a pencil-and-paper instrument. Each questionnaire was accompanied by a covering letter explaining the purpose of the study to the prospective participant. A letter of consent was attached that included a description of the research, protection of confidentiality and voluntary participation, the importance of participation, potential benefits, contact information and consent. General instructions on completing the questionnaire were included.

The questionnaire was divided into Section A (Demographic Section consisting of twenty-three ((23)) questions) and Section B (A holistic wellness behaviour assessment tool consisting of one hundred ((100)) questions). In line with the recommendations of Leedy and Ormrod (2005:191), clear instructions for both sections were provided. The 5-point Likert scale was used in Section B and the number that best identified the response was clearly explained. In Section B, the instrument, TestWell Wellness Inventory for Adults, had pre-existing scales that were standardised. However, it was decided to change the wording and concepts of some items to make them more understandable and applicable to the South African context without deviating from their original meanings and context. Apart from this, the items were not modified in any way so that original response scales were maintained.

A letter to request permission to use managerial staff members as respondents in the study was sent to the human resource departments and the ethics research committees of the academic university and the technology university. Once permission had been granted, 324 questionnaires were sent out by e-mail attachment to all the listed respondents. The advantages of an e-mail survey include the following: it helps gaining access to respondents normally difficult to reach; is useful when issues that are researched are particularly sensitive; is more attractive to young people which may lead to a higher response rate when compared to paper-and-pencil surveys; e-mail surveys are inexpensive; data collection is fast; it helps to improve reach potential respondents especially if they are distributed across a large geographical region; the absence of interviewer bias; the removal of the need for data entry in as much as the respondents directly enter data into an electronic file and is convenient for respondents (Van Selm & Jankowski, 2006:436-439; Akl, Maroun, Klocke, Montori & Schünemann, 2005:427-428). The completed questionnaires were then returned to the researcher via internal mail, fax, personal collection and e-mail attachments. An e-mail reminder was sent to all non-respondents to complete and return the questionnaires every fortnight.

3.5.2 Handling of returned questionnaires and data

The returned questionnaires were coded and the raw data processed into the Microsoft® Excel Program. As the data had been collected through a self-administrated questionnaire, it was not possible for the researcher to confirm the completion of all the survey items by the respondents. As already indicated, a total of 10 questionnaires were incomplete due to unanswered items. Finchilescu (2005:209-210) postulates that missing scores, due to unanswered items, can be dealt with by either removing the respondent from the data file or replacing the missing number with the average of the respondent's other scores. He recommends that the rule of thumb is that every respondent should complete at least 75% of the items and if more than 25% is missing, the respondent should be dropped from the sample. As a result, only eighty-nine (89) questionnaires were usable, providing an average return rate of 28%. The response rate of 28% is low when compared with the guidelines in the literature. According to Babbie and Mouton (2001:261), a response rate of 50% is adequate for analysis and reporting, 60% good and 70% very good. Welman and

Kruger (2001:147) state that postal surveys have the lowest response rates of all survey methods. Frankfort-Nachmias and Nachmias (1996:116) state that the response rate for a mail survey without follow-up is between 20% and 40% and that a low response rate makes it difficult to make generalisations. Akl *et al*. (2005:428) report that postal surveys tend to have higher response rates than e-mail surveys. Porter and Whitcomb (2005:132-133) point out that the non-response rate of e-mail surveys has been increasing due to several reasons such as that more affluent or educated individuals are more likely to participate than less affluent and educated individuals; women responding in greater proportions than men; whites responding more often than non-whites; older individuals are less likely to participate while the relevance of the survey topic also differs between respondents and non-respondents. An e-mail list may provide a researcher with a sampling frame, but certain obstacles, such as multiple e-mail addresses for the same respondent, invalid/inactive e-mail addresses and self-selection bias where some individuals are more likely than others to complete an online survey, can be problematic (Wright, 2006). The response rate in this study was low despite the sending of various reminders and personal visits to deliver and collect the questionnaires.

There are multiple reasons to which the low response rate can be attributed. The high non-response rate may be attributed to the length of the questionnaire (Delport, 2005:167). The questionnaire used in the study was 12 pages long and contained 123 questions. The negative influence of the length of the questionnaire was confirmed by the comments received from some of the respondents, for example, a respondent who returned the questionnaire that had nearly been completed, but stopped after half an hour as the instructions indicated that it would take only 30 minutes to complete. Another reason was the negative attitude of the respondents. Regular e-mail, telephonic and personal face-to-face requests and reminders were made. Some respondents indicated that the health and wellness questions were too sensitive and personal in nature, while others were more offended and stated that the questions were intrusive and irrelevant to their jobs, some were sceptical about confidentiality, or felt uncomfortable and as a result had either withdrawn from participation or chose not to respond.

The main objection towards online surveys is the issue of sampling bias (Van Selm & Jankowski, 2006:439). The response rate is an important indication of the success of a survey research study. Ideally, all the listed managers in the population

of 324 should have completed and returned their questionnaires. The low response rate of 28% thus created a response and representative bias problem that made it difficult to generalise the results obtained to the entire managerial population of the academic university and the technology university. The low response rate restricted the usefulness of the research survey in the sense that the results may be deemed as not being sufficiently representative of the whole population.

3.6 PROCEDURES FOR DATA ANALYSIS

The statistical analysis of the data was done at the Department of Statistics at the University of Limpopo and the University of Pretoria. The researcher, the study leader and a statistics practitioner were involved in the planning and execution of the analysis. The Statistical Package for the Social Sciences (SPSS) was used for data management and analysis.

The following statistical procedures were used:

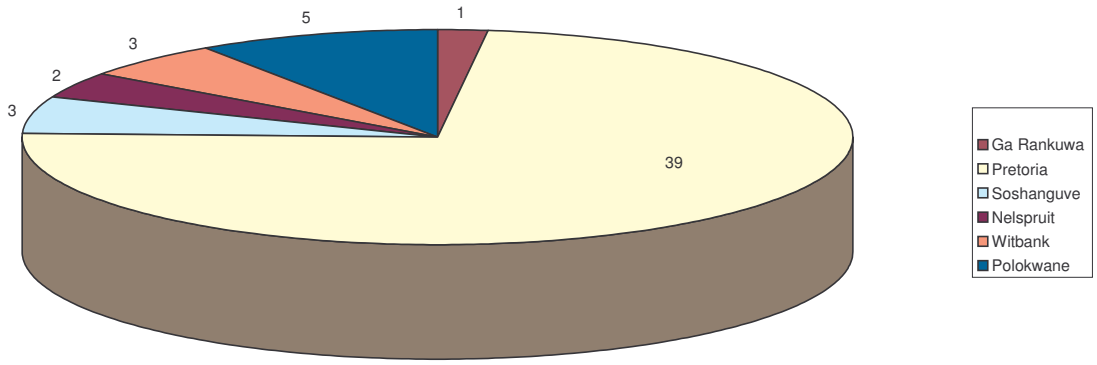
- ❏ Descriptive statistics such as tables, graphs, means and standard deviations;
- ❏ Cronbach's alpha coefficient to measure the internal consistency of the instrument;
- ❏ Pearson product moment correlation coefficient to measure the relationship between the wellness sub-dimension scores and the health risk scores;
- ❏ *T*-tests to compare the mean scores of the various groups; and
- ❏ One-way analysis of variance (ANOVA) to compare the mean wellness sub-dimension and health risk scores between the three age groups.

3.6.1 Descriptive statistics

Institution and campus: The respondents were requested to indicate at which university and campus they were employed. Of the 89 respondents, 36 (40.45%) were employed by the academic university (AU), while 53 (59.55%) were working at the technology university (TU). Of the 36 academic university respondents, 1 was from the satellite campus, while 35 were from the Pretoria campus. Of the 53 technology university respondents, 1 was from Ga-Rankuwa, 39 from Pretoria, 3 from Soshanguve, 2 from Nelspruit, 3 from Witbank and 5 from

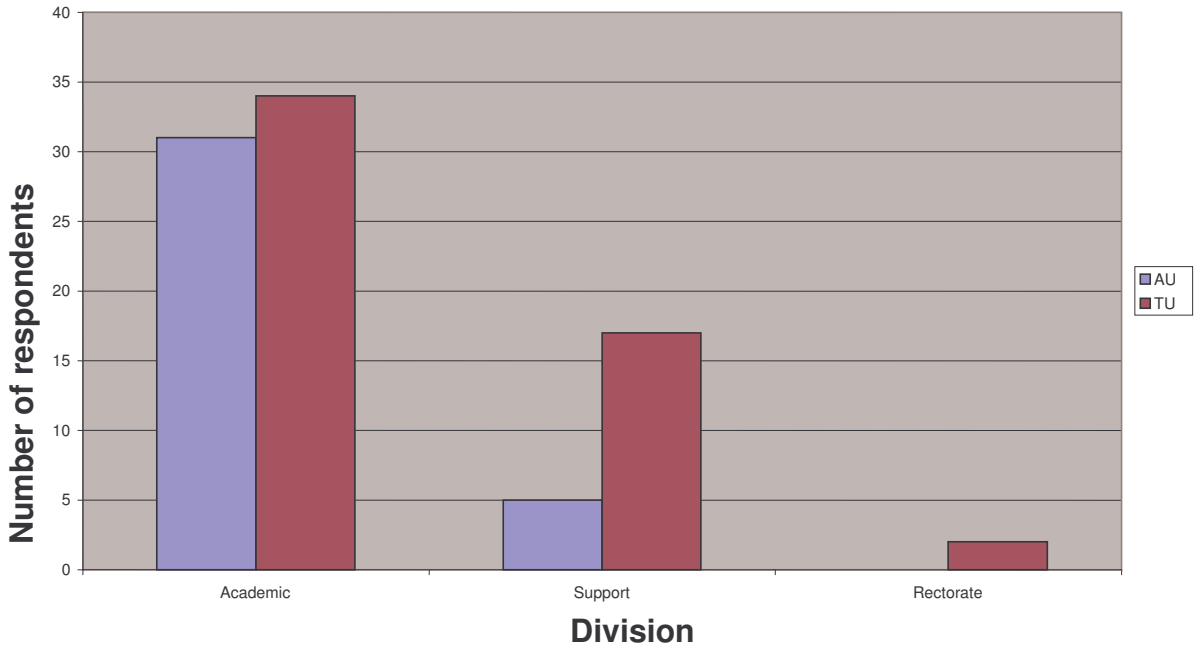
Polokwane. The distribution of the technology university respondents is reflected in Figure 3.1.

Figure 3.1: Representation of Delivery Sites of the Technology University



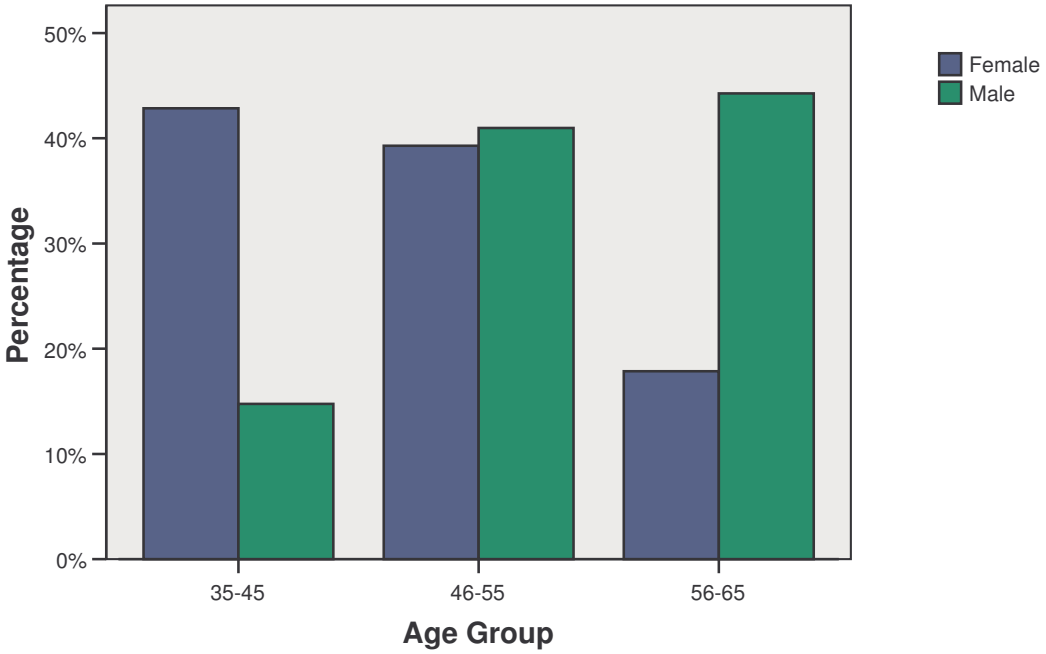
Division or faculty: The respondents were requested to indicate if they resorted under academic, support services, or the rectorate. The distribution of the academic university was academic 86.1% (31); support services 13.9% (5) and the rectorate 0% (none). The distribution of the technology university was academic 64.2% (34); support services 32.1% (17) and the rectorate 3.8% (2). Of the total of 89 respondents, 73% (65) were from academic faculties, 24.7% (22) support services and 2.2% (2) from the rectorate. The distribution of the respondents per faculty or division and university is shown in figure 3.2.

Figure 3.2: University and Division Distribution of Respondents



Gender: In addition, the respondents were asked to state their gender. The majority of the respondents were male, representing 61 (68.5%) of the 89 respondents. Females made up 28 (31.5%) of the 89 respondents. The gender distribution of the AU respondents were 10 females (27.8%) and 26 males (72.2%) while the TU respondents consisted of 18 females (34%) and 35 males (66%). The respondents' ages varied between a minimum age of 35 years and a maximum of 64 years. In terms of age groups 21 (23.6%) were in the age group 35-45; 36 (40.4%) in the age group 46-55 and 32 (36%) in the age group 56-55. From the respondents of the AU, 4 (11.1%) and the TU 17 (32.1%) were in the age group 35-45, while at the AU 17 (47.2%) and TU 19 (35.8%) were in the age group 46-55. In the age group 56-65 there were 15 (41.7%) from the respondents from the AU and 17 (32.1%) from the TU. From the aforementioned data, it can be deduced that the managers at the technology university are on average younger than their counterparts at the academic university. The gender and age distribution of the respondents are shown in Figure 3.3.

Figure 3.3: Gender by Age Category of Respondents

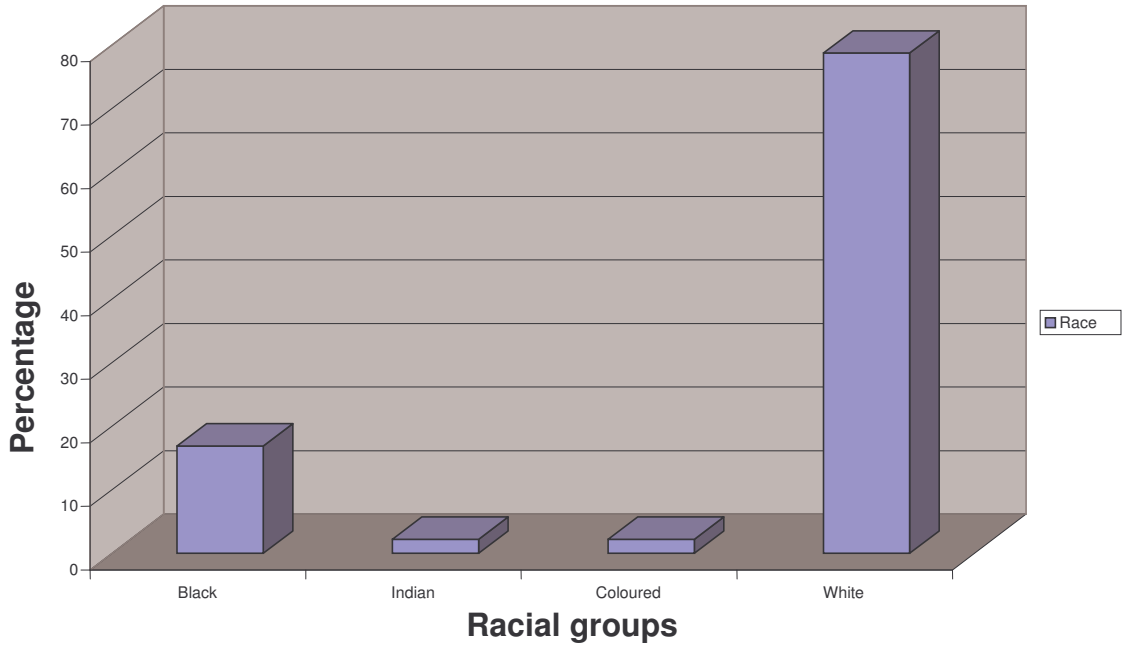


Race: When the respondents were asked to state their race, of the 36 AU respondents, 4 were Black, 1 Indian, 1 Coloured and 30 White. Of the 53 TU respondents, 11 were Black, 1 Indian, 1 Coloured and 40 White. The race distribution of the respondents is shown in Table 3.2 while the combined race distribution of the two institutions is illustrated by figure 3.4.

Table 3.3: Race of Respondents by University

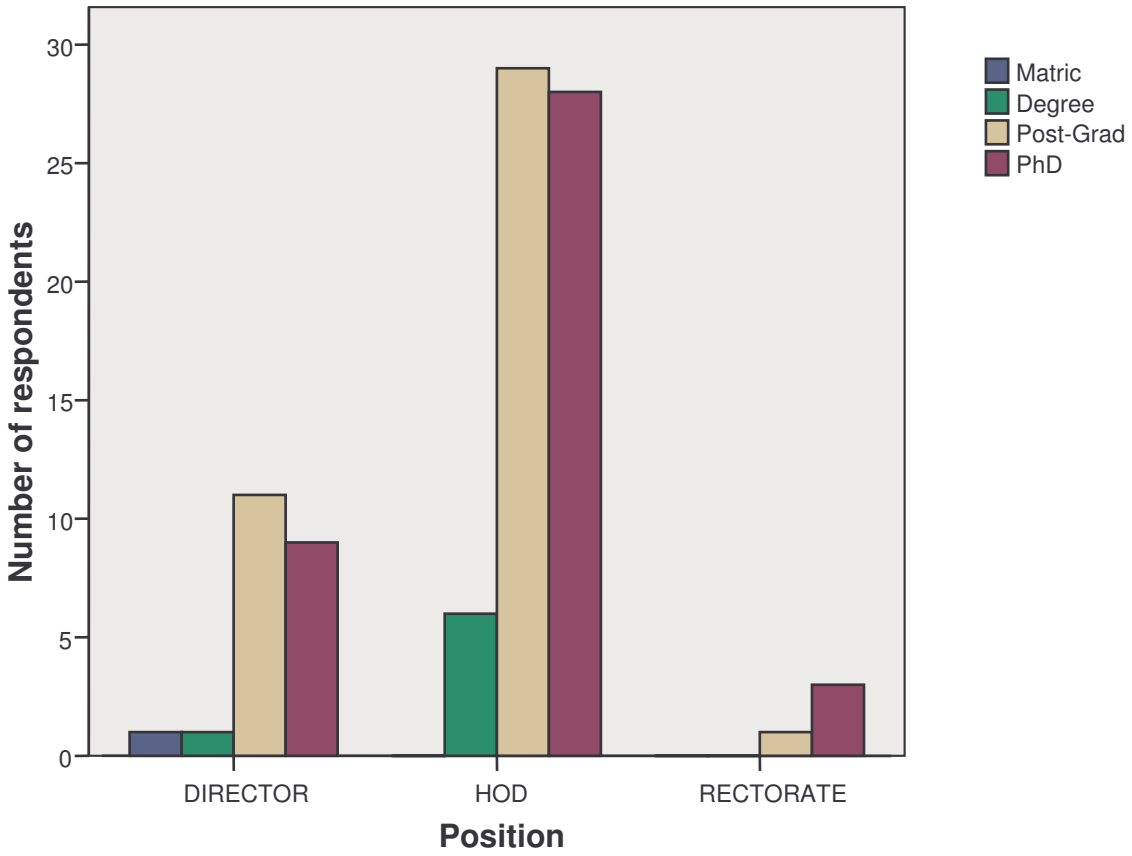
RACE		University			
		AU		TU	
		Count	Col %	Count	Col %
	Black	4	11.1%	11	20.8%
	Indian	1	2.8%	1	1.9%
	Coloured	1	2.8%	1	1.9%
	White	30	83.3%	40	75.5%

Figure 3.4: Combined Race Distribution of the Academic and Technology University



Level of education and position: The respondents were asked to indicate their highest level of education and job title (position). Of the 89 respondents, 1 had matric (1.1%) and 7 (7.9%) had degrees. The largest single group of respondents, 41 (46.1%) had a post-graduate degree, while 41 (44.9%) respondents had doctoral degrees. Three possible job titles were given. These were director, head of department and rectorate. Of the total respondents, 65 (73.03%) were heads of academic departments, 22 (24.7%) directors of support services and 2 (2.24%) were from the rectorate. The distribution of the respondents' level of education and position is shown in figure 3.5.

Figure 3.5: Position and Highest Level of Education of Respondents



Number of staff responsible for (span of control): In response to this question requesting the number of staff members they were responsible for, the average number of people that the heads of academic departments were responsible for was 23, directors 45 and the rectorate 229. The average span of control for the three job categories is reflected in table 3.4.

Table 3.4: Average Span of Control per Job Category of Respondents

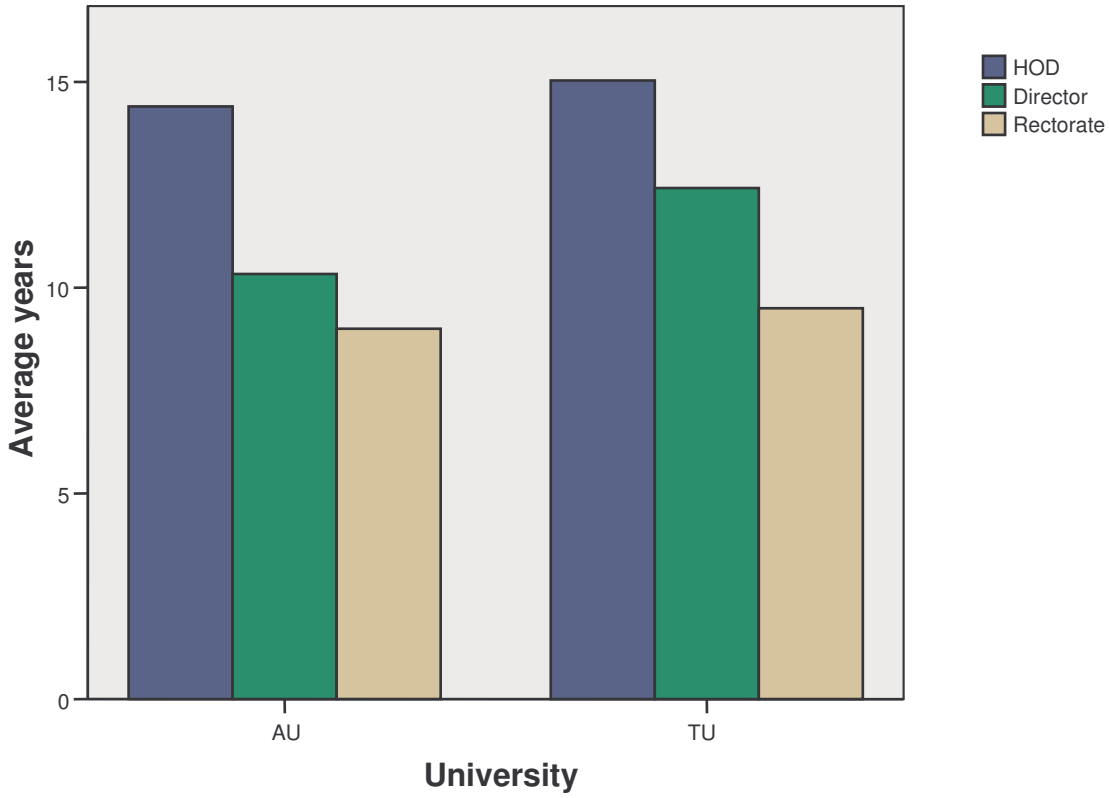
Job Category	Mean	N	Std. Deviation	Minimum	Maximum
HOD	23.38	65	25.284	1	140
Director	44.77	22	87.104	0	400
Rectorate	229.00	2	225.386	4	512
Total	37.91	89	76.259	0	512

Number of years working for current institution: The following information was given when the respondents were asked to report on how many years they were working at their current institution. The average number of years for heads of academic departments was 15 years, directors 12 years and members of the rectorate 9 years. The average number of years at the current institution for each job category is indicated in table 3.5, while the average number of years at the current institution per job position category for the AU and TU is illustrated by figure 3.6.

Table 3.5: Average Number of Years at Current Institution per Job Position Category of Respondents

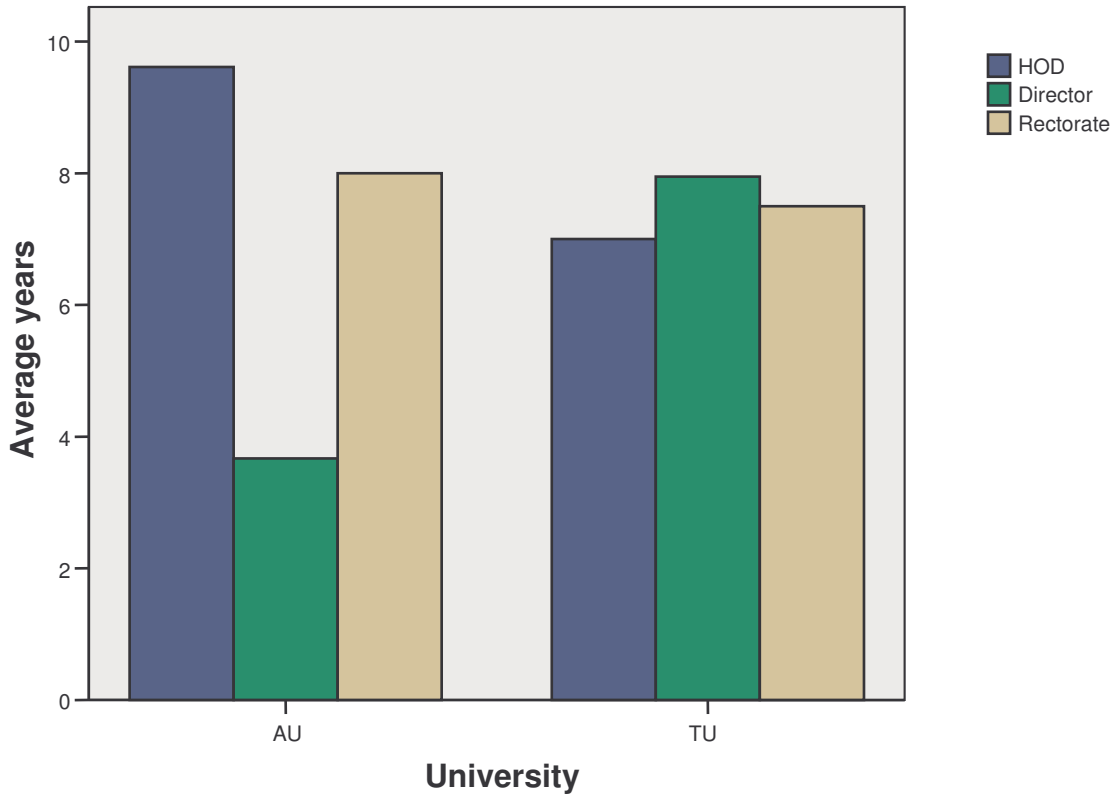
Job Category	Mean	N	Std. Deviation	Minimum	Maximum
HOD	14.72	65	8.780	1	36
Director	12.14	22	6.735	2	25
Rectorate	9.25	2	5.500	4	14
Total	13.84	89	8.271	1	36

Figure 3.6: Average Number of Years per Job Position Category for the Academic University and the Technology University



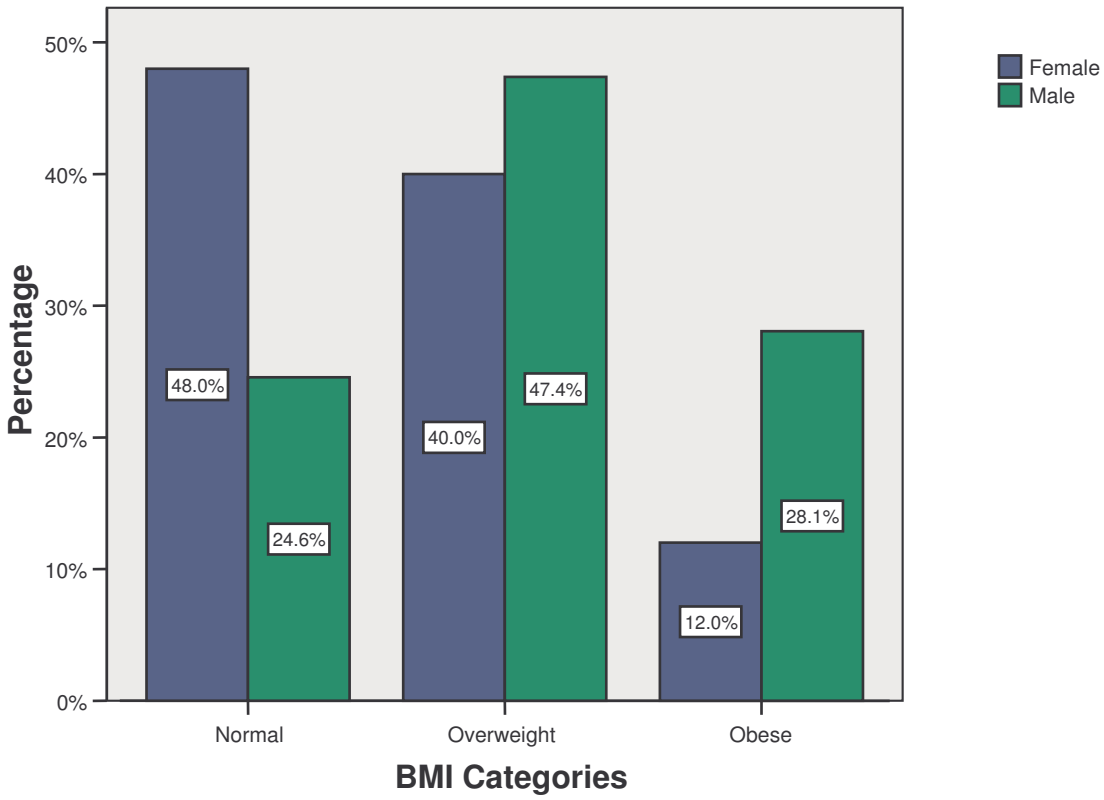
Number of years in current position: The respondents were then asked to state the number of years they had been appointed in their current position. The heads of academic departments had an average service period of 8, directors of support services 7 and members of the rectorate 8 years in their current positions. The average number of years is summarised in figure 3.7.

Figure 3.7: Average Number of Years in Current Position per Job Category of Respondents



Body weight and height: The respondents were asked to indicate their body weight and height without shoes. The reason for asking their body weight and height was to calculate their Body Mass Index. The BMI calculation enabled the researcher to determine which respondents had a normal weight, were overweight or obese. Being overweight and obese increase an individual's risk for developing various medical conditions. In total, 92% of the 89 respondents reported their weight and height (BMI). Of these respondents 29% had a normal weight, 42% were overweight while 21% were obese. A comparison between the females and males indicated the following BMI categories: 48% of the females and 25% of the males had reported a normal weight, 40% of the females and 47% of the males were overweight, while 12% of the females and 28% of the males were obese. The BMI categories by gender are summarised in figure 3.8.

Figure 3.8: BMI Categories by Gender



Tobacco smoking: The next question was intended to indicate if the respondents were smokers, ex-smokers, or non-smokers. Only 10 (11.2%) of the respondents reported that they were smokers, 18 (20.2%) were ex-smokers and 61 (68.5%) were non-smokers. The smoking statuses by gender were as follows: 3 (10.7%) females and 7 (11.5%) males were smokers; 5 (17.9%) females and 13 (21.3%) males were ex-smokers and 20 (71.4%) females and 41 (67.2%) males were non-smokers. The smoking status of the total respondents is summarised in table 3.6, while table 3.7 indicates the smoking status by gender.

Table 3.6: Frequency Distribution of Respondent's Smoking Status

Smoking status	Frequency	Percent	Valid Percent	Cumulative Percent
Smoker	10	11.2%	11.2	11.2%
Ex-smoker	18	20.2%	20.2	31.5%
Non-smoker	61	68.5%	68.5	100.0%
Total	89	100.0%	100.0	

Table 3.7: Smoking Status by Gender of Respondents

Smoking status	Gender			
	Female		Male	
	Count	Col %	Count	Col %
Smoker	3	10.7%	7	11.5%
Ex-smoker	5	17.9%	13	21.3%
Non-smoker	20	71.4%	41	67.2%

Visits to medical doctor and other health professionals: The respondents were requested to indicate how many times they had consulted a medical doctor or other health care professional during the previous 12 months. The number of visits to health professionals is indicated in table 3.8.

Table 3.8: Distribution of Respondents' Visits to Health Professionals

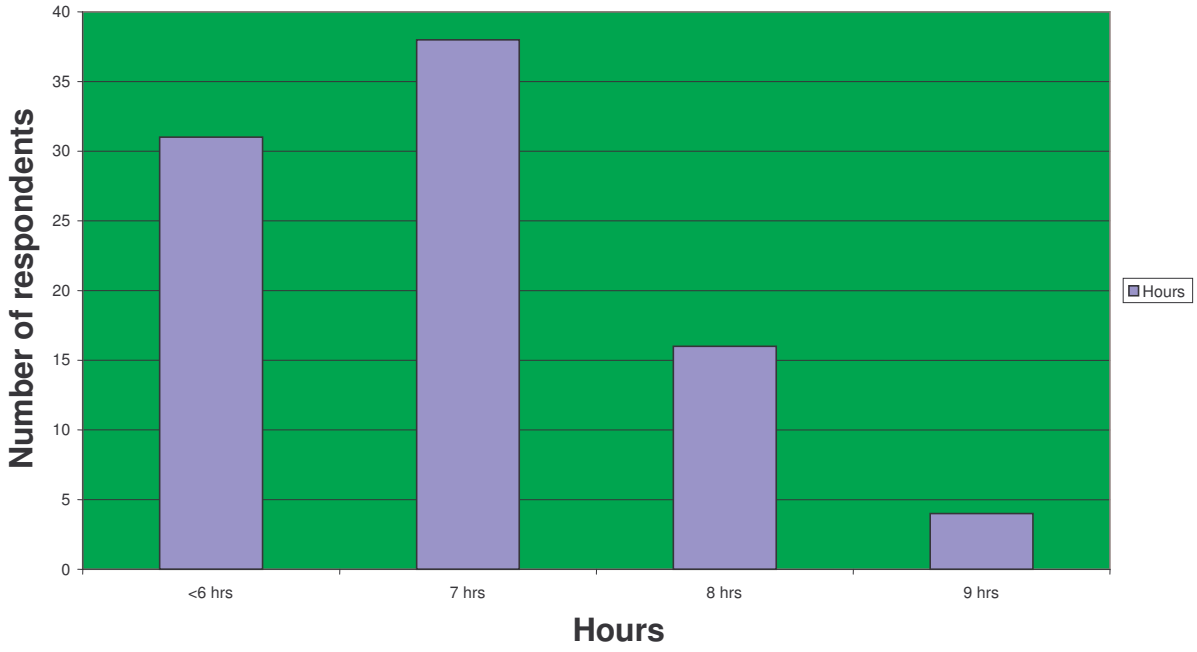
Number of visits	Frequency	Percent	Valid Percent	Cumulative Percent
0	46	51.7%	59.0%	59.0%
2	18	20.2%	23.1%	82.1%
4	3	3.4%	3.8%	85.9%
5	4	4.5%	5.1%	91.0%
6	4	4.5%	5.1%	96.2%
7	1	1.1%	1.3%	97.4%
20	2	2.2%	2.6%	100.0%
Total	78	87.6%	100.0%	
Missing	11	12.4%		
Total	89	100.0%		

Hours of sleep per night: The following responses were given when the respondents were asked to indicate the number of hours they usually slept at night. Four options were offered, namely, 6 hours or less, 7 hours, 8 hours and 9 hours. Of the total respondents of 89, 31 (34.8%) reported less than six hours' sleep per night; 38 (42.7%) seven hours' per night; 16 (18%) eight hours' per night and 4 (4.5%) nine hours per night. Table 3.9 indicates the average number of hours sleep per night.

Table 3.9: Distributions of Respondents' Hours Sleep per Night

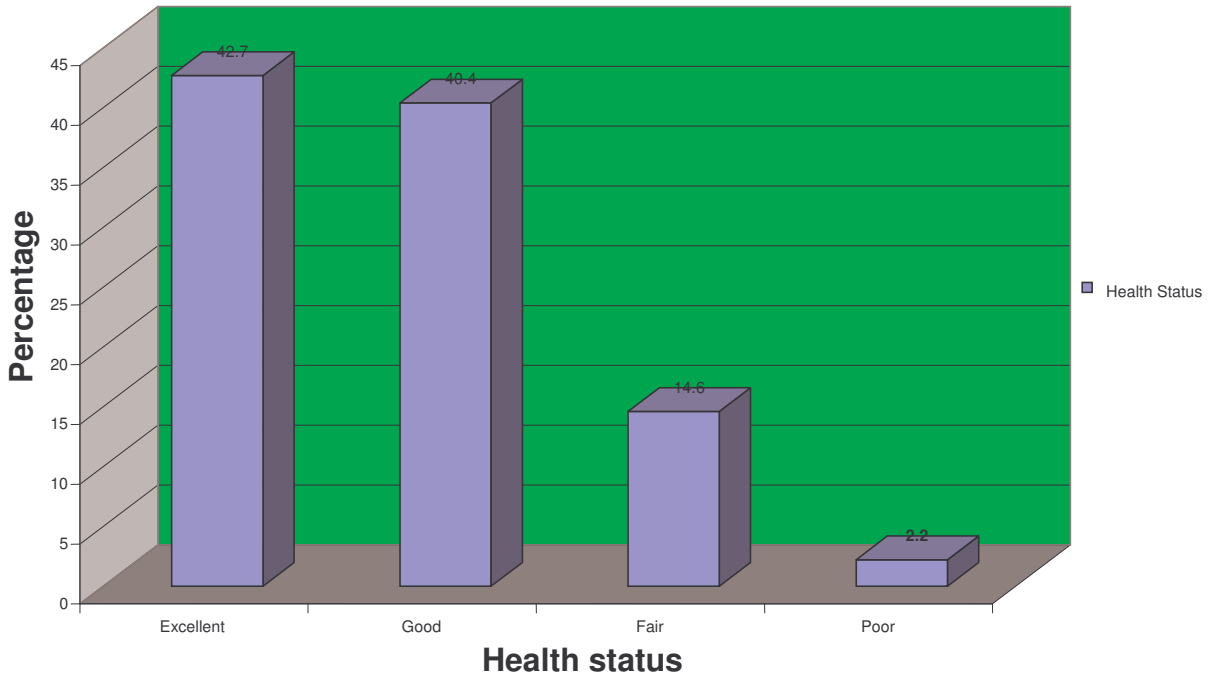
Number of hours sleep per night	Frequency	Percent	Valid Percent	Cumulative Percent
<6 hrs	31	34.8%	34.8%	34.8%
7 hrs	38	42.7%	42.7%	77.5%
8 hrs	16	18.0%	18.0%	95.5%
9 hrs	4	4.5%	4.5%	100.0%
Total	89	100.0%	100.0%	

Figure 3.9: Average Hours Sleep per Night



Physical health status: The respondents were requested to report on their physical health status. Four options were offered, namely, excellent, good, fair and poor. The health ratings were 38 (42.7%) excellent, 36 (40.4%) good, 13 (14.6%) fair and 2 (2.2%) poor. The respondents from the academic university reported as follows on their health status: 10 (27.8%) excellent, 18 (50%) good, 8 (22.2%) fair and poor none. The respondents from the technology university reported as follows on their health status: 28 (52.8%) excellent, 18 (34%) good, 5 (9.4%) fair and 2 (3.8%) poor. The health status of the respondents is indicated by figure 3.10.

Figure 3.10: The Self-Reported Health Status of Respondents

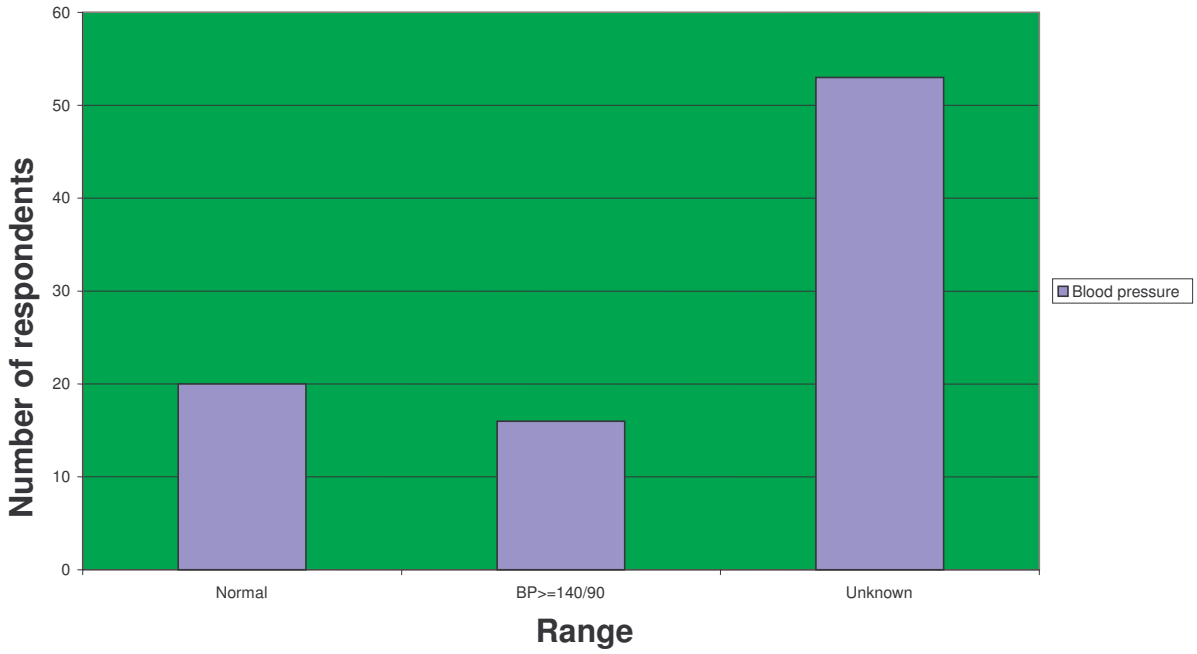


Blood pressure: Only 36 (40.4%) of the respondents indicated their blood pressure levels. Of these, 20 (22.5%) had a normal blood pressure, while 16 (18%) had hypertension or high blood pressure. The blood pressure level of the respondents is indicated in table 3.10 and visually illustrated by figure 3.11.

Table 3.10: Distribution of Respondents' Blood Pressure Level

Blood pressure category	Frequency	Percent	Valid Percent	Cumulative Percent
Normal	20	22.5%	55.6%	55.6%
BP>=140/90	16	18.0%	44.4%	100.0%
Total	36	40.4%	100.0%	
Unknown	53	59.6%		
Total	89	100.0%		

Figure 3.11: Blood Pressure Levels of Respondents



Family history of medical conditions such as high blood pressure, diabetes, heart attack or angina, stroke and high blood cholesterol: The respondents were requested to report if any close relatives had been diagnosed with any of the aforementioned medical conditions. The respondents reported the number of family medical conditions as follows: hypertension 49, diabetes 19, heart attack or angina 22, stroke 17 and cholesterol 23. Of the 38 respondents that indicated an excellent health status, 19 (50%) reported hypertension as a family medical condition. Of the 36 reported a good health status, 17 (47.2%) revealed a family condition of hypertension. Hypertension was also reported by 11 (84.6%) of the 13 respondents that indicated a fair health status. Only 2 respondents mentioned having a poor health status and both (100%) reported hypertension as a family condition.

Of the 38 respondents that indicated an excellent health status, 7(18.4%) reported diabetes as a family medical condition. Of the 36 that indicated a good health status, 6 (16.7%) mentioned a family condition of diabetes. Diabetes was also reported by 5 (38.5%) of the 13 respondents that indicated a fair health status. Of the two respondents that revealed having a poor health status, both (100%) reported diabetes as a family condition. Of the 38 respondents that indicated an excellent health status, 8 (21.1%) reported a heart attack or angina as a family medical condition. Of the 36 that indicated a good health status, 9 (25.7%) reported a family

condition of heart attack or angina. A heart attack or angina was also reported by 3 (23.1%) of the 13 respondents that indicated a fair health status. Of the 2 respondents that mentioned a poor health status, both (100%) reported a heart attack or angina as a family condition.

Of the 38 respondents that indicated an excellent health status, 6 (15.8%) reported stroke as a family medical condition. Of the 36 that indicated a good health status, 8 (22.2%) reported a family condition of having a stroke. A stroke as a family condition was also reported by 1 (7.7%) of the 13 respondents that indicated a fair health status. Of the 2 respondents that mentioned a poor health status, both (100%) reported a stroke as a family condition.

Finally, of the 38 respondents that indicated an excellent health status, 9 (23.7%) reported high cholesterol as a family medical condition while of the 36 that indicated a good health status, 10 (27.8%) reported a family condition of high cholesterol. High cholesterol was also reported by 2 (15.4%) of the 13 respondents that indicated a fair health status. The 2 respondents that revealed a poor health status both (100%) reported high cholesterol as a family condition.

From the aforementioned discussion, it can be deduced that there is a correlation between the self-reported health status and family history of medical conditions. With the decline in reported health statuses, there is an increase in family medical conditions. The family history of medical conditions is indicated by table 3.11.

Table 3.11: Reported Family History of Medical Conditions

Family history of medical conditions		REPORTED HEALTH STATUS							
		Excellent		Good		Fair		Poor	
		Count	Col %	Count	Col %	Count	Col %	Count	Col %
Hypertension	No	19	50%	19	52.8%	2	15.4%	0	0%
	Yes	19	50%	17	47.2%	11	84.6%	2	100%
Diabetes	No	31	81.6%	30	83.3%	8	61.5%	1	50%
	Yes	7	18.4%	6	16.7%	5	38.5%	1	50%
Heart attack / angina	No	30	78.9%	26	74.3%	10	76.9%	0	0%
	Yes	8	21.1%	9	25.7%	3	23.1%	2	100%
Stroke	No	32	84.2%	28	77.8%	12	92.3%	0	0%
	Yes	6	15.8%	8	22.2%	1	7.7%	2	100%
High cholesterol	No	29	76.3%	26	72.2%	11	84.6%	0	0%
	Yes	9	23.7%	10	27.8%	2	15.4%	2	100%

Current medical conditions such as high blood pressure, diabetes, heart attack or angina, stroke and high blood cholesterol: The respondents were requested to indicate if they had ever been diagnosed with any of the aforementioned conditions. The respondents reported the number of diagnosed medical conditions as follows: hypertension 22; diabetes 5; heart attack or angina 4; stroke 0 and high cholesterol 21. Of the 38 respondents that indicated an excellent health status, 5 (13.2%) reported a diagnosed condition of hypertension and of the 36 that stated a good health status, 9 (25%) reported a diagnosed condition of hypertension. Hypertension was also reported by 7 (53.8%) of the 13 respondents who indicated a fair health status while the 2 respondents who indicated a poor health status, 1 reported being diagnosed with hypertension.

Among the 38 respondents that indicated an excellent health status, 1 (2.6%) reported to be diagnosed with diabetes while the 36 who reported a good health status, none had diabetes as a diagnosed medical condition. A diagnosed condition of diabetes was reported by 4 (30.8%) of the 13 respondents that indicated a fair health status, while none was reported by respondents with a poor health status.

Only 1 (2.6%) of the 38 respondents who indicated an excellent health status, reported a diagnosed heart attack or angina and of the 36 that revealed a good health status, 2 (5.6%) reported being diagnosed with a heart attack or angina. None of the 13 fair health status respondents reported a heart attack or angina, while 1 (50%) of the poor health status respondents reported a diagnosed heart attack or angina. None of the respondents responded that they had been diagnosed with a stroke.

Only 7 (18.4%) of the 38 excellent health status respondents reported high cholesterol as a diagnosed medical condition. Of the 36 good health status respondents, 8 (22.2%) reported being diagnosed with high cholesterol levels. Having been diagnosed with high cholesterol was also reported by 4 (30.8%) of the 13 fair health status respondents. The 2 poor health status respondents both (100%) reported being diagnosed with high cholesterol.

This discussion thus shows that there is a correlation between the self-reported health statuses and diagnosed medical conditions. With the decline in reported health status there is an increase in diagnosed medical conditions. The diagnosed medical conditions are indicated by table 3.12.

Table 3.12: Self-reported Health Status by Reported Medical Conditions of Respondents

Diagnosed with medical conditions		REPORTED HEALTH STATUS							
		Excellent		Good		Fair		Poor	
		Count	Col %	Count	Col %	Count	Col %	Count	Col %
Hypertension	No	33	86.8%	27	75.0%	6	46.2%	1	50.0%
	Yes	5	13.2%	9	25.0%	7	53.8%	1	50.0%
Diabetes	No	37	97.4%	36	100.0%	9	69.2%	2	100.0%
	Yes	1	2.6%			4	30.8%		
Heart attack / angina	No	37	97.4%	34	94.4%	13	100.0%	1	50.0%
	Yes	1	2.6%	2	5.6%			1	50.0%
Stroke	No	38	100.0%	36	100.0%	13	100.0%	2	100.0%
High cholesterol	No	31	81.6%	28	77.8%	9	69.2%		
	Yes	7	18.4%	8	22.2%	4	30.8%	2	100.0%

Number of alcoholic drinks per day: Finally, the respondents were asked to indicate how many glasses of beer, wine or mixed drinks they consumed per day. Only 60 (67.4%) of the respondents reported their alcohol consumption habits. Of these, 17 (19.1%) consumed 1 drink per day, 29 (32.6%) 2 drinks per day, 9 (10.1%) 3 drinks per day, 1 (1.1%) 4 drinks per day, 3 (3.4%) 5 drinks per day and 1 (1.1%) 6 drinks per day. Table 3.13 indicates the average alcoholic drinks consumed per day.

Table 3.13: Average Alcoholic Drinks Consumed per Day

Total drinks per day	Frequency	Percent	Valid Percent	Cumulative Percent
1	17	19.1%	28.3%	28.3%
2	29	32.6%	48.3%	76.7%
3	9	10.1%	15.0%	91.7%
4	1	1.1%	1.7%	93.3%
5	3	3.4%	5.0%	98.3%
6	1	1.1%	1.7%	100.0%
Total	60	67.4%	100.0%	
Unknown	29	32.6%		
Total	89	100.0%		

3.6.2 Cronbach's alpha coefficient

The researcher used an instrument that had been developed and validated with samples outside the South African context. The researcher conducted a reliability test (Cronbach's alpha coefficient) to ensure the internal consistency of the questionnaire. Aiken (quoted by Finchilescu, 2005:216) argues that if the scale is to be used to compare groups of people, then a reliability of 0.65 is sufficient and if an individual's score is to be compared with another's, or against a set of norms, the reliability should be at least 0.85. Durrheim and Painter (2006:154) are of the opinion that, as a rule of thumb, questionnaire-type scales with an alpha value of greater than 0.75 are considered reliable (internally consistent).

The reliability test of the ten sub-dimensions of the instrument showed a Cronbach's alpha of 0.69 for physical fitness and nutrition; 0.67 for medical self-care, 0.76 for safety and lifestyle, 0.71 for environmental wellness, 0.77 for social awareness, 0.81 for sexuality and emotional awareness, 0.84 for emotional management, 0.82 for intellectual wellness, 0.87 for occupational wellness and 0.85 for spirituality and values. The reliability of the full TestWell scale, determined by Cronbach's coefficient alpha was 0.93. The Cronbach's alpha of each wellness sub-dimension is shown in table 3.14.

Table 3.14: Cronbach's Alpha for the Wellness Sub-dimensions

Wellness sub-dimension	Cronbach's Alpha	N of Items
Physical fitness and nutrition	0.69	10
Medical self-care	0.67	10
Safety	0.76	10
Environmental wellness	0.71	10
Social awareness	0.77	10
Sexuality and emotional awareness	0.81	10
Emotional management	0.84	10
Intellectual wellness	0.82	10
Occupational wellness	0.87	10
Spirituality and values	0.85	10
Full TestWell score	0.93	100

3.6.3 Pearson product moment correlation coefficient

Correlation is a measure of the strength of the linear association between two variables, X and Y (Siegel & Morgan, 1996:532). Pearson product moment correlation coefficient was used to determine if any association existed between the ten sub-dimensions of wellness scores and the health risk scores.

The formula for *r* is:

$$r = \frac{S_{xy}}{S_x S_y}$$

Where: x is the variable on the horizontal axis

Y is the variable on the vertical axis

S_x and S_y are the standard deviations of x and y, respectively

S_{xy} is the co-variance between x and y

The formula to calculate the co-variance between x and y is:

$$S_{xy} = \frac{\sum_{xy} - \frac{\sum_x \sum_y}{n}}{n - 1}$$

According to Lachenicht (2005:184) and Triola (1998:482), the product-moment correlation formula was devised in such a way to ensure that the value of *r* will fall within the range of -1 to +1. An r of -1 means a perfect negative correlation (a perfect inverse relationship where, as the value of x rises, the value of y falls); an r of +1 means a perfect positive correlation (where the values of x and y rise or fall together); while an r of 0 means zero correlation, which means that there is no relationship between x and y. Guilford (quoted by Lachenicht, 2005:184) offers

informal interpretations for statistically significant Pearson correlations of various sizes as visually represented in table 3.15.

Table 3.15: Guilford's Informal Interpretations of the Magnitude of *r*

Value of *r* (+ or -)	Informal interpretation
<0.2	Slight; almost no relationship
0.2 – 0.4	Low correlation, definite but small relationship
0.4 – 0.7	Moderate correlation; substantial relationship
0.7 – 0.9	High correlation; strong relationship
0.9 – 1.0	Very high correlation; very dependable relationship

3.6.4 *T*-tests to compare mean scores

The *T*-test is used to compare two (estimated) population means and aims at comparing distributions that are normally distributed (Nunez, 2005:143). The researcher conducted *T*-tests to compare the mean wellness behaviour levels and mean health risk scores of various groups.

The first *T*-test was done to compare the mean wellness behaviour levels and mean health risk scores of managers at the academic university and technology university. A second *T*-test was done to compare the mean wellness behaviour levels and mean health risk scores of heads of academic departments and directors of support services. Members of the rectorate were excluded in view of their small representation (2.2% of respondents). A third *T*-test was done to compare the mean wellness behaviour levels and mean health risk scores of males and females. Lastly, a *T*-test was done to compare the mean wellness behaviour levels and mean health risk scores of post-graduate (46.1%) and PhD graduate (44.9%) managers. In view of the insignificant representation, those with matric (1.1%) and degrees (7.9%) were excluded from the *T*-test.

3.6.5 One-way analysis of variance (ANOVA)

ANOVA allows one to compare the means of more than two independent groups of subjects (Durrheim, 2005:252). Thus, One-way analysis of variance is

used to test whether the population means of the groups are different (Siegel & Morgan, 1996:433).

For the purpose of this study, the researcher conducted a one-way analysis of variance to determine the difference between the mean wellness behaviour levels and mean health risk scores of the three age groups (35-45; 46-55 and 56-65).

3.7 SUMMARY

This chapter has provided a description of the research methodology used in this study. An overview was given of the research design, respondents and population. To provide a clear picture of the respondents the identified demographic variables were summarized. The nine health risk variables of the population were discussed with specific reference to how the health risk scores were calculated. The psychometric properties of the research instrument used in the study were reported.

In terms of procedures for data collection, the questionnaire administration and handling of returned questionnaires and data were explained. The procedures for data analysis were reported with specific reference to the statistical procedures that were followed, namely, descriptive statistics such as tables, graphs, means and standard deviations; Cronbach's alpha coefficient to measure the internal consistency of the instrument; Pearson product moment correlation coefficient to measure the relationship between the ten wellness sub-dimension scores and health risk scores; *T*-tests to compare the mean scores of various independent groups and One-way analysis of variance to compare the mean wellness sub-dimension and health risk scores between the three age groups.

The results obtained and the interpretation of the results will be discussed in Chapter Four.