

CHAPTER 1

GENERAL INTRODUCTION

1.1 Introduction

The researcher believes that, in all professions, there are unique problems and problematic circumstances facing the people who are involved. Dentistry is not excluded from this phenomenon. Dentists experience stressful situations every day, and have to deal with these in a very professional manner. A dentist is regarded as a highly-skilled professional in his field and the expectations of his patients puts him in a very challenging but vulnerable position. More than two decades ago, Forrest (1978: 361-71) hypothesized that the practice of dentistry is a rewarding but demanding profession, and he claimed that the health of dentists may depend on how successfully they keep the rewards and demands of their profession in proper perspective. Forrest (1978: 361-71) suggested that dentists need to identify factors that cause stress and strain, and must take measures to eliminate, or at least reduce, the harmful effects of stress and strain on their health and emotions. Linked to what Forrest said, Katz (1986: 29-36) found that the stress in the dental working environment is a topic of great importance, and the effective reduction of stress in the dental environment has emotional and health benefits for the dentist and everyone else involved. The researcher experienced that some dentists consume alcohol to relieve stress and strain caused by their profession. At first this measure might be beneficial to reduce the effects of stress and strain on the dentist's emotions, but for some dentists, this measure leads to dependency that has devastating consequences.

Through the ages, alcohol and other chemical substances have been used to relieve physical and emotional pain (Erlank, 2002: 01). Unfortunately, even if chemical substances such as alcohol are used for good reasons, the use of these substances can lead to dependency on such substances. Erlank (2002: 01) claims that substance dependency is a universal phenomenon that does not

distinguish between age, race, status, gender, or title, and substance use, abuse and dependency may occur regardless of a person's occupation. Dentists are definitely not an exception to this rule. According to Erlank (2002: 01), the potential of dependency to a substance was only recognized in the late 19th century. Alcohol is easily available, and dentists do not need to abuse the authority provided by their profession to obtain alcohol. The researcher believes that alcohol is commonly used as an emotional pain reliever in the health professions, because in order to obtain other addictive substances, medical practitioners and dentists and even other health professionals have to abuse their professional rights to prescribe drugs in order to obtain the substances.

Kenna and Wood (2004: 107-16) reported that dentists consume more alcohol than other health professionals, but when compared to the general population in the USA, health professionals appear to take less alcohol. They found that when methodologically rigorous studies on alcohol and other drugs were performed involving the dental profession, the researchers focused exclusively on dental students and early dental career practitioners. Kenna and Wood (2004: 107-16) supported the findings of Hanks and Bissel in 1991, that little meaningful data are available on alcohol consumption among dentists in general, and they found that prevalence studies of substance use and abuse rarely included dentists. They also found that much of the data pertaining to dentists on alcohol consumption have largely been based on review articles, retrospective analyses of treatment seeking dentists, and qualitative studies.

The researcher personally experienced that social anxiety can be a major factor that some dentists have to cope with. Apart from the high occupational stress levels that the dentist has to cope with, there is also the factor of social interaction between the patient and the dentist to make a dental appointment more comfortable for the patient. Thomas, Randall and Carrigan (2003: 1937-43) reported a high rate of alcohol consumption among individuals with high trait anxiety, which can lead to alcohol dependency in vulnerable individuals. They

found that individuals who experience high social anxiety, deliberately take alcohol to cope with their social fears, and while alcohol is only moderately effective at reducing their anxiety, it is sufficient to allow them to endure social situations. Osborne and Croucher (1994: 52) reported that the social interaction that exists between a dentist and a patient is an occupational-related stress factor, which may produce burnout in dentists. According to the above authors, burnout is a syndrome of emotional exhaustion, depersonalization and reduced personal accomplishment that can occur in individuals whose work involves close personal contact with their clients.

A lack of career perspective among Dutch dentists appeared to be the stress factor most strongly related to burnout, and in Amsterdam it was reported that dentists with a high burnout risk exhibit unhealthy behaviour such as increased alcohol consumption and unhealthy diets (Gorter, Eijkman and Hoogstraten, 2000: 261-67).

In the researcher's experience there are many stress factors that a dentist has to cope with, and the literature confirms this. In a study conducted as far back as 1984, O'Shea, Cora, and Ayer reported that an exploratory factor analysis led them to hypothesize six sources of stress among dentists, namely: patient compliance, pain and anxiety, interpersonal relations, the physical strain of work, economic pressures, third party constraints, and the strain of seeking ideal results. They further reported that dentists use a variety of ways to cope with their stress, but some do nothing to relieve their stress (O'Shea, Cora and Ayer, 1984: 48-51).

Because it is generally accepted that dentistry is a very stressful profession, a study was conducted in South-Australia to investigate stress levels and alcohol consumption among South-Australian dentists. This study revealed that dentistry is well recognized as a stressful profession, and that there are conflicting views of how such stress contributes to hazardous drinking among dentists. This study

concluded that dentists suffer high levels of occupational stress, and that stress and hazardous alcohol drinking are present among South-Australian dentists to a significant extent. During this study, it was found that hazardous alcohol consumption among certain dentists, especially male dentists and dentists in rural areas, were up to four times higher than that of the average South-Australian population. However, the study revealed that existing personal vulnerability factors may be much stronger predictors for hazardous alcohol consumption (Winwood, Winefield and Lushington, 2003: 102-109).

Stress and health problems among dentists were determined by Randkin and Harris (1990: 2-8). They reported that dentists are vulnerable to health problems due to the stress associated with the profession, but most of the literature on the stress that dentists experience is based on opinions rather than systematic research. Randkin and Harris (1990: 2-8) reported that dentists are reasonably healthy and that most dentists, male or female, use alcohol or drugs in moderation, but male dentists are more likely to consume alcohol and both sexes use alcohol more frequently than other drugs.

In 1996, the Department of Psychology at the University of Stellenbosch investigated stress and coping with stress among South African dentists. They used a randomly selected sample of 311 South African dentists, and found that 40% of the respondents reported extremely high stress levels, irrespective of the type of employment. They reported that the private South African dental practitioner experiences many stressors, of which financial issues and time-scheduling procedures are listed as the most important. They identified other stressors, such as patients' beliefs that dentists are pain inflictors, working with children, treating nervous patients, concerns about the future, and worrying about the oversupply of dentists. They also found that stressors which pose coping problems among South African dentists are staff-related problems, difficulty in keeping appointment schedules, working under constant time pressure, the repetitive nature of the work, feeling isolated, and the possibility of contracting

infectious disease such as HIV. In this study, it was concluded that a fairly high number of dentists use analgesics on a regular basis, a substantial number of dentists have marital problems, but less dentists have severe interpersonal problems with their children, and that a substantial percentage of dentists have severe problems in other personal relationships. An important fact that was discovered in the study is that dentists experience a severe lack of social involvement and outside interests and that 10.23% of the private dental practitioners and 4.76% of the non-private practitioners reported severe suicide ideation (Moller and Spangenberg, 1996: 347-57).

Meyers and Meyers (2004: 89-93) conducted a nationwide anonymous cross-sectional survey among general dental practitioners in the UK to assess overall stress, work-stress, and health of UK dentists, and found that over a third of general dental practitioners are overweight or obese, and that alcohol use is associated with work-stress among dentists.

The researcher believes that uncertainty and the future credibility of the dental profession may also be a stress concern among dentists that may lead to alcohol abuse. In a quantitative survey in the UK, where the objective was to identify new stressors in the past ten years, it was concluded that uncertainty about the future of the organization of dental care provision was the most important new pressure of work (Humphris and Cooper, 1998: 404-6).

Apparently, the habit of alcohol use among dentists begins early in their career. A study among dental students at the University of Newcastle found that the proportion of dental students consuming alcohol, above the recommended low risk of alcohol intake, declined from 47% in their second year of dental study to 25% in their final year, and this figure increased to 41% among qualified dentists. They also found that a greater portion of dental students use alcohol at hazardous levels when compared to medical students (Newbury-Birch, Lowry and Kamali, 2002: 646-49). Mac Donald and Mac Innis (1991: 873-76) warned

that the prevention of chemical dependency among dentists must begin in the curricula of dental schools, because chemical dependency can be prevented if it is recognized early enough.

Marlatt *et al.* (1998: 604-15) conducted a randomized controlled trial that evaluated the efficacy of a brief intervention designed to reduce the harmful consequences of heavy drinking among high-risk college students. They developed a programme called “Basics for brief screening and intervention for college students” at the University of Washington. This programme is a preventive intervention for college students who drink alcohol heavily and have experienced, or are at risk of alcohol-related problems, such as poor class attendance, missed assignments, accidents, sexual assault, and violence. The programme style is empathetic, not confrontational or judgmental, and it reduces alcohol consumption and its adverse consequences. It also promotes healthier choices among young adults, and it provides important information and coping skills. They used two active areas of research in alcohol treatment to develop the programme, the cognitive-behavioural group treatment, and brief interventions in addiction treatment.

Very little substance dependency is reported to councils nationally or internationally. This phenomenon is called the “Conspiracy of Silence” that is unique to occupations (Lens and Van der Wal, 1997a: viii).

The researcher also believes that the so-called “conspiracy of silence” where colleagues and friends are reluctant to report dentists who have a dependency problem, does indeed exist in the dental profession. The consequences of alcoholism and drug dependency within the dental profession can be progressive and potentially fatal for the dentist, and denial by colleagues, family, friends, professionals and office personnel, can perpetuate the illness of the dentist (Clarno, 1986: 45-53). Should a dentist become addicted to alcohol, there are

many difficulties which a dentist has to face when alcohol or drug dependency causes him or her to violate laws or the Dental Practice Act (Lyon, 1996: 69-71).

According to his observations, the researcher personally believes that close relatives, especially spouses of dentists with hazardous alcohol-drinking habits that result in consequences, do not report such dentists to the Health Professions Council of South Africa (HPCSA). The spouse of a dentist with an alcohol drinking problem will not seek help from the HPCSA, because of fear that the dentist will be deregistered, with financial implications for that family. However, a national strategy for managing impairment in students and practitioners registered with the Council was compiled by a work-group on impairment in students and practitioners of medicine and dentistry in 1996. This work-group resolved that the Medical, Dental and Supplementary Health Service Professions Act, 1974 (Act No. 56 of 1974) be appropriately amended to clearly distinguish between offences of an improper and disgraceful nature, and impairment on the part of registered persons. Procedures for dealing with impaired students and practitioners, registered with the Council, should differ from procedures dealing with practitioners and students, registered with the Council, who committed offences of improper and disgraceful nature (The Interim National Medical and Dental Council of SA, 1996: 3).

Research found that the most common impairments among dentists are cognitive impairment, physical disability, chemical dependency such as alcohol, and mental illness. It was reported that the most frequently cited cause of impairment for dentists is chemical dependency and that 70-90% of dentists who had reported to state rehabilitation committees in the USA had done so for chemical dependency (Giannandrea, 1996: 73-76).

Should dentists choose to use alcohol to relieve their stress and anxiety of occupational origin, there are many norms for alcohol consumption, as published by different authors, for example. Regular alcohol use is referred to as alcohol

use for 20 or more days per month in the past year (Hudges *et al*, 1992: 2333-39). Heavy episodic drinking refers to drinking five or more alcoholic drinks on one occasion at least once a month, and heavy alcohol use means drinking five or more drinks on one occasion at five occasions a month (National Survey on Drug Use and Health, 2003: 3836). Heavy and constant alcohol use includes either heavy alcohol use or two or more alcoholic drinks per day during the past year or self-characterization as a problem drinker (Mc Auliffe *et al*, 1991: 177-82).

The Department of General Practice at the Health Science Centre of the University of Texas in Houston believes that chemical dependency is a devastating disease and unless some form of intervention and treatment takes place, it will ultimately destroy a person's life. They also believe that dentists are not immune to this malady and therefore the Texas Dental Peer Assistance programme was formed to assist dentists who have a chemical dependency problem (Jessee, 1993: 5-9). In their article "The alcohol-impaired dentist: an educational challenge", Peterson and Avery (1988: 743-48) reported that there is a need to strengthen educational efforts and to develop peer assistance networks to assist alcohol-impaired dentists. Newton and Gibbons (1996: 329-34) from the Unit of Dental Health of Guy's Hospital in London, reported that there are limited techniques for stress management among dentists and the techniques that exist are usually symptom-focused.

Should there be indications that an individual can become addicted to alcohol, Burch and Schneider (1999: 370-72) suggested that the most effective tool for alcohol-consumption screening is a thorough history of the individual's drinking behaviour. Such an instrument must be designed to identify patterns of alcohol-related difficulties, such as physical and mental health problems, family life problems, problems with legal authorities, and employment. They suggested using a protocol that was developed by the National Institute on Alcohol Abuse and Alcoholism to classify these individuals as at-risk alcohol drinkers, problem alcohol drinkers or alcohol dependents. They recommend that the severity of the

alcohol problem and the patient's readiness to change determine whether intervention is needed.

On numerous occasions over a period of many years, the researcher has attended intervention sessions on alcohol consumption where he actually had conversations on alcohol consumption with different people from different socio-economical backgrounds and occupations, including dentists (SANCA, Staanvas Rehabilitation Centre, now called Stabilis Rehabilitation Centre). The researcher has also attended alcohol discussion groups for medical professionals where two dentists were present on occasions (Stabilis Rehabilitation Centre). This was done under the guidance of Mr. T. Visser (psychologist) and Dr. E. Erlank (social worker). The researcher has also had personal interviews with the late Dr. S. de Miranda (1994-1996) from SANCA, who specialized in drug addiction, particularly drug addiction in the health professions. The researcher also had in-depth conversations with Dr E Erlank (2006) from the Stabilis Rehabilitation Centre in Pretoria. Dr Erlank is of the opinion that this study is feasible. She specializes in chemical substance abuse, and coordinates an alcohol-consumption group that consists of medical practitioners. These experts have personally dealt with dentists who have experienced alcohol-related problems, and are of the opinion that a study on alcohol consumption among South African dentists will make a significant contribution.

1.2 Problem formulation

There are many definitions available in scholarly literature that define the term "problem formulation". Grinnell (1993: 22) defines a problem as a difficulty we are aware of and about which something ought to be done. According to Fouché (2002: 96), there are various sources for the identification of a research problem, such as observation of reality, theory, previous research, curiosity and supervision.

From the in-depth literature review which was undertaken for the purpose of the current study, it is clear that alcohol abuse among dentists does exist and that the demands of their profession contribute to it. However, a profile on alcohol consumption among South African dentists, and factors in the dental profession that may lead to excessive alcohol consumption and eventually dependency, is currently not available. Research conducted in South Africa by Moller and Spangenberg (1996: 347-57) revealed that 40% of South African dentists reported extremely high stress levels, irrespective of type of employment and that general drug use among South African dentists is low, but a fairly high number of South African dentists use analgesics regularly.

The literature indicates that although dentistry is recognized as a stressful profession, there are conflicting views as to what extent such stress contributes to hazardous alcohol consumption among dentists. A substantial amount of international research concerning factors in the dental profession that leads to substance dependency, including alcohol dependency among dentists, is available but relatively little is known concerning the use and abuse of alcohol among South African dentists.

The researcher has on various occasions attended meetings where intervention techniques for alcohol abuse were applied. At some of these meetings, there were dentists present who had an alcohol-dependency problem. While attending these intervention group meetings the researcher observed, over a period of many years, that the majority of dentists with chemical dependency do not reveal or realize that it is actually the stress and strain of their profession that has caused their dependency. They very seldom admit that it could be professional anxiety or social interaction with their patients that led them to use alcohol to cope with the demands of their profession. The researcher also attended individual meetings with therapists over a period of time and has come to the conclusion that many professionals do not know the actual factors linked to the dental profession that could lead to alcohol dependency. Should this information

be available, it will assist professionals to effectively treat dentists suffering from alcoholism.

The researcher feels that it will be to the advantage of the health professionals who are involved with the treatment and rehabilitation of dentists that suffer from chemical dependency and especially alcohol dependency, to construct a profile on alcohol consumption among dentists. The researcher is also of the opinion that should such a profile be available, it will help to construct intervention models, specifically for dentists suffering from alcohol dependency, or who are in the process of developing an alcohol-dependency problem.

The researcher has formulated the research problem as follows: It is well-recognized that dentistry is a very stressful profession, and there are conflicting views of how this occupational stress contributes to hazardous alcohol consumption among South African dentists. A complete profile on alcohol consumption among South African dentists is currently not available and the use of alcohol amongst dentists to relieve occupational stress and anxiety with an ultimate dependency problem has also not been reported. The researcher has attended intervention programmes and found that the actual factors linked to the dental profession that lead to alcohol dependency, are not addressed by counsellors due to a lack of knowledge concerning factors in the dental profession that can lead to alcohol use or abuse among dentists.

1.3 Purpose, goal and objectives

The current study focussed on the investigation of factors that cause stress, strain and anxiety among South African dentists, leading to alcohol use as a measure to relieve stress, strain and anxiety among these dentists. These findings could then be used to construct intervention models for alcohol dependency among dentists.

1.3.1 Purpose

According to the Concise Oxford Dictionary (1995: 1113), a purpose is “an object to be attained, a thing intended, the intention to act, resolution, determination”.

The purpose of research can either be descriptive, exploratory, explanatory, or a combination thereof (Neuman, 2003: 28). This study was exploratory in nature. According to Bless and Higson-Smith (1995:20) exploratory research is conducted to gain insight into a situation, phenomenon, community, and individual.

This study was mainly exploratory in nature, in order to gain insight into alcohol consumption among South African dentists, because very little is known on alcohol consumption related to occupational stress among this group of dentists. However, a small descriptive component was included where the researcher has made recommendations for further research to develop intervention models specifically aimed at dentists with an alcohol dependency problem.

1.3.2 Goal

The Oxford Dictionary (1995: 580) defines a goal as the object of a person’s ambition or effort, a destination, an aim. Fouché (2002: 108) uses Neuman’s definition of a goal which basically states that the goals of research are exploratory, descriptive and explanatory.

The specific goal for this study was to explore alcohol consumption related to occupational stress and anxiety among South African dentists, by compiling a general profile on alcohol consumption among South African dentists.

1.3.3 Objectives

The Concise Oxford Dictionary (1995: 938) defines the word objective as “aimed at, something sought or aimed at”. “Exploratory, descriptive and explanatory” can be regarded as objectives of professional research. Objectives are the steps taken one by one, realistically at grass-roots level, within a certain time span, in order to attain the goal, purpose or aim (Fouché, 2002: 107, 109).

The researcher identified the following objectives for the current study. Each of these objectives was investigated by means of the empirical study and reinforced by means of the literature study.

- To explore occupational stress and anxiety among South African dentists and measures they take to cope with occupational stress and anxiety.
- To explore alcohol consumption and alcohol-related problems among South African dentists.
- To explore among South African dentists alcohol use, abuse, and dependency related to occupational stress and anxiety.
- To compile a profile on alcohol consumption among South African dentists.
- To make recommendations for dealing with alcohol dependency amongst dentists. These recommendations can be used for developing new intervention models and for refining existing intervention models for treatment and rehabilitation of dentists addicted to alcohol, or if the indications are there that a dentist is developing an alcohol-dependency problem.

1.4 Underlying research questions

The research questions should address what the researcher is trying to determine and for what purpose the findings will be used (Grinnell, 1993: 25, 45).

After a general problem has been identified, one still has to find ways of reducing it to a specific and manageable research question (Bless, Higson-Smith and Kagee, 2006: 21).

In this study the researcher hopes to answer the following questions:

- What factors in the dental profession cause occupational stress and anxiety in South African dentists?
- What measures do South African dentists apply to cope with occupational stress and anxiety?
- To what extent do South African dentists consume alcohol to cope with occupational stress and anxiety?
- To what extent has alcohol consumption caused alcohol-related problems among South African dentists?
- How can these identified occupational stress and anxiety factors present among South African dentists and the use of alcohol to cope, as well as the adverse side effects of this way of coping, be utilized to recommend intervention models for alcohol abuse and dependency specifically among dentists?

1.5 Research approach

According to Fouché (2002: 365), there are two well recognized research paradigms namely the quantitative and qualitative paradigms. De Vos (2002: 365) describes Cresswell's combinations of these two paradigms. For this study, the researcher is of the opinion that the use of the dominant - less dominant model of Cresswell will provide the best results. In this model, Cresswell uses a dominant research approach, and incorporates a smaller, less dominant approach (De Vos, 2002: 365).

The researcher engaged in a dominant quantitative approach and less dominant qualitative approach with a limited number of informants. The advantage of this approach is that it presents a consistent paradigm picture in the study and still gathers limited information to probe in detail one aspect of the study (Creswell, 1994: 177).

1.6 Type of research

According to Bless, Higson-Smith and Kagee (2006: 44-45), the researcher's primary motivation is sometimes to contribute to human knowledge and understanding relating to a particular phenomenon. This is usually achieved by gathering more facts and information which enables existing theories to be challenged and new ones to be developed. The actual utility or application of the newly acquired knowledge is of little concern to the researcher. This kind of research is called basic research. At other times the researcher's primary motivation is to assist in solving a particular problem facing a particular community. This is referred to as applied research and is often achieved by applying basic research findings to a particular community's challenges and in this way applied research may assist the community to overcome the problem or design interventions which will help to solve it.

In this study the researcher aimed at utilizing applied research to gather information to construct a profile on alcohol consumption among a selected group of South African dentists, which may be applied to construct or refine intervention models specifically for dentists that abuse alcohol.

1.7 Research design and methodology

Grinnell (1993: 45) states that the research design is a plan or blue print of how the research is to be conducted. The research methodology refers to the

systematic methodological and accurate execution of the design (Fouché and Delpont, 2002: 79).

1.7.1 The research design

1.7.1.1 The dominant quantitative research design

According to Fouché and De Vos (2002: 138), the quantitative research designs are divided into two broad categories, namely experiments and surveys. In this study, the researcher utilized the quantitative-descriptive (survey) design by using a questionnaire to obtain data. Cresswell (1994: 117) defines a survey design as follows: “A survey design provides a quantitative or numeric description of some fraction of the population, the sample, through the data collection process of asking questions of people. This data collection, in turn, enables a researcher to generalize the findings from a sample of responses to a population”. The researcher constructed a questionnaire that would reflect the respondent’s biographical details, alcohol consumption (use/abuse), dysfunction as a result of alcohol use/abuse, factors in the dental profession that cause the dentist stress, anxiety and emotional discomfort that could result in alcohol use/abuse, and background history, such as the alcohol consumption habits of the respondent’s biological parents or guardians with whom he/she grew up.

1.7.1.2 The qualitative research design

Cresswell (1994: 145) describes the assumptions for the qualitative design as follows:

- The researcher is more concerned with the process rather than outcomes.
- The researcher is interested in meaning, e.g. how people make sense of their lives.
- The researcher is the primary instrument for data collection and analysis.

- The researcher physically goes to the people to observe.
- Qualitative research is descriptive.
- Qualitative research is inductive because the researcher builds theories and hypotheses from details.

The strategies of inquiry that could be used to design qualitative research are ethnographies, grounded theory, phenomenological studies, and case studies (Cresswell, 1994: 11). The researcher used a collective case study for qualitative data collection where semi-structured interviews with an interview schedule were conducted. Fouché (2002: 275) describes a case study as follows: “The exploration and description of the case takes place through detailed, in-depth data collection methods, involving multiple sources of information that are rich in context. These sources can include interviews, documents, observations or archival records”. The researcher decided on semi-structured interviews with an interview schedule with dentists that have already had treatment for alcohol abuse.

1.7.2 Data-collection methods and techniques

The researcher collected data from a selective group of South African dentists (respondents or research subjects). For the quantitative method, a questionnaire was hand delivered to a sample of dentists, chosen from a sample frame of registered dentists practising in the Tshwane (Pretoria), Krugersdorp and Johannesburg Metropolitan areas. For the qualitative method, the researcher scheduled semi-structured interviews with dentists who have already had treatment for alcohol abuse.

The instruments for data-collection for both of these paradigms were tested for validity and reliability. Quantitative research is accurate and reliable through validity and reliability. Qualitative research is accurate and reliable through verification (Cresswell, 1994: 5).

1.7.2.1 Quantitative data collection

Quantitative research data can be collected by means of questionnaires, checklists, indexes, and scales (Delpont, 2002: 171). The researcher decided to make use of questionnaires to collect the quantitative data. A survey design requires utilization of questionnaires as a data collection method, and respondents are selected by means of the random sampling method (Fouché and De Vos, 2002: 142). Questionnaires were delivered by hand to a sample of a hundred and ten dentists (selected by means of the systematic sampling technique) from a sample frame of registered dentists practising in the Tshwane (Pretoria), Krugersdorp and Johannesburg Metropolitan areas. The sample frame (population from which will be selected) was drawn from the list of dentists, listed in the Pretoria telephone directory. The sample was then checked against the list of dentists that are registered with the Health Professions Council of South Africa (HPCSA), to make sure that they are registered to practice their profession in South Africa. This list was obtained from the HPCSA. The respondents were provided with a set of questions on a form which they had to complete (Delpont 2002: 172).

1.7.2.2 Qualitative data collection

Data for the qualitative case study design can be obtained by means of interviews, documents, observations or archival records (Fouché, 2002: 275). The researcher decided to use semi-structured, one-to-one interviews with an interview schedule as the qualitative data-collection method in this study. Five respondents that have had treatment for alcohol abuse or self-characterization as a problem drinker were planned to be interviewed by means of an interview schedule. According to Greeff (2002: 302), an interview schedule provides the researcher with a set of predetermined questions. The researcher purposively selected five respondents for the interviews. These interviews took place at a venue that was suitable for the respondents. Unfortunately two of the

respondents died before they could be interviewed. Because of ethical reasons and the sensitivity of the topic the researcher could not find respondents to be interviewed in the place of the deceased ones.

1.7.3 Method of data analysis

1.7.3.1 Quantitative data analysis

The questionnaire was constructed in such a way that it could be processed in numerical form by means of a computer. De Vos, Fouché and Venter (2002: 223) state that data analysis in the quantitative paradigm entails that the analyst break the data down into constituent parts to obtain answers to research questions and to test research hypotheses. De Vos, Fouché and Venter (2002: 224) stipulate that data analysis involves the data collection process, which will be complemented by the use of computer software after it has been collected and processing, with a view to quantification. The researcher made use of consultants at the Department of Statistics at the University of Pretoria to help with the questionnaire, data-processing, and analysis.

1.7.3.2 Qualitative data analysis

De Vos (2002: 354) states that the qualitative data analysis is a process of bringing order, structure, and meaning to the mass of data collected. The researcher used the data analysis procedure as described by Cresswell (1994: 153) who says that the process of qualitative data analysis is “eclectic,” in other words, there is no right way. Metaphors and analogies are as appropriate as open-ended questions. Data analysis requires that the researcher be comfortable with developing categories and making comparisons and contrasts. The researcher must be open to possibilities and consider alternative explanations for the findings. Cresswell’s process as discussed in De Vos (2002: 340) was followed, namely collecting and recording data, managing the data, reading and

writing memos, describing, classifying and interpreting, representing and visualizing.

- Collecting and recording data – The researcher has kept records of interview notes according to themes, e.g. occupational stress themes, alcohol consumption themes. The researcher also tape-recorded the interviews and then transcribed them.
- Managing the data – The researcher organized files and notes and made use of computer programmes. The researcher evaluated the merits of the data to determine whether the data were authentic, valid, true and worthy.
- Reading and writing memos – After collection, the data were studied to enable the researcher to become familiar with the content as a whole, before categorizing it to see if similarities existed in the various categories. The researcher has also kept memos of the various uncovered themes.
- Describing, classifying and interpreting – The researcher searched for explanations and identified similarities from the different respondents' views and compared them before describing the data. The researcher also interpreted the data to give meaning to it before it was analyzed and conclusions were drawn. The researcher used descriptive statistical analyses for the purpose of summarizing, describing and analyzing major characteristics of the collected data.
- Representing, visualizing – The researcher has presented data in text and tabular form, to create a visual image.

1.8 Pilot study, pre-test of the measuring instruments and feasibility

1.8.1 Pilot study and pre-test of the measuring instruments

Before conducting a study, it is usually a good idea to do a pilot study to ensure that instruments are working properly. A pilot study is done to test the actual programme on a small sample taken from the community for whom the programme is planned. This allows the evaluator to identify any difficulty with the method or materials and to investigate the accuracy and appropriateness of the instrument that has been developed. It is also important to determine the readability of measuring instruments as people who do not understand the questions on a scale will not be able to answer them accurately (Clair Bless, Craig Higson-Smith and Ashraf Kagee, 2006: 60). Delpont and Strydom (2002: 216) are of the opinion that pilot-tested questionnaires ensure that errors are corrected immediately at little cost and that necessary modifications are made before the questionnaires are presented to the full sample.

For the pilot quantitative phase of this study, questionnaires were administered to two dentists who were employed at the Oral Health Centre of the University of Limpopo, who were not part of the main study, to see if they understood the content of the questionnaire and if any changes to the questionnaire were needed. For the pilot qualitative phase of this study the researcher could not find a respondent, other than the respondents he purposively selected for the qualitative phase of the study, for the pilot testing. However, the researcher discussed the content of the semi-structured interview schedule with an expert on chemical dependency, Dr Erlank, from the Stabilis Rehabilitation Centre.

1.8.2 Feasibility

Strydom (2005: 208) states that it is also necessary to obtain an overview of the actual practical situation where the prospective investigation will be executed.

The researcher is of the opinion that this study has been cost-effective. The researcher had leave and time available, and being a dentist himself, he was sure that dentists would participate in the study if it would benefit the dental profession.

1.9 Research population, sample and sampling methods

1.9.1 Universe

The universe refers to all the potential subjects who have the attributes in which the researcher is interested (Strydom and De Vos, 2002:198). All the dentists practising in South Africa will contribute to the universe of this study.

1.9.2 Research population

Bless, Higson-Smith and Kagee (2006: 99) stipulate that good sampling implies a well defined population, an adequate chosen sample, and an estimate of how representative of the whole population the sample is. According to these authors, the “target population” is the set of elements that the research focuses upon and to which the results obtained by testing the sample should be generalized. For this study, the researcher targeted the dentists practicing in the Metropolitan areas of Tshwane (Pretoria), Krugersdorp and Johannesburg.

1.9.3 Delimitation of the study

The study was conducted in the Tshwane Metropolitan area during 2006 and 2007. Dentists registered with the HPCSA, irrespective of employment, practising their profession in the Tshwane, Krugersdorp and Johannesburg Metropolitan areas, were the focus of the research. All dentists, male or female, who are practising in these areas were utilized, whether they consume alcohol or not. The researcher also interviewed dentists (selected purposively) who have had

treatment, or are currently receiving treatment for alcohol consumption at hazardous levels irrespective of the geographical area.

1.9.4 Research sample

Although the sample is a subset of the population, the sample must have properties which make it representative of the whole. Such a group is called a representative sample (Bless, Higson-Smith and Kagee, 2006: 100). The researcher decided to target dentists practising in the Tshwane Metropolitan area by drawing a sample from them. The researcher is of the opinion that dentists practising in the Tshwane Metropolitan area, are representative of the whole South African dental population, because for many years the Dental Faculty of the University of Pretoria had been highly regarded, and many candidates from all the provinces of South Africa have obtained dental degrees from this faculty. The Dental Faculty of the previous Medical University of Southern Africa, currently named, the University of Limpopo, Medunsa Campus is also located in the Tshwane Metropolitan area, and candidates from all cultural groups, from all over South Africa and neighbouring countries have obtained dental qualifications from this faculty. After graduation, many dentists that have qualified from these two faculties remain in the Pretoria Metropolitan area to practise as dentists irrespective of the type of employment.

Many dentists that qualified at the remaining two Dental Schools, namely the Dental Faculty of the University of the Witwatersrand in Johannesburg and the Dental Faculty of the University of Stellenbosch are also currently practising in the Tshwane Metropolitan area.

Currently there are also dentists practicing in the Tshwane Metropolitan area that have qualified at foreign universities. Therefore the researcher believes that a sample of dentists selected from the population sample frame of dentists practising in the Pretoria Metropolitan area, is a representative of South African

dentists as a whole. However, as a result of an unsatisfactory response from this area the researcher extended the sample to dentists practising in the Krugersdorp and Johannesburg Metropolitan areas.

1.9.5 Research sampling methods and procedures

The sampling procedures for both the quantitative and qualitative research methods that were utilized in this study were carried out according to the sampling methods and procedures described by Bless, Higson-Smith and Kagee (2006: 100-110).

1.9.5.1 Quantitative sampling

A hundred and ten dentists, irrespective of type of employment, practising in the Tshwane, Krugersdorp and Johannesburg Metropolitan areas, and who are registered with the HPCSA, were selected. A systematic sampling method was utilized where the researcher drew a sample from a list of dentists listed in the telephone directory. These names were then be verified with the list of dentists registered with the HPCSA, obtained from the HPCSA. The researcher allocated a number starting with one to each participant on the list, and then selected every second one until the desired sample size was reached.

1.9.5.2 Qualitative sampling

Because ethical aspects are so important in research, the qualitative sampling for this study was difficult, because alcohol treatment organizations will not reveal the names of dentists who have already received treatment for alcohol abuse or hazardous alcohol consumption. However, the researcher has attended many group-therapy sessions over a very long period, where he met dentists receiving treatment for alcohol abuse and addiction, and being a dentist himself, many of these dentists receiving alcohol treatment have confided in the researcher. The

researcher was of the opinion that some of these dentists would be willing to share their experiences during a semi-structured one-to-one interview with him, because he was sure that these dentists would be honest with him and share their experiences if these are in the interest of the dental profession. The researcher utilized the purposive or judgmental sampling technique as described by Bless, Higson-Smith and Kagee (2006: 106). They describe this technique as “a sample is chosen on the basis of what the researcher considers to be typical units to be the most common in the population under investigation”. The researcher chose five respondents for the qualitative component of the research. Unfortunately two of the respondents died before they could be interviewed. Because of ethical reasons and the sensitivity of the topic, the researcher could not find other respondents to replace the deceased respondents. The criteria for the purposive sampling were South African dentists, male or female, irrespective of type of employment, race, age and geographical area, registered with the HPCSA that have had treatment for alcohol abuse.

1.10 Ethical aspects

The fact that human beings are the objects of study in the social sciences brings unique ethical problems to the fore which would never be relevant in the pure, clinical laboratory settings of the natural sciences (Strydom, 2005: 56).

The dental profession is a high profile profession, where specific ethical rules are applicable and no dentist will participate in a research project that could have negative consequences for him or her. The researcher was aware of the fact that some dentists would feel threatened by his research and that he had to respect ethical issues.

Ethical guidelines for research have been designed in order to help protect the interest of participants and sufficient literature on ethics in research is available

(Grinnell, 1993: 304; Grinnell and Williams, 1990: 304; Mouton, 2003: 245- 46; Neuman, 2003: 120 – 27; Strydom, 2005: 56-69).

1.10.1 Harm to experimental subjects and/or respondents

Regarding this issue, Strydom (2005: 58) clearly states that the researcher is ethically obliged not to expose his respondents to the faintest possibility of any physical and/or emotional harm, of which he may be aware. The researcher was aware of the fact that sensitive questions may trigger the respondent to recall bad memories concerning his alcohol consumption history. Therefore the researcher compiled the questionnaire in a manner that would minimize emotional harm that might arise from memory recall because this could be a renewed personal trauma or embarrassment to the respondent. The researcher disclosed possible emotional discomfort that might have emanated from participation. Had a participant suffered from emotional discomfort, as a result of his participation, the researcher ensured that the respondent was appropriately referred to Dr Erlank, employed at the Stabilis Rehabilitation Centre in Pretoria for counselling.

1.10.2 Informed consent

Strydom (2005: 59) explains the purpose of informed consent as “Emphasis must be placed on accurate complete information, so that subjects will fully comprehend the investigation and consequently be able to make a voluntary, thoroughly reasoned decision about their possible participation”. Nobody should ever be coerced into participating in a research project, because participating must always be voluntary (Neuman, 2003: 124). The researcher asked each participant to sign an informed consent form, which was an indication that they indeed understood the content of the research and that they had the right to participate or to decline to participate if they chose to do so. For the quantitative phase, an informed consent form was hand delivered to the respondents. The content was personally discussed with the respondents and they were thoroughly

informed about the potential impact of the investigation. The same was done for the qualitative phase of the study before the interview started. Therefore the respondents had complete and adequate information on the goal of the investigation and the procedures that would be followed (Bless, Higson-Smith and Kagee, 2006: 141 – 46).

1.10.3 Deception of subjects and/or respondents

The researcher must not hide the true nature of the study from the participants (Bless, Higson-Smith and Kagee, 2006: 141 – 46). Strydom (2005: 61) has the following view concerning deception. “It is our firm opinion that no form of deception should ever be inflicted on respondents. If this happens inadvertently, it must be rectified immediately after or during the debriefing interview”. The researcher was aware of the consequences of deliberately misrepresenting facts such as withholding information, or offering incorrect information in order to ensure participation of respondents, when they would otherwise possibly have refused participation and would avoid any form of deception.

1.10.4 Confidentiality (Violation of privacy)

According to Strydom (2005: 61), privacy implies the element of personal privacy, while confidentiality indicates the handling of information in a confidential manner. Information given anonymously ensures the privacy of subjects. Questionnaires were completed anonymously by respondents and were personally distributed by the researcher and filed confidentially (Grinnell, 1993: 82-87; Mouton, 2003: 245-243; Neuman, 2003: 127; Strydom, 2000: 68). The researcher adhered to promises and agreements between himself and the participants. For the quantitative and qualitative phases, the researcher undertook not to engage in deception or breaching of confidentiality (Bless, Higson-Smith and Kagee, 2006: 141 – 46). In the research report, all data are used anonymously.

1.10.5 Action and competence of researcher

Researchers are ethically obliged to ensure that they are competent and adequately skilled to undertake the proposed investigation (Strydom, 2005: 63). The researcher ensured that the study has been well designed and executed with care (Bless, Higson-Smith and Kagee, 2006: 141 – 46). The researcher is knowledgeable regarding the subject of research. He has successfully completed a research project and dissertation concerning oral lesions in patients with HIV/AIDS, for his Master's degree in dentistry.

1.10.6 Cooperation with contributors

When researchers have to rely financially on a sponsor, both parties have to clarify ethical issues beforehand, and when colleagues are involved, formally and informally, a clear contract between parties is preferable (Strydom, 2005: 65). The researcher did not involve any sponsors or any colleagues, other than the respondents for this study and is bound by the standards of the University of Pretoria's Ethical Committee.

1.10.7 Release of publications and findings

The findings of the study should be introduced to the reading public in written form, otherwise even a highly scientific investigation will mean very little (Strydom, 2005: 65). In the research report, the researcher has formulated the study accurately and objectively, including the shortcomings. The researcher will also submit two articles, written in conjunction with his promoter, to an accredited journal for publication.

1.10.8 Debriefing of subjects or respondents

According to Strydom (2005: 67), this process involves debriefing sessions after the study, where the researcher can minimize possible harm that was done to respondents. It also involves rectifying misconceptions that may have arisen in the minds of the respondents, and if therapy was part of the research, it has to be continued. The researcher will, if necessary refer the respondents for debriefing sessions, after the study, with the help of a qualified social worker (Dr Erlank) at Stabilis Rehabilitation Centre. It has been arranged with Dr Erlank that she will assist with the debriefing sessions of respondents should it be necessary.

1.11 Definition of key concepts

1.11.1 Dentist and Dentistry

The Concise Oxford Dictionary (1999: 383) defines *dentist* as follows: “A person who is qualified to treat the diseases and conditions that affect the teeth and gums”. The researcher, being a dentist himself is of the opinion that this definition does not actually describe the complexity of the profession, and agrees more with the following definition: “A dentist is a person who has received a degree from an accredited school of dentistry and is licensed to practice dentistry by a state board of dental examiners. Also called odontologist. Dentistry is: (1) That department of the healing arts which is concerned with the teeth, oral cavity, and associated structures, including the diagnosis and treatment of their diseases and the restoration of defective and missing tissue. (2) The work done by dentists, such as the creation of restorations, crowns, and bridges, and surgical procedures performed in and about the oral cavity (Dorland’s Illustrated Medical Dictionary, 2000: 473).

The researcher defines a *dentist* and *dentistry* as follows: A dentist is a highly skilled professional who, after qualification, has been licensed to practise dentistry. Dentistry is that part of the health professions that is concerned with the treatment of the soft and hard tissues of the oral cavity and surrounding

structures. For this purpose, the dentist has to have a sound basic knowledge of the body as a whole (anatomy, histology, physiology, biochemistry, pathology (general pathology, chemical pathology and oral pathology), pharmacology, microbiology, surgery, internal medicine and anesthesiology. General dentistry includes prosthodontics (fixed and removable prosthesis), orthodontics (correcting malocclusion), restorative dentistry (dental restorations), paedodontics (restoring primary teeth), endodontics (pulp and root canal treatment), maxillo facial and oral surgery, radiology (x-rays), diagnostics (diagnoses), periodontics (treatment of the supporting tissue of the teeth) oral medicine (non surgical treatment of oral disease), community based dentistry, and oral pathology (diseases of the oral cavity and surrounds).

1.11.2 Alcohol consumption

The Concise Oxford Dictionary (1999: 306) defines the word *consumption* as “the action or process of consuming, an amount consumed”. Dorland’s Illustrated Medical Dictionary (2000: 397) defines *consumption* as “the act of consuming, or the process of being consumed”. The researcher is of the opinion that some dentists consume alcohol, to relieve the stress and strain due to their profession. For the purpose of this study, alcohol consumption is defined as the quantity and frequency use or abuse of alcohol for various reasons such as: a way of socializing, relaxing, calming effect, relief of depression, relief of frustration, relief of exhaustion, relief of emotional pain and stress, relief of loneliness, relief of anxiety, giving self-confidence, relief of work stress, and relief of physical pain and problems.

1.11.3 Alcoholism

Alcoholism is the personality and behavioural syndrome characteristic of a person who abuses alcohol, or the actual state or condition of one who habitually consumes excessive amounts of alcohol (Dictionary of Psychology – Penguin reference, 2001: 21). According to Dorland’s Illustrated Medical Dictionary (2000: 46), *alcoholism* is “a disorder characterized by a pathological pattern of alcohol use that causes a serious impairment in social and occupational functioning. In DSM-IV it is covered by alcohol abuse and alcohol dependence”. The researcher has experienced that this phenomenon is prevalent among some dentists.

For the purpose of this study, the researcher defines *alcoholism* as a form of chemical dependency where a person can no longer function without the use of alcohol and, because of tolerance, the person has to eventually abuse alcohol to get the same effect. Because of the deterioration effect of alcohol (physically, mentally and psychologically) the person eventually reaches the state where he can no longer function with or without alcohol.

1.11.4 Addiction

Dorland’s Illustrated Medical Dictionary (2000: 26) defines *addiction* as “the state of being given up to some habit or compulsion”. According to the Dictionary of Psychology – Penguin reference (2001: 11), *addiction* is any psychological or physiological overdependence of an organism on a drug. Originally the term was only used for physiological dependencies where a drug has altered the biochemistry of an individual such that continued doses (often of increasing size because of tolerance) were required as in the case with opiates and alcohol. However, the line between purely physiological addiction and psychological addiction is far from clear and over the years the semantic realm of the term expanded. Even in the technical literature one can find gems like “the patient was addicted to chocolate cake”. The confusion attending such loose usage, plus the definitional problems that emerged with the attempts of different governmental bodies to circumscribe the use of various illicit drugs, led the World Health

Organization to recommend that the term dependency be used with proper qualifiers for cases in which drugs are involved. For the purpose of this study the researcher defines *alcohol addiction* as the physical and psychological need of people to consume alcohol in order for them to function.

1.11.5 Occupational stress

According to the Dictionary of Psychology - Penguin reference (2001: 480, 716), an *occupation* is “specifically, any activity or set of activities carried out for purposes of earning a living” and the term *stress* in this sense is an effect; it is the result of other occupational pressures. For the purpose of this study *occupational stress* is therefore defined as the physical or mental strain that an individual endures as a result of the work he/she does for a livelihood.

1.12 Limitations of the study

With regard to the current study, six limitations have been identified:

- There was insufficient literature available on alcohol consumption among dentists and even less among South African dentists, linked to the stress and strain of the dental profession. The literature search (internationally) revealed that prevalence studies on substance abuse seldom involved dentists.
- As ethical aspects are so important in research, the qualitative sampling for this study was difficult, because alcohol treatment organizations were reluctant to reveal the names of dentists who had already received treatment for alcohol abuse or hazardous alcohol consumption, which was the planned method of acquiring possible respondents. However, the researcher personally contacted five dentists who met the criteria for the qualitative sampling (had already received treatment for alcohol abuse, or were self-characterized as heavy alcohol users). Unfortunately two of

these dentists who characterized themselves as heavy alcohol users died before they could be interviewed, leaving the researcher with only three respondents that had treatment for alcohol abuse. No other respondents could be found to replace the deceased ones.

- Because of the sensitivity of the topic that was investigated, there is a possibility that the respondents were reluctant to reveal personal information regarding their alcohol use linked to the stress of their profession, which could have affected the validity and reliability. This was possible despite the fact that the respondents were ensured that their confidentiality would be respected.
- Due to the sensitivity of the topic the application for ethical clearance took much longer than expected.
- Although the response rate in the quantitative phase was 70%, the findings of this study cannot be generalized with certainty to the whole population of South African dentists, because the sample was chosen from dentists practising in the Gauteng province of South Africa. The majority of the respondents grew up and attended school in the Gauteng province; nevertheless all the other provinces were represented to a lesser degree.
- Due to an insufficient response from the sample of dentists that was chosen from the Tshwane metropolitan area of Gauteng, as initially planned for the quantitative study, the researcher had to include dentists practising in the Krugersdorp and Johannesburg metropolitan areas of Gauteng in the sample frame.

1.13 Content of the thesis

Excluding this chapter, the thesis consists of the following:

- Chapter 2: Alcohol use, abuse, and alcoholism - In this chapter the many facets of alcohol use, abuse and dependency in general, not only as it relates to a dentist, are discussed.
- Chapter 3: Factors in the dental profession that cause occupational stress, anxiety and burnout - The researcher addressed literature on stress and burnout, factors in the dental profession that cause occupational stress, economic stressors, practice management and stress, job satisfaction and stress, dental procedures and stress, overall stress, and age related to stress.
- Chapter 4: The phenomenon of alcohol consumption and alcohol related problems among dentists - In this chapter the researcher addressed the literature available on alcohol related problems among dentists and found that not much literature is available on this topic with respect to South African dentists.
- Chapter 5: The empirical findings (quantitative phase) of this study - Data were obtained with regard to biographical information of the respondents, background information of the respondents, stress factors and coping with stress among dentists, alcohol use/abuse and dysfunction as a result of alcohol use/abuse among dentists, and a dentist's perspective of alcohol use, linked to the stress and strain of the dental profession.
- Chapter 6: The empirical findings (qualitative phase) of this study - Semi-structured interviews with an interview schedule were conducted with dentists that have already had treatment for alcohol abuse. The researcher derived categories and themes from the findings of the qualitative phase to reinforce the findings of the quantitative phase.
- Chapter 7: Summary, conclusions and recommendations - The purpose of this chapter was to summarize the content of the preceding thesis and to provide conclusions and recommendations derived from the findings of the



research for this thesis. The overall goal of this study as well as each research question with its objective was addressed.

CHAPTER 2

ALCOHOL USE, ABUSE, AND ALCOHOLISM

2.1 Introduction

In this chapter the many facets of alcohol use, abuse and dependency in general, and not only as it relates to a dentist, will be discussed. The author explores models, theories and classifications of alcoholism and addiction, and explains etiological factors relating to alcoholism. The author addresses the behavioural, psychological, and physical effects of alcohol use or abuse, as well as alcohol related disabilities linked to nutritional and pharmacological aspects of alcohol use.

2.2 Definition of key terms

2.2.1 Alcoholism (alcohol dependency)

Alcoholism is the actual state or condition of one who habitually consumes excessive amounts of alcohol. It is a personality and behavioural syndrome characteristic of a person who abuses alcohol (Reber and Reber, 2001: 21). Ringold *et al.* (2006: 2100) define *alcoholism* (alcohol dependency) as follows: “Alcoholism is a more severe pattern of drinking that includes the problems of alcohol abuse plus persistent drinking in spite of obvious physical, mental, and social problems caused by alcohol”. For the purpose of this study the researcher defines *alcoholism* as a form of chemical dependency where a person can no longer function without the use of alcohol and, because of tolerance, the person has to eventually use alcohol in excessive amounts to get the same effect. Alcohol, when used in excessive amounts, has a deterioration effect (physically, mentally and psychologically) and the person eventually reaches the state where he/she can no longer function with or without alcohol.

2.2.2 Alcohol abuse

According to Reber and Reber (2001: 21) *alcohol abuse* is the general label for any pathological syndrome associated with excessive alcohol use. The researcher is of the opinion that some individuals consume alcohol for the positive effect that it has for them such as a calming effect, a way of relaxing, relief of anxiety and as a coping mechanism. However, after prolonged use of alcohol, a person develops tolerance and more alcohol has to be consumed for the same effect. Eventually such a person has to abuse alcohol in order to feel the required effect, and by definition such a person will develop a pathological syndrome associated with the excessive use of alcohol.

2.2.3 Addiction

Dorland's Illustrated Medical Dictionary (2000: 26) defines *addiction* as "the state of being given up to some habit or compulsion". According to the Dictionary of Psychology (2001: 11) *addiction* is "any psychological or physiological overdependence of an organism on a drug". This dictionary makes it clear that physiological dependency occurs when a drug has altered the biochemistry of a person in such a way that continued doses of increased size (because of tolerance) are required as seen in alcoholism. The line between physiological addiction and psychological addiction is not clear and therefore, the World Health Organization (WHO) recommends that the term *dependency* be used with proper qualifiers for cases in which drugs are involved (Dictionary of Psychology, 2001: 11). For the purpose of this study the researcher defines *alcohol addiction* as the physical and psychological need of people to consume alcohol in order for them to function.

2.2.4 Medical, psychiatric and psychological terms

Table 1 explains the medical, psychiatric and psychological terms, used in this report

Table 1: Medical, psychiatric and psychological terms

<i>Medical, psychiatric and psychological terms</i>	<i>Explanation</i>	<i>Reference</i>
Agitation	Shaking, mental distress causing restlessness.	Weller (2007: 13)
Alcohol hallucinosis	A syndrome of vivid auditory hallucinations following the sudden cessation of alcohol intake after an extended history of alcohol abuse.	Reber & Reber (2001: 21)
Amnesia and retrograde amnesia	Amnesia is the partial or complete loss of memory. Retrograde amnesia is the loss of memory for events prior to an injury. It often applies to the time immediately preceding an accident.	Weller (2007: 19)
Apathy	Indifference, unresponsiveness, less interest or reactivity to a situation than would normally be expected.	Reber & Reber (2001: 44)
Ataxia	Partial or complete loss of coordination of voluntary muscle movements.	Reber & Reber (2001: 60)
Barbiturates	Large group of sedatives and hypnotic drugs derived from barbituric acid.	Weller (2007: 41)

Table 1: Medical, psychiatric and psychological terms continued



Benzodiazepines	A major group of anti-anxiety drugs with tranquillizing effects e.g. diazepam.	Reber & Reber (2001: 87)
Biopsychosocial model	A model that maintains that drug dependencies are the result not just of pharmacological effects but a complex of interacting elements.	Reber & Reber (2001: 92)
Biotransformation	Any alteration in a substance within the body.	Reber & Reber (2001: 92)
Calories	The term <i>calorie</i> is used to denote physiological values to various food substances, estimated according to the amount of heat they produce while being oxidized in the body.	Weller (2007: 64)
Carbohydrates	A compound of carbon, hydrogen and oxygen. In food they are an immediate source of energy for the body. In the body they are absorbed immediately or they are stored in the form of glycogen.	Weller (2007: 67)

Table 1: Medical, psychiatric and psychological terms continued



Cerebral dementia	Dementia is a global and progressive deterioration of the mental faculties which is irreversible and affects memory, intellect, judgement, personality and emotions. Cerebral – Relating to the cerebrum of the brain.	Weller (2007: 109, 74)
Chromosomes	A chromosome is a microscopic body in the nucleus of a cell which is conspicuous during cell reproduction (mitosis). Chromosomes carry genes, the basic hereditary units.	Weller (2007: 81)
Cirrhosis	Cirrhosis is a degenerative change that can occur in any organ, but especially in the liver. This could be due to micro-organisms or toxic substances.	Weller (2007: 82)
Confabulation	The production of fictitious memories and the relating of experiences which have no relation to truth, to fill in the gaps due to loss of memory. A symptom of Korsakoff's syndrome.	Weller (2007: 91)
Convulsion	An extensive seizure with involuntary muscular contraction and relaxation.	Reber & Reber (2001: 156)

Table 1: Medical, psychiatric and psychological terms continued

Cross tolerance	Drug tolerance for one pharmacological compound produced by chronic doses of another from the same family of drugs.	Reber & Reber (2001: 754)
Cushing's syndrome	Over secretion of the adrenal cortex due to an adenoma of the pituitary gland.	Weller (2007: 101)
Deficiency syndrome	A condition caused by dietary or metabolic deficiency, including all diseases due to an insufficient supply of essential nutrients.	Weller (2007: 108)
Depression	A mood state characterized by a sense of inadequacy, a feeling of despondency, a decrease in activity, pessimism, sadness and related symptoms.	Reber & Reber (2001: 189)
Dysphoria	Inappropriate affect, usually in association with anxiety, restlessness or depression.	Reber & Reber (2001: 223)
Encephalopathy	General term for any disease or dysfunction of the brain.	Reber & Reber (2001: 241)
Enzymes	An enzyme is an organic catalyst that produces chemical changes in other substances without being changed themselves.	Reber & Reber (2001: 244)

Table 1: Medical, psychiatric and psychological terms continued



Euphoria	An exaggerated feeling of wellbeing, often not justified by circumstances.	Weller (2007: 140)
Fibrosis	Fibrous tissue formation, such as occurs in scar tissue formation or as the result of inflammation.	Weller (2007: 150)
Folic acid (folate)	One of the vitamins of the B complex and is involved in DNA and amino acid synthesis.	Weller (2007: 154)
Gastritis	Inflammation of the lining of the stomach.	Weller (2007: 162)
Genes	Genes are biological units of heredity on a particular chromosome.	Weller (2007: 163)
Gout	A hereditary form of arthritis with excess of uric acid in the blood.	Weller (2007: 169)
Hepatitis	Inflammation of the liver. One of the reasons for such an inflammation could be toxic liver injury.	Weller (2007: 183)
Hepatotoxins	Applied to drugs and substances that cause destruction of liver cells.	Weller (2007: 184)
Hyperlipaemia	An excess of fat or lipids in the blood.	Weller (2007: 193)
Hypoglycaemia	Blood sugar levels are lower than normal.	Weller (2007: 195)

Table 1: Medical, psychiatric and psychological terms continued



Keto acidosis	Ketones are organic acids that produce energy when broken down. Ketones are also called keto acids. Thus keto acidosis refers to increased keto acids.	Reber & Reber (2001: 379)
Lactic acidosis	Lactic acid is formed as a result of glucose metabolism. Lactic acid that accumulates in muscles cause the muscle to cramp.	Weller (2007: 226)
Macrocytosis	Abnormally large red blood cells.	Weller (2007: 240)
Malabsorption	Inability of the small intestine to absorb certain substances.	Weller (2007: 241)
Mental disorders	More neutral term than either mental disease or mental illness.	Reber & Reber (2001: 428)
Necrosis	Death of a portion of tissue.	Weller (2007: 265)
Neuropathy	A disease process of nerve degeneration and loss of function, e.g. alcoholic neuropathy due to thiamine deficiency in chronic alcoholism.	Weller (2007: 269)
Neurosis	Neurosis is a personality or mental disturbance not due to any known neurological or organic dysfunction.	Reber & Reber (2001: 465)

Table 1: Medical, psychiatric and psychological terms continued



Neurotransmitter	A neurotransmitter functions as the vehicle of communication across the synaptic gap between the terminal buttons of one neuron and the membrane of the receiving cell on the other side. Dopamine is one of these neurotransmitter substances.	Reber & Reber (2001: 466)
Osteoporosis	Abnormal rarefaction of bone which may be idiopathic or secondary to other conditions (thinning of the skeleton and decreased precipitation of calcium in bone).	Weller (2007: 284)
Pancreatitis	Acute pancreatitis is a severe condition usually associated with alcohol misuse or biliary disease. Sudden pain in the upper abdomen and back.	Weller (2007: 290)
Personality	Personality is the sum total of heredity and inborn tendencies, which influences from environment and education, which forms the mental make-up of a person and influences attitude to life.	Weller (2007: 300)

Table 1: Medical, psychiatric and psychological terms continued



Psychosis	A psychotic disorder	Reber & Reber (2001: 585)
Schizophrenia	Schizophrenia is a general label for a number of psychotic disorders with various cognitive, emotional and behavioural manifestations.	Reber & Reber (2001: 650)
Status epilepticus	Condition in which there is rapid succession of epileptic fits.	Weller (2007: 367)
Thrombocytopenia	A reduction in the number of platelets in the blood affecting blood clotting.	Weller (2007: 385)
Tolerance	A condition of diminished responsiveness to a particular drug resulting from repeated exposure to it.	Reber & Reber (2001: 754)
Toxicology	The science dealing with poisons.	Weller (2007: 388)
Tremor	An involuntary muscular quivering which may be due to fatigue, emotion or disease.	Weller (2007: 392)

2.3 Alcoholism

The researcher agrees with Kumar, Cotran and Robbins (1997: 234) that alcohol is partly consumed for its mood-altering properties and when used in moderation it is socially acceptable and non-injurious. However, when excessive amounts are used alcohol can cause marked physical and psychological damage. They claimed that in 1997, in the United States, there were more than 10 million chronic alcoholics and an additional 7 million who drank enough amounts of alcohol to suffer adverse effects. Similarly, the researcher is also of the opinion that there is a high prevalence of alcohol abuse in South Africa. Rademeyer (2006) reported that, according to the South African Council for Alcoholism and Drug addiction (SANCA), between June 2005 and March 2006, altogether 8 718 persons received treatment for alcoholism and drug addiction at SANCA in-patient and out-patient clinics. Of these patients, 4 315 received treatment for alcohol addiction.

From the literature (Sher, 2006: 700-706) it is clear that alcohol, primarily in the form of ethyl alcohol (ethanol), has occupied an important place in the history of human kind. Sher claimed that in most Western societies at least 90% of people consume alcohol at some time during their lives, 30% or more of drinkers develop alcohol related problems and alcohol dependency (alcoholism) is observed at some time during their lives, in 10% of men and 3-5% of women.

The researcher is of the opinion that alcohol abuse is responsible for work absenteeism, underperformance and even premature death. This belief is supported by the findings of Schuckit (2001: 2561) who claimed that alcohol is responsible for almost 5% of missed work time, with a 25% decrease in work performance among heavy drinkers. Schuckit is also of the opinion that men and women who fulfill criteria for alcohol use disorders decrease their lifespan by approximately 15 years, with abuse and dependence responsible for almost 25% of premature deaths in men and 15% in women. These figures represent early

death, as a result of alcohol, even among people with higher levels of education and socio-economic functioning.

The researcher believes that people who use alcohol in excessive amounts experience certain problems such as legal problems and getting into trouble at their workplaces. According to Ringold *et al.* (2006: 2100) alcohol abuse is a pattern of drinking that is accompanied by one or more of the following problems: Failure to fulfill major work such as occupation, school or home responsibilities because of drinking, drinking in situations that are physically dangerous, alcohol-related legal problems, and having social or relationship problems that are caused by the effects of alcohol. Ringold *et al.* (2006: 2100) define alcoholism (alcohol dependency) as follows: “Alcoholism is a more severe pattern of drinking that includes the problems of alcohol abuse plus persistent drinking in spite of obvious physical, mental, and social problems caused by alcohol. Also typical are loss of control over drinking, withdrawal symptoms such as nausea, sweating, shakiness etc, and tolerance (needing increased amounts of alcohol in order to feel drunk)”.

In her thesis, *The Substance dependant Doctor – A social work perspective*, Erlank (2002: 34-36) mentions the viewpoints of Brooks and Rice (1997: 11). Brooks and Rice state that little progress has been made in the development of a model and theory that explains the etiology of substance dependency and quote that “everyone is vulnerable to either the direct or indirect effects of addiction”. She makes it clear that, in spite of all the theoretical explanations for substance dependency, it has a destructive and painful effect on the substance dependant individual and his or her family. It appears that there is still a debate whether age of an individual influences the individual’s ability to become addicted to alcohol. O’Neill and Sher (2006: 228-244) claimed that community and high-risk sample studies suggest that alcohol dependency is relatively stable and chronic, but epidemiological studies demonstrate a strong age-graded decline whereby alcohol dependency tends to peak in early adulthood and declines thereafter.

However, Erlank (2002: 36) states that substance dependency is a progressive condition if intervention is not implemented. It is difficult to clearly distinguish between *alcohol abuse* and *alcohol dependency*. Doweiko (1996: 50-51) mentions that research authors are of the opinion that it is not clear whether the distinction between alcohol abuse and alcohol dependency carries any important prognostic or treatment implications. When alcohol use has reached the point where the drinker is experiencing various physical, legal, social, financial, and legal problems, the distinction between abuse and dependency becomes virtually meaningless. Meyer (1994: 165; cited in Doweiko, 1996: 50-51) states that what the research does suggest, is that it usually takes about ten years of heavy drinking before the typical person becomes dependent on alcohol. However, once a person does become dependent on alcohol, even if that person stops drinking for a period of time, he or she will again become dependent in a matter of days to weeks. Thus, once an individual becomes dependent on alcohol, it is unlikely that he or she can return to non-abusive drinking.

2.4 Models, theories and classifications to explain alcohol drinking behaviour and dependency (addiction)

There are many models, theories, classifications and explanations for substance dependency and behaviours. Here, the author addresses some of the more common models, theories and classifications of substance dependency and explains addictive behaviours.

2.4.1 The moralistic theory of substance dependency

In the 19th century, substance dependency was seen as a sin and something immoral. It was claimed that an individual who suffered from substance dependency, acted immorally with no self-control (Stevens-Smith and Smith, 1998:26). It was only in the middle of the 20th century that the WHO formally defined substance dependency. However, in modern society, some people still

have a negative perception (Erlank, 2002: 35). The moral model blames the drinker for the problem, which is regarded as a sin due to weakness. The drinker is responsible for the consequences of his or her actions, and thus variants of this model are the legal and spiritual models. The former relates to the ability to control behaviour, the latter to the need for some powerful alliance to aid the alcoholic to overcome temptation (Murray, Hill and McGuffin, 1997: 257). The researcher is also of the opinion that in modern society there are still individuals with the perception that people suffering from alcohol dependency, whether it is psychological or physiological in nature, are bad people who deliberately do not want to quit.

2.4.2 The medical model (theory) of substance dependency

The disease model implied that the alcoholic could no longer be regarded as a immoral person with no self-control. This had important political and social consequences in that alcoholics were no longer punished and denied access to help (Murray, Hill and McGuffin, 1997: 257). Jellinek, according to Stevens-Smith and Smith (1998:27), developed the medical model for substance dependency. He describes substance dependency as a chronic and progressive medical condition, characterized by a genetically predisposed physiological deficiency. Dodgen and Shea (2000: 44) support Jellinek's conceptualization that alcoholism and other forms of substance abuse are chronic, progressively and potentially fatal diseases (Dodgen and Shea, 2000: 44; cited in Erlank 2002: 36). The researcher strongly supports this view because he has on many occasions been in contact with individuals, for whom it was impossible to quit their drinking habits. Many of these individuals came from families where either one or both of the individual's parents abused alcohol, and some of these individuals were medically, mentally and psychologically so broken down that there was very little hope of recovery. Jellinek described five types of alcoholism, which he labeled with letters of the Greek alphabet (McMurrin, 1994: 14). These are:

- Alpha alcoholism is drinking to relieve physical or mental pain, which creates social or psychological problems, but where no withdrawal symptoms are evident.
- Beta alcoholism is regular heavy drinking, often in accordance with cultural norms, causing physical damage.
- Gamma alcoholism is where the alcohol has caused biological changes, such as altered metabolism, leading to withdrawal symptoms, craving and loss of control over drinking – once the gamma alcoholic starts drinking, he or she cannot stop.
- Delta alcoholism is like gamma alcoholism in respect of biological changes, but here the withdrawal symptoms are such that alcohol is always necessary – the delta alcoholic drinks constantly.
- Epsilon alcoholism, which is binge drinking, with drinking bouts separated by periods of abstinence.

Only the gamma and delta alcoholism were considered to be disease forms because they entailed biological changes (adaptation of cell metabolism, increased tissue tolerance and withdrawal symptoms) that resulted in craving and inability to abstain from alcohol. The other forms of alcoholism, although problematic, were not seen as disease forms.

In Jellinek's work, as cited in Stevens-Smith and Smith (1998:27), we see the distinction drawn between alcoholics, who are supposedly in the grips of a disease process, and alcohol abusers, who may be causing harm to themselves or others, but are not afflicted with the disease, a dichotomy that is central to later psychiatric classification systems.

The researcher strongly believes that alcoholism is a disease because he has observed alcohol withdrawal symptoms in individuals suffering from alcoholism. In many of these individuals the alcohol withdrawal symptoms and craving were

so severe that it was impossible to quit drinking. For them, another drink seemed to be the only solution.

2.4.3 The genetic theory of substance dependency

According to the genetic theory, substance dependency is transmissible from parents to their children by means of genes. According to this theory, alcoholism is inherited by children of alcoholic parents, rather than the environment being the primary source (Stevens-Smith and Smith, 1998:27). According to Dodgen and Shea (2000:31; cited in Erlank, 2002: 37), research has shown that:

- The sons of alcoholic biological parents have a greater chance to develop alcoholism than the sons of non-alcoholic biological parents.
- Sons of alcoholic biological parents that grew up with non-alcoholic foster parents, have the same chance to develop alcoholism, than what they would have had if they grew up with their biological parents.
- The rate to which an individual develops tolerance to alcohol is genetically predisposed.

Dick and Bierut (2006: 151-7) claimed that family, twin and adoption studies have convincingly demonstrated that genes play an important role in the development of alcohol dependency, with heritability estimates in the range of 50-60% for both men and women. The researcher has been in conversation with persons suffering from alcohol dependency, and the majority of these people confirmed that alcohol or other substance abuse runs in their family. Either a brother, or a sister, or one of the parents, or both, were addicted to alcohol or another chemical substance.

To be able to understand the genetic predisposing factors of alcoholism, one also has to understand the metabolism of alcohol. Once in the blood, alcohol passes rapidly into all body tissue, including those of the brain. As alcohol may diffuse into muscle and fat tissue, an obese or muscular person would normally have a

slightly lower blood alcohol level than would a leaner person after a given dose of alcohol. The researcher has, while observing people at drinking occasions, noted that the more obese people tended to get less intoxicated, by the same amount of alcohol intake, than slimmer people. About 95% of the alcohol that reaches the blood is metabolized by the liver before it is excreted. The other 5% of alcohol in the blood stream is excreted unchanged through the lungs, skin and urine (Ashton, 1992; cited in Doweiko, 1996: 41). The researcher has observed that, no matter how hard alcohol abusers attempt to hide the fact that they have used alcohol, other people can still smell the alcohol on their person. This is due to the fact that a percentage of alcohol is excreted unchanged by the lungs and skin.

The body bio-transforms alcohol in two steps. First, the liver produces the enzyme alcohol dehydrogenase (ADH), which breaks the alcohol down into acetaldehyde. The second enzyme required to metabolize alcohol is aldehyde dehydrogenase, an enzyme produced in many different parts of the body. This enzyme breaks down the acetaldehyde into acetic acid. Ultimately, alcohol is bio-transformed into carbohydrates. The latter are the source of the “empty calories” obtained by ingesting alcohol (Goodwin, 1989; cited in Doweiko, 1996: 41). Research by Wall (2005) has shown that the functioning of the enzymes alcohol dehydrogenase and aldehyde dehydrogenase are regulated by genes. Two alcohol dehydrogenase genes on chromosome 4 and one aldehyde dehydrogenase gene on chromosome 12 are associated with lower rates of alcohol dependency. The researcher is of the opinion that this is the reason why some people can consume more alcohol over a longer period of time than other people, without becoming dependant on alcohol.

Tabakoff *et al.* (1988: 134-9) indicated that the dopamine neurotransmitter system was a focus of interest in the development of alcoholism. Blum *et al.* (1990: 2055-60) claimed that variation in the dopamine D2 neurotransmitter receptor gene (DRD2) can be attributed to alcoholism. Cook and Curling (1994:

400-3) came to the conclusion that the dopamine receptor gene, is the most important single gene determinant of susceptibility to substance abuse.

However, we must always bear in mind that alcohol induced adverse effects does not result from a genetic background alone. Gemma, Vichi and Testai (2006: 8-16) states that alcohol adverse effects result from a broad range of complex interactions between environmental, behavioural, genetic and social factors.

The researcher has also observed, while having conversations with people who are alcohol dependant, that some of these people did not necessarily come from a family with a genetic alcohol problem, but that their environment, social behaviour or working conditions have contributed towards their particular drinking behaviour.

2.4.4 Psychiatric classification of substance dependency

According to McMurrin (1994: 19) there are two main systems of classification of psychiatric disorders namely:

- The American Psychiatric Association's (APA) Diagnostic and Statistical Manual of the Mental Disorders (DSM).
- The World Health Organization's (WHO) International Classification of Diseases (ICD).

Nathan (1991: 356-61) as cited in McMurrin (1994: 20) stated that alcoholism and drug dependency appeared in DSM-I (APA, 1952) and DSM-II (APA, 1968) as subsets of the category "Sociopathic personality disturbance", along with anti-social behaviour and the sexual deviations. This mixed category clearly shows how behaviours that may be a threat to good order in society have been pathologized. DSM-III (APA, 1980) moved away from the implicit moralizing, by allocating a separate category to the substance use disorders, within which two

types of disorder figures – abuse and dependence. Abuse was defined by impaired social or occupational functioning, whereas dependence was defined by the process of tolerance and withdrawal (McMurrin, 1994: 20). The DSM-IV (APA, 1987, 1994) uses the terms dependence and abuse (Murray, Hill and McGuffin, 1997: 248). Gilles (1986: 168) states that a person is psychologically dependent on a substance if he craves for the euphoric effect (a “high”) of the substance, and a person is physically dependent if he develops physical symptoms on stopping the substance.

Alcoholism and drug dependence appeared in the ICD-8 (WHO, 1965), within the category “Neuroses, personality disorders, and other non-psychotic mental disorders”. In ICD-9 (WHO, 1977), within the same overall category, three separate disorders were listed, the alcohol dependence syndrome, drug dependence and non-dependent abuse of drugs (McMurrin, 1994: 21). The ICD-10 (WHO, 1987) has adopted the terms alcohol dependence syndrome and harmful use. The evolution of the dependence syndrome concept has been useful in that it provides a basic set of criteria for diagnosis, and has thus improved communication between professionals (Murray, Hill and McGuffin, 1997: 248).

In Table 2, Murray, Hill and McGuffin (1997: 248) make a comparison between ICD-10 (WHO, 1987) and DSM-IV (APA, 1987; 1994)

Table 2: Comparison between ICD-10 (WHO, 1987) and DSM-IV (APA, 1987, 1994)

	ICD-10	DSM-IV
	Dependence	Dependence
Compulsion to use	+	-
Impaired capacity to control use	+	+
Tolerance	+	+
Neglect of pleasure, behaviours, interests	+	+
Persistent use despite evidence of harmful consequences	+	+
Great deal of time spent in activities related to obtaining, using or recovering from the substance	-	+

	ICD-10	DSM-IV
	Harmful use	Abuse
Evidence of psychological or physical harm caused by the substance	+	
Failure to fulfill major role obligations		+
Legal problems		+
Recurrent social or interpersonal problems		+
Use in physically hazardous situations		+

The researcher agrees that drug dependency should not be subsets of the category “Sociopathic personality disturbance”, along with anti-social behaviour and the sexual deviations, as it appeared in DSM-1 (APA, 1952) and DSM-II (APA, 1968). Abuse and dependence, as it appears in DSM-IV (APA, 1987,1994), is more appropriate because substance abuse is clearly linked to a lack of fulfilling major role obligation, legal problems, social and interpersonal problems, and using substances in physically hazardous situations. Furthermore, the researcher agrees that substance dependency is accompanied by factors,

such as compulsion to use, impaired capacity to control use, tolerance, neglecting interests, persistent use despite evidence of harmful consequences, and a great deal of time spent in activities related to obtaining the substance.

2.4.5 Psychological model of addiction

The disease model alone does not fit all the facts that could lead to substance dependency. Psychologists view behaviour (all kinds of behaviour and not just addictions) as determined by a multitude of factors, such as culture, family, social group, lifestyle, environment, behavioural skills, thoughts, feelings and physical factors. Somehow, this whole range of factors that influences behaviour must be taken into account in any approach to understanding addiction (McMurrin, 1994: 31-33). In her book, *The Psychology of Addiction*, Mc Murrin (1994: 31-40) describes major psychological theories, such as classical conditioning, operant conditioning, opponent process theory, social learning theory, problem behaviour theory, and expectancy theory to explain addiction. However, she concludes by giving the implications of psychological approaches to addiction:

- There is no single explanation of addiction.
- Addicts are not different from the rest of us.
- There is no cut-off point for addiction.
- Addiction is not irreversible.
- Psychological theories are not specific to addictive behaviours because mainstream psychological theories have been used to explain drinking and drug use.

If all behaviours are explained according to the same principles, it allows for the inclusion of non-substance-based behaviours as addiction (McMurrin, 1994: 34-48).

The symptomatic model suggests that alcoholism is the result or symptom of some underlying psychological problem, personality difficulty or anxiety. This is

now regarded as relatively simplistic, although interrelations between mental disorder and alcohol problems do exist (Murray, Hill and McGuffin, 1997: 257).

From his own experience in the field of substance dependency, especially alcohol dependency, the researcher agrees that the disease model alone does not fit all the facts that could lead to substance dependency. There are other psychological factors that contribute to alcohol dependency such as culture, lifestyle, social activity, environment, personality, emotional aspects, and physical aspects.

2.4.6 Other models to explain drinking behaviour

Models, such as the disease and psychological models of addiction, provide meaningful explanations for substance dependency or any addiction. However, one must always bear in mind that there are other meaningful explanations for addictive behaviour (Murray, Hill and McGuffin, 1997: 257-261).

2.4.6.1 The learning model

The learning model of drinking behaviour supposes that normal and abnormal behaviours is subject to the same learning processes (Murray, Hill and McGuffin, 1997: 257). The researcher is of the opinion that many people learned some or other time in their lives that alcohol has some benefit for them, such as relaxing, calming or providing coping mechanisms. Because they learned that alcohol was beneficial in certain unpleasant situations, they use alcohol every time when such an unpleasant situation arises. According to Clark *et al.* (1995: 206) the learning theory has also been used to develop a causal model of substance use. Many alcoholics report that being intoxicated reduces anxiety and replaces it with a feeling of well-being. Because people are drawn toward pleasurable states, drinking behaviour, for example, is reinforced and gradually becomes a learned behaviour, a so-called habit.

2.4.6.2 The social model

This model seeks explanation in the environment of the individual, rather than internal characteristics (Murray, Hill and McGuffin, 1997: 258). The researcher is of the opinion that the social model implies that factors, such as culture, personal values and environment in which a person is placed, will predict how much such a person drinks.

2.4.6.3 The biopsychosocial model

The researcher agrees that addictive behaviour can be linked to a combination of biological, psychological and social factors. Murray, Hill and McGuffin, (1997: 258) describe this model of addiction as follows: “This model attempts to integrate knowledge about psychological and biological vulnerabilities in a broader cultural, social and historical context. This model puts emphasis on the dynamic interaction of the multiple components”.

2.4.6.4 Environmental risk factors

According to Murray, Hill and McGuffin (1997: 261), environmental risk factors that play a part in the etiology of drinking behaviour are divided into two groups:

- The factors that influence the availability of alcohol, such as age policies and the costs of alcohol.
- The factors that render the individual vulnerable to the use and abuse of alcohol, such as peer affiliation, family interaction, employment, and culture.

The researcher is of the opinion that environmental risk factors play a role in developing alcohol dependency. However, once a person is addicted to alcohol, no matter what risk there is involved, such a person will go to extreme measures to obtain alcohol.

The researcher believes that although there are many models that explain drinking behaviour, it stays individualized. Although the drinking pattern of some individuals may be the same, one may find that their circumstances differ.

2.5 The effects of alcohol

The term *alcohol* refers to a large group of organic molecules that have a hydroxyl group (-OH) attached to a saturated carbon atom. Ethyl alcohol, also called ethanol, is the common form of alcohol and is sometimes referred to as beverage alcohol because it is the alcohol that is used for drinking. The chemical formula for ethanol is: $\text{CH}_3\text{-CH}_2\text{-OH}$. The possible beneficial effects of alcohol have been reported, especially by the distributors of alcohol. Some epidemiological data suggest that one or two glasses of red wine each day lower the incidence of cardiovascular disease. However, these findings are highly controversial (Sadock and Sadock, 2003: 398). The researcher is of the opinion that when a person has the make-up (predisposing factors) to develop an alcohol dependency problem, especially a genetic background, such a person should rather disregard the so-called beneficial effects of alcohol. Such a person should rather focus on the possible bad effects of alcohol.

2.5.1 Behavioural effects of alcohol

According to Sadock and Sadock (2003: 399), a level of 0,05% alcohol in the blood disrupts thought, judgment, and restraint is loosened. At a concentration of 0,1%, voluntary motor actions usually become perceptibly clumsy. Legal intoxication ranges from 0,1-0,15% blood alcohol level. At 0,2%, the function of the entire motor area of the brain is measurably depressed, and the parts of the brain that control emotional behaviour are also affected. At 0,3%, the person is commonly confused and at 0,4-0,5%, the person falls into a coma. At higher levels, the primitive centers of the brain that control breathing and heart rate are affected that can result in death. Persons with long term histories of alcohol

abuse, however, can tolerate much higher concentrations of alcohol than can alcohol naïve persons. Their alcohol tolerance may cause them to falsely appear less intoxicated than they really are (Sadock and Sadock, 2003: 399).

The six stages of alcohol intoxication can be described as follows:

Alcohol is a suppressant as it suppresses the normal function of your brain, and this happens in six stages (Alcohol: The six stages of..., [Sa]).

The jovial phase – The frontal lobes control among other things your inhibitions, self-control, willpower, ability to judge and attention span. If the frontal lobe is suppressed you get jovial, your self-confidence increases, you talk more and become more generous. This already happens when your blood alcohol levels are still within the legal limit (0,05g/100ml).

The slurring phase – At a blood alcohol level of 0,10g/100ml the parietal lobes are affected and your motor skills become impaired and your speech starts slurring without you noticing it.

The can't see properly phase – At a blood alcohol level of 0,20g/100ml the occipital lobes are affected and your vision perception ability becomes limited.

The falling down phase – At a blood alcohol level of 0,15g/100ml the cerebellum becomes affected and it is difficult to maintain your balance.

The down and out phase – At a blood alcohol level of 0,25 gram/100ml the diencephalon of the brain as well as the mesencephalon (midbrain) are affected. You become tired and very unsteady, you start shaking and you vomit. You are ready to pass out. You may become comatose.

The valley of the shadow of death phase – Should you continue to take alcohol in and it reaches a blood alcohol level of 0,36 – 0,40g/100ml your brainstem and

medulla oblongata are affected and it is a life threatening situation because these centre control your breathing and blood circulation.

The researcher has had encounters with alcohol intoxicated people on numerous occasions. Most of these people appeared to lack judgement, their thoughts were not clear and their voluntary motor actions were clumsy. He has also dealt with persons that had no control over their emotional behaviour as a result of being drunk and they were commonly confused and made inappropriate remarks. The researcher also had conversations with people, knowing that they had been exceeding the normal drinking limit by far but appeared not to be intoxicated.

2.5.2 Psychological consequences

Alcoholics often present with symptoms of depression such as dysphoria, agitation, apathy, suicidal ideation, loss of libido, early morning waking, loss of appetite and weight loss. Alcohol may also increase the likelihood of a successful suicide, as alcohol use is common immediately prior to or during suicide attempts (Murray, Hill and McGuffin, 1997: 249). According to Sher (2005: 1010-12), alcohol use and abuse substantially influence suicide rates and suicide is the cause of death for a substantial percentage of individuals with alcoholism. However, many different factors, including the prevalence of various psychiatric and medical disorders, quality of psychiatric and medical care, unemployment and divorce rates, and other psychosocial and demographic factors determine suicide rates in a certain region or country.

The researcher has known people who took alcohol in excessive amounts over many years. Some of these individuals presented with symptoms of depression which were aggravated by the continuous prolonged alcohol intake. Some of these people actually told the researcher that they had attempted suicide but were unsuccessful.

2.5.2.1 Neurosis and personality disorder

Stockwell and Bolderston (1987: 971-9) claimed that anxiety and phobic symptoms may be causal factors for developing a drinking problem, as patients may attempt to control their anxiety and phobias by drinking, but the alcohol consumption may then in turn exacerbate the anxiety or phobia. The researcher attended alcohol rehabilitation facilities where patients assured him that they mainly consumed alcohol to deal with anxiety. However, a great deal of these patients also told him that the relief was only temporarily because once the alcohol effect seized, their anxiety was even greater.

2.5.2.2 Schizophrenia, alcohol hallucinosis and pathological jealousy

Bernadt and Murray (1986: 393-400) found that on average, schizophrenics drank less than other psychiatric patients and that very few cases of alcoholic hallucinosis develop into schizophrenia. Alcoholic hallucinosis is a condition in which a chronic drinker complains of auditory hallucinations of a persecutory nature. This may follow abstinence, reduction of alcohol consumption or even occurs during the course of drinking. Pathological jealousy is an unpleasant and destructive syndrome that can develop on the backdrop of heavy drinking, but also as part of depression or schizophrenia (Murray, Hill and McGuffin, 1997: 250). During conversations with alcoholics, the researcher noted that some alcoholics were extremely jealous and accused their wives of being unfaithful for meaningless reasons. Many people who abuse alcohol have also told the researcher that they hear or see things that do not exist while drinking, or when they are in a state of alcohol withdrawal.

2.5.3 Physical consequences of alcohol abuse

There are many physical complications resulting from the use of alcohol. Murray, Hill and McGuffin (1997: 250) are of the opinion that these complications relate to

the pharmacological effects of alcohol, withdrawal, toxicity and deficiency syndromes as a result of chronic alcohol abuse. Subsequently, some of the major effects will be discussed.

2.5.3.1 Effects on the Digestive system

There is a known relationship between chronic alcohol abuse and cancer of the upper digestive tract, respiratory system, mouth, pharynx, larynx, esophagus, and liver (Garro, Espina and Lieber, 1992: 81-5). Rice (1993: 10-11) mentions that alcohol is responsible for 75% of deaths due to cancer of the esophagus. The combination of alcohol and cigarette smoking increases the risk of developing cancer of the mouth and pharynx (Garro, Espina and Lieber, 1992: 81-5).

The liver is the organ that is most commonly affected by alcohol because the liver is the organ that metabolizes alcohol. Alcohol is a potent hepatotoxin when taken in large quantities and liver changes occur even after isolated bouts of heavy drinking. Early evidence of metabolic injury to liver cells is the appearance of fatty change by means of lipid accumulation within some liver cells. With more severe metabolic disruption, the liver cells undergo hydropic degeneration and become swollen. In some cases the metabolic changes are irrecoverable and some liver cells undergo necrosis. The liver cells around the centrilobular veins in the liver appear to be the most vulnerable to alcohol toxicity and in some individuals delicate fibrosis develops around the centrilobular veins (Nace, 1987: 23).

With prolonged alcohol abuse, there is progressive fibrosis because of liver cell necrosis and regeneration of liver cells which can develop into alcohol cirrhosis. Some individuals develop recurrent alcoholic hepatitis that is likely to proceed to cirrhosis. Others may develop cirrhosis insidiously with no preceding episodes of acute hepatitis. Reversible fatty change may develop in a healthy individual after a single drinking binge. The presence of fatty change in a known alcoholic is an

indicator of continued alcohol intake (Stevens, Lowe and Young, 2002: 156). The researcher is of the opinion that a person who abuses alcohol, over a long period of time, will eventually die of liver disease if they do not quit their drinking. This is, if they do not die of any other alcohol related problem before the time.

Alcohol has been implicated as a cause of a painful inflammation of the pancreas known as pancreatitis. Approximately 35% of all known cases of pancreatitis are caused by chronic alcohol use and it is estimated that alcoholism is the major cause (66-75%) of pancreatitis (Steinberg and Tenner, 1994: 1198-1210). Chronic pancreatitis is fairly common in chronic alcoholics and is often associated with cirrhosis of the liver. In chronic pancreatitis the gland becomes firmer. Sometimes it is enlarged, but more frequently it is shrunken and atrophic due to fibrosis and atrophy of the glandular elements of the pancreas. The Islets of Langerhans may also become fibrotic resulting in diabetes. Chronic pancreatitis is associated with varying degrees of malabsorption of nutrients (Cappell and Anderson, 1974: 598). The researcher knows and has spoken to people who suffer from diabetes as a direct result of prolonged excessive alcohol use.

Chronic alcohol use may also cause gastritis due to chronic irritation of the stomach lining. Inflammation of the stomach is termed gastritis and may be divided into acute and chronic forms. Acute gastritis may be associated with the use of aspirin, anti-inflammatory drugs, excessive alcohol use, and severe stress. Chronic gastritis due to chronic alcohol consumption is also known as chronic chemical gastritis or reactive gastritis. It is the chronic gastritis that is associated with the development of peptic ulceration and less commonly gastric carcinoma (Stevens, Lowe and Young, 2002: 138). However, even with the stomach lining intact, chronic alcohol ingestion contributes to a number of malabsorption syndromes, in which the individual's body is no longer able to absorb needed vitamins or minerals from food (Marsano, 1994: 284-291).

Sometimes the chronic intake of alcohol causes a painful inflammation of the tongue (glossitis), as well as stricture of the esophagus that makes it difficult for the individual to take in adequate levels of food (Marsano, 1994: 284-291). Charness, Simon and Greenberg (1989: 442-454) state that when the body metabolizes alcohol, one of the eventual by-products is a form of carbohydrate, which the body then burns in the place of normal food. This results in a form of anorexia, as the body replaces the normal calorie intake with “empty” calories obtained from alcohol. There are a number of other metabolic consequences of heavy alcohol use for both the alcoholic and the heavy social drinker such as: inadequate body control of blood glucose levels, inadequate secretion of digestive enzymes from the pancreas, and inadequate fat metabolism (Doweiko, 1996: 56).

As a dentist, the researcher has encountered numerous conditions of the oral cavity and surrounds, that are associated with alcohol abuse. He has also treated dental patients that suffer from hepatitis, pancreatitis and gastritis as a result of long term alcohol abuse and is familiar with these conditions.

2.5.3.2 Effects on the cardiovascular and respiratory systems

Marmot and Brunner (1991: 565-8) reviewed studies concerning the protective effect of low level alcohol consumption on cardiovascular disease and came to the conclusion that “the balance of harm and benefit does not weigh in favor of making recommendations to the public to increase alcohol consumption, in order to prevent coronary heart disease”. Murray, Hill and McGuffin (1997: 252), state that alcohol is an established risk factor for hypertension, strokes, chronic bronchitis, and emphysema. Thirty percent of essential hypertension may be related to alcohol abuse.

Knowing the devastating effect of alcohol once a person gets addicted to it, the researcher is of the opinion that, even if there are beneficial effects of small

amounts of alcohol on the cardiovascular system, alcohol should be avoided if there is a possibility of alcohol dependency.

2.5.3.3 Haematological, musculoskeletal, endocrine and metabolic disorders

Alcohol, when used in excessive amounts, can cause a variety of haematological, musculoskeletal, endocrine and metabolic disorders. Alcohol is toxic to bone marrow and this results in a macrocytosis and thrombocytopenia. Gout, osteoporosis, avascular necrosis, and chronic myopathies are also associated with alcohol abuse. Alcohol causes a range of metabolic disorders including lactic acidosis, ketoacidosis, hypoglycaemia, hyperlipidaemia, and disturbances in electrolyte and acid base balance. Furthermore, alcohol causes a pseudo-Cushing's syndrome that is characterized by hypertension and obesity. Direct alcohol toxicity to the gonads and suppression of the hypothalamic-pituitary axis, causes impotence and diminished fertility (Murray, Hill and McGuffin, 1997: 253). The researcher, as a dentist, has encountered many of these conditions that are directly related to alcohol abuse, because a thorough medical history is taken from each patient before dental treatment is commenced.

2.5.3.4 Central nervous system.

In different concentrations, alcohol has different effects on the central nervous system. A blood alcohol concentration of 25 mg% causes euphoria, 50-100 mg% causes lack of coordination, 100-200 mg% causes unsteadiness, and 200-400 mg% causes stupor. Novice drinkers will exhibit such signs at much lower blood alcohol levels than hardened drinkers. Intoxication can lead to death resulting from coma and respiratory depression at a blood alcohol level of about 400 mg%. An alcoholic coma is a fatal condition in 55% of cases and toxicology analysis is needed in such cases (Murray, Hill and McGuffin, 1997: 250).

According to Murray, Hill and McGuffin (1997: 250), the effects of alcohol on the central nervous system can be summarized as alcohol withdrawal syndrome, nutritional deficiency syndromes, and alcohol toxicity.

- Alcohol withdrawal syndrome

The alcohol withdrawal syndrome occurs within hours or days after the cessation of alcohol drinking in the alcohol dependent person. The alcohol withdrawal syndrome is produced by the biological mechanism of neurological tolerance to ethanol. The clinical manifestations of the alcohol withdrawal syndrome are due to the hyperexcitability of the central nervous system: agitation, excitability, tremor, convulsions, status epilepticus, delirium, and sympathetic hyperactivity (Yersin, 1999). The spectrum of alcohol withdrawal symptoms ranges from minor symptoms such as insomnia and tremulousness to severe complications, such as withdrawal seizures and delirium tremors. The pharmacologic treatment of alcohol withdrawal involves medications that are cross tolerant with alcohol, such as the benzodiazepines, administered on a fixed or symptom triggered schedule. The treatment of alcohol withdrawal should be followed by treatment for alcohol dependency (Bayard *et al*, 2004: 1443-50). The researcher has witnessed symptoms of alcohol withdrawal syndrome ranging from minor to major symptoms. Many people have also described the symptoms they experience when their alcohol intake is stopped at once to the researcher. These symptoms ranged from mild tremor to severe withdrawal seizures. The researcher has actually witnessed a seizure.

- Nutritional deficiency syndrome due to alcohol abuse

Murray, Hill and McGuffin (1997: 250), states that the initial presentation, due to a lack of nutrients, may be peripheral neuropathy and cardiovascular disorders, such as hypotension or high output cardiac failure, in combination with oral ulcerations. The oral ulceration is usually due to a thymine deficiency, and the peripheral neuropathy may be caused by the toxicity of alcohol, or as a result of a vitamin deficiency. Peripheral neuropathy may be mild or a severe incapacitating sensori-motor neuropathy. Perhaps the most serious complication of chronic

alcohol use is a form of brain damage known as Wernicke's encephalopathy, which is related to an avitaminosis of thiamine, one of the B family of vitamins. (Charness, Simon and Greenberg, 1989: 442-454). Lishman (1990: 653-44) describes the Wernicke-Korsakoff syndrome as a result of thiamine deficiency due to alcohol abuse. Korsakoff's psychosis presents a lack of insight, apathy, antegrade and retrograde amnesia with confabulation. It may or may not improve with vitamin replacement. The researcher, as a dentist, has personally diagnosed oral ulcerations in known alcoholics as a result of thymine deficiency.

- Alcohol toxicity

Murray, Hill and McGuffin (1997: 251) state that alcohol toxicity probably causes neuronal loss that will finally result in cerebral dementia. This condition is reversible with abstinence of alcohol. Alcoholic cerebral degeneration presents as gross ataxia and may respond to thiamine therapy in the early stages. The researcher believes and has seen that thiamine administration has been successful in treating alcohol toxicity.

Being in conversation with alcohol dependents on various occasions, the researcher came to the conclusion that alcohol withdrawal symptoms are present among almost every alcohol dependant that stops alcohol intake. These symptoms can be mild to severe and last for days up to weeks depending on how long and how excessively a person drank. Rehabilitation facilities makes it clear that alcohol withdrawal symptoms last for a shorter period than those of other drug addictions. For this reason, the alcohol abuse rehabilitation period is usually shorter than the drug abuse rehabilitation period.

2.6 The pharmacology and nutritional impact of alcohol (ethanol)

According to Schuckit (2001: 2561-2562), the pharmacology and nutritional impact of ethanol comprises the following:

- Ethanol is a weakly charged molecule that moves easily through cell membranes and rapidly equilibrates between blood and tissues.
- The level of alcohol in the blood is expressed as milligrammes (mg) or grammes (g) of ethanol per deciliter (e.g. 100 mg/dL or 0,10 g/dL).
- An alcohol level of 0,02 to 0,03 results from the ingestion of one to two typical drinks.
- In 340 ml of beer there is approximately 10g of ethanol, and in one litre of wine there is approximately 80g of ethanol.
- Although some behavioural stimulation is observed at low ethanol blood levels, ethanol is a central nervous system depressant, that decreases the activity of neurons.
- Ethanol has cross tolerance and shares a similar pattern of behavioural problems with other brain depressants, such as the bezodiazepines and barbiturates.
- The major site for alcohol absorption is from the proximal portion of the small intestine. Alcohol is also absorbed, in modest amounts, from the mucous membranes of the stomach and large bowel, and the least alcohol is absorbed from the mucous membranes of the mouth and esophagus.
- The rate of ethanol absorption is increased by rapid gastric emptying.
- The rate of absorption is also increased in the absence of proteins, fat and carbohydrates.
- About 2-10% of ethanol is excreted directly through the lungs, urine and sweat.
- The greater part of ethanol is metabolized to acetaldehyde, primarily in the liver.
- In the liver, alcohol is metabolized to acetaldehyde by means of the enzyme, alcohol dehydrogenase.
- The acetaldehyde is then rapidly destroyed by means of the enzyme, aldehyde dehydrogenase.
- One gram of ethanol has approximately 29.7 KJ of energy.

- One drink of ethanol contains between 293,0 and 418,6 KJ of energy, however these are “empty” of nutrients such as minerals, proteins and vitamins.
- In addition alcohol interferes with the absorption of vitamins in the small intestine and decreases their storage in the liver.
- The absorption of folate, pyridoxine (Vit B₆), thiamine (Vit B₁), niacin (Vit B₃), and vitamin A is reduced by ethanol.
- Heavy drinking can also produce low blood levels of potassium, magnesium, calcium, zinc and phosphorus as a consequence of dietary deficiency and acid base imbalance during excess alcohol ingestion and withdrawal.

Having been associated informally with numbers of people who suffered from an alcohol dependency problem over a very long period of time, the researcher agrees strongly that the literature reflects what he has observed amongst such sufferers of alcohol dependency.

2.7 Alcohol use and abuse in South Africa

According to Mkhize (2007), the country’s Central Drug Authority (CDA) released statistics reflecting that the abuse of alcohol and the use of dagga (marijuana) has lead South Africa to being one of the top ten narcotics and alcohol abusers in the world. He also claimed that South Africans, who consume alcohol, each drink about 196 six-packs of beer or 62 bottles of spirits per year. This is the equivalent of 20.1 litres of pure alcohol per person per year. Mkhize (2007) also reported that Social Development Minister, Dr Zola Skweyiya, claimed that between 7,5% and 31,5% of South Africans have an alcohol problem or are at risk of having one, and that alcohol abuse costs the country about ten billion rand every year.

Some disturbing statistics provided by the Medical Research Council (MRC) indicate that South Africans consume over 6 billion litres of alcohol per year,

which makes South Africa one of the highest alcohol consuming countries in the world. The MRC claims that South Africa is estimated to have 240,000 shebeens and that more than 60% of hospital trauma cases are linked to alcohol consumption (Safety and security: How drinking..., [Sa]).

According to Huisman and Davids (2007), drug and alcohol abuse in South Africa is spiralling out of control, and surveys only reveal the tip of the iceberg. They claim that Social Development Minister, Dr Zola Skweyiya, has admitted that the country has a massive substance abuse problem. The Minister said that the latest research by the South African National Council on Alcoholism and Drug Dependency (SANCA) has revealed that about half of the people, who sought help at SANCA for substance abuse between April 2006 and March 2007, were jobless and 25% of them were still at school or tertiary institutions.

In a report prepared by the Alcohol and Drug Abuse Research Group, Medical Research Council, alcohol content, standard servings and alcohol calorie information were addressed. They recommended that serious consideration should be given to bring labelling on alcohol containers. These labels should spell out the number of standard drinks per container and the amount of alcohol in a standard serving. Such labels must also contain the South African Food Based Dietary Guidelines on sensible drinking: No more than 2 standard drinks per day for women and 3 standard drinks per day for men (Alcohol and Drug Abuse Reseach..., [Sa]).

Communities have very little knowledge concerning the term “a standard drink” or “a standard alcohol drink”. Carruthers and Binns (1992) investigated the knowledge of a sample of people to determine their knowledge of what a standard drink is. They found that the knowledge of alcohol content of beverages was very poor. The also found that most people did not know what a standard drink means, and what it represents in terms of absolute alcohol.

A standard drink usually contains between 8 and 14 grams of pure ethanol and this varies between countries. Table 3 reflects the alcohol content of a standard drink in various countries (Module 20: Standard Drinks, 2005).

Table 3: Alcohol content of a standard drink in various countries

<i>Country</i>	<i>Standard drink (grams of ethanol)</i>
United Kingdom	8
Netherlands	9.9
Australia, New Zealand, Poland, Spain	10
Finland	11
Denmark, France, Italy, South Africa	12
Canada	13.6
Portugal, United States	14
Japan	19.75
Austria	20

2.8 Summary

In this chapter, many facets of alcohol use, abuse and dependency in general, and not only as it relates to a dentist, were discussed. For the purpose of this study, the researcher defines alcoholism as a form of chemical dependency where a person can no longer function without the use of alcohol and because of tolerance, the person has to eventually use alcohol in excessive amounts to get the same effect. Alcohol, when used in excessive amounts, has a deterioration effect (physically, mentally and psychologically) and the person eventually reaches a state where he/she can no longer function with or without alcohol.

The researcher is of the opinion that some individuals consume alcohol for the positive effect that it has for them, such as a calming effect, a way of relaxing,

relief of anxiety and as a coping mechanism. However, after prolonged use of alcohol, a person develops tolerance and more alcohol has to be consumed for the same effect. Eventually such a person has to abuse alcohol in order to feel the required effect, and by definition such a person will develop a pathological syndrome associated with the excessive use of alcohol. For the purpose of this study the researcher defines alcohol addiction as the physical and psychological need of people to consume alcohol in order for them to function.

It is claimed that in most Western societies at least 90% of people consume alcohol at some time during their lives, 30% or more of drinkers develop alcohol related problems, and alcohol dependency (alcoholism) is observed at some time during their lives, in 10% of men and 3-5% of women. The researcher is of the opinion that alcohol abuse is responsible for work absenteeism, underperformance and even premature death.

Alcoholism is a more severe pattern of drinking that includes the problems of alcohol abuse plus persistent drinking in spite of obvious physical, mental, and social problems caused by alcohol. Also typical are loss of control over drinking, withdrawal symptoms such as nausea, sweating, shakiness, etc, and tolerance (needing increased amounts of alcohol in order to feel drunk). In spite of all the theoretical explanations for substance dependency, it has a destructive and painful effect on the substance dependant individual and his or her family.

It is difficult to clearly distinguish between alcohol abuse and alcohol dependency. However, when alcohol use has reached the point where the drinker is experiencing various physical, social, financial, and legal problems, the distinction between abuse and dependency becomes virtually meaningless. Once a person does become dependent on alcohol, even if that person stops drinking for a period of time, he or she will again become dependent in a matter of days to weeks when he drinks again.

There are many models, theories, classifications and explanations for substance dependency and behaviours, resulting from this condition. In the 19th century, substance dependency was seen as a sin and something immoral. Later on, in terms of the disease model, the alcoholic was no longer regarded as a immoral person with no self-control. According to the genetic theory, substance dependency is transmissible from parents to their children by means of genes. According to this theory, alcoholism is inherited by children of alcoholic parents, rather than that the environment being viewed as the primary source.

The researcher agrees that drug dependency should not be classified as subsets of the category “Sociopathic personality disturbance”, along with anti-social behaviour and the sexual deviations, as it appeared in DSM-1 (APA, 1952) and DSM-II (APA, 1968). Abuse and dependence, as it appears in DSM-IV (APA, 1987,1994), is more appropriate because substance abuse is clearly linked to a lack of fulfilling major role obligation, legal problems, social and interpersonal problems, and using substances in physically hazardous situations. Furthermore the researcher agrees that substance dependency is accompanied by factors such as compulsion to use, impaired capacity to control use, tolerance, neglecting interests, persistent use despite evidence of harmful consequences, and a great deal of time spent on activities related to obtaining the substance.

Psychologists view behaviour (all kinds of behaviour and not just addictions) as determined by a multitude of factors, such as culture, family, social group, lifestyle, environment, behavioural skills, thoughts, feelings and physical factors. Somehow, this whole range of factors that influences behaviour must be taken into account in any approach to understanding addiction. Models, such as the disease and psychological models of addiction provide meaningful explanations for substance dependency or any addiction. However, one must always bear in mind that there are other meaningful explanations for addictive behaviour, such as the learning, social, biopsychosocial, and environmental risk factor models.

A level of 0,05 % alcohol in the blood disrupts thought, judgment, and restraint is loosened. At a concentration of 0,1 % , voluntary motor actions usually become perceptibly clumsy. Legal intoxication ranges from 0,1-0,15 % blood alcohol level. At 0,2 % , the function of the entire motor area of the brain is measurably depressed, and the parts of the brain that control emotional behaviour are also affected. At 0,3%, the person is commonly confused and at 0,4-0,5 % , the person falls into a coma. At higher levels, the primitive centres of the brain that control breathing and heart rate are affected that can result in death. The six stages of drunkenness are the jovial phase, the slurring phase, the can't see properly phase, the falling down phase, the down and out phase, and the valley of the shadow of death phase. Alcoholics often present with symptoms of depression such as dysphoria, agitation, apathy, suicidal ideation, loss of libido, early morning waking, loss of appetite and weight loss. Alcohol may also increase the likelihood of a successful suicide, as alcohol use is common immediately prior to or during suicide attempts. Anxiety and phobic symptoms may be causal factors for developing a drinking problem, as patients may attempt to control their anxiety and phobias by drinking, but the alcohol consumption may then in turn exacerbate the anxiety or phobia.

There are many physical complications resulting from the use of alcohol. As a dentist, the researcher has encountered numerous conditions of the oral cavity and surrounds, that are associated with alcohol abuse. He has also treated dental patients that suffer from hepatitis, pancreatitis and gastritis as a result of long term alcohol abuse and is familiar with these conditions. Knowing the devastating effect of alcohol once a person gets addicted to it, the researcher is of the opinion that, even if there are beneficial effects of small amounts of alcohol on the cardiovascular system, alcohol should be avoided if there is a possibility of alcohol dependency. Alcohol, when used in excessive amounts, can cause a variety of haematological, musculoskeletal, endocrine and metabolic disorders.

The effects of alcohol on the central nervous system can be summarized as alcohol withdrawal syndrome, nutritional deficiency syndromes, and alcohol toxicity.

The Central Drug Authority (CDA) released statistics indicating that the abuse of alcohol and the use of dagga (marijuana) has led to South Africa's being one of the top ten narcotics and alcohol abusers in the world. Social Development Minister, Dr Zola Skweyiya, has admitted that the country has a massive substance abuse problem.