4.0 DISCUSSION

The main objectives of this study were to determine the prevalence and patterns of cigarette smoking and tobacco use and the knowledge, beliefs and attitudes of medical students to the dangers of tobacco. The study also sought to examine the participants' beliefs and attitudes to restrictions, legislation and the advocacy role of doctors in anti-tobacco activities.

4.1 Prevalence, patterns and aspects of tobacco use

In this study, about 6% of the medical students smoked daily and an additional 10% smoked occasionally. The overall prevalence rate of smoking was 15.4%. This was lower than the overall adult (18+ years) prevalence of current smoking in South Africa, which in 2000 was about 25%\textsuperscript{10}. Males (16.7%) and females (14.2%) were equally likely to smoke in this study and this again is different from the national prevalence rates, where about 45% and 13% adult males and females, respectively, smoked. The Birkholtz et al’s 1996 study in Pretoria\textsuperscript{82} found that a smaller percentage (12.1%) of the medical students smoked, compared to this study, but that the males significantly smoked more than the females. And Grant et al’s 1989 study\textsuperscript{81} in Cape Town found a higher prevalence rate amongst the females health personnel (20.0%) compared to their male counterparts (15.7%). This however differed from the 1985\textsuperscript{81} part of their study, which conformed to the usual norm of the males (14.9%) smoking more than the females (8.9%). The similarity of smoking rates between the genders found in this study, suggests that the traditional, social, religious and cultural taboos against smoking in public, by women do not apply to this group.
Smoking prevalence rates obtained from the study is also lower than that of South African youths (2000)\textsuperscript{17}, which for the daily smokers is; females – 21\%, males – 34.3\%\textsuperscript{17}, but was similar to the GYTS (2002)\textsuperscript{18} rates (16.2\%). These relatively lower prevalence rates obtained in this study may be explained by the fact that medical students may be more aware of the importance of not smoking than the general population. It could also be attributed to their increased education. In the general population, prevalence rates varied inversely with educational achievement\textsuperscript{10}.

Among the females, the Asian students were significantly more likely to smoke. Among the males, however, even though overall differences existed across all races, there were no significant differences in the smoking patterns between the white and the Asian population.

A worrisome trend that was revealed was the fact that 7.1\% of the participants smoked hookahs. The use of hookah in the study population was however lower than that found in other studies elsewhere\textsuperscript{23}. Sixty-four hookah related studies, especially in the Middle-East (51 studies) have thus been carried out globally and Maziak et al\textsuperscript{23} advocate for more studies. In their report, prevalence rates of hookah use ranged from 22\% among the 12 to 18 years in Israel and Egypt to 57\% (males) and 69\% (females) reportedly having used hookahs, at least once in Kuwait.

Overall, about one-third of the respondents did not have friends who smoked. It appeared that the tendency to have friends who smoked was less in the 5\textsuperscript{th} years compared to the 3\textsuperscript{rd} years. This view is supported by the fact that more students
in the 5th year had quit compared to their 3rd year counterparts. Study participants were more likely to be occasional smokers, rather than daily smokers in their 5th year of study. The differences observed in the smoking behaviour of the two class groups suggest that there might be an increased likelihood for the 5th year students to quit when compared to their 3rd year counterparts.

A similar trend was observed by Vakefliu et al in Tirana-Albania84, where it was found that there were more occasional smokers in the 5th year class (49.5%) compare to their 3rd year counterparts (29%). This however differed from Richmond et al’s 1997 study98 of 1st and 5th year medical students in Australia, where there was a general increase in both the rates of “daily” (2.3%, 1st years and 3.3%, 5th years) and “occasional” (12.4%, 1st years and 19.3%, 5th years) smokers. Richmond et al’s study was however similar to an earlier study by Grant et al81 in Cape Town South Africa, where there was an upward trend in “daily” smoking of medical students from 12.8% in 1985 to 17.3% in 1989. This may have occurred during that period due to the non-existence of the current restrictions and legislations or may mean that smoking may be becoming more popular again because 3rd years smoked more, had more friends smoking and tended to over estimate smoking prevalence despite increasing knowledge of the dangers of tobacco.

Also, the year of study did not influence the rate at which students were bothered by environmental tobacco smoke as the results revealed that people were similarly bothered or not bothered by secondary tobacco pollution.
Evidently, this study tends to point more to a downward spiral in the prevalence rates of tobacco smoking amongst health professionals and medical students that have been noticed elsewhere\textsuperscript{69,99,100}. As of 20 years ago, in many countries the prevalence rate of medical students was already less than that of the general population, and in some cases, physicians who taught them. In Czechoslovakia 18\% of medical students smoked compared to 38\% and 25.6\% of male and female physicians, respectively and 49\% of nurses\textsuperscript{99}. Similarly in Bahrain, 60\% of male physicians smoked compared to 27\% of male and 2.3\% of female students, respectively\textsuperscript{69}. Around that time also, in England, in a study of 13 randomly selected medical schools, 11\% of medical students smoked compared with 33\% of the general population’s tobacco use prevalence\textsuperscript{100}. The emergence of fewer smoking doctors seems to be on the cards now. Isshii et al\textsuperscript{80}, in a recent study of physicians in Tokyo-Japan found that 13\% of the doctors currently smokes but that an encouraging 33\% had quit.

The smoking prevalence rate observed in this study and other South African studies were encouragingly low. Globally, more work may have to be done in reducing these rates in individual countries. This is because a recent Global Health Professional Survey (GHPS) carried out in 10 randomly selected countries, found that smoking prevalence ranged from 18.1\% (Republic of Serbia medical; students) to 47\% (Albania pharmacy students). Overall, in the GHPS, prevalence rates were about 20\% in seven of the 10 countries surveyed\textsuperscript{19}. This was comparable to the prevalence rate (about 16\%)\textsuperscript{17,18} of both South African
youths and that obtained in this study of medical students at the University of the Witwatersrand.

In this study 24.4% of the smokers were not willing to quit and this was very similar to results emanating from Hill et al’s 2004 study of Turkish medical students\textsuperscript{83}.

4.2 Knowledge of the national prevalence of smoking

This study unlike others before, examined the students knowledge about the prevalence rate of smoking in South Africa. The 5\textsuperscript{th} year students displayed a better knowledge of the prevalence rate of smoking. This may be attributed to a week-long module offered by the medical school as part of a 7-week course called “Life on the streets”. Overall, the students were poorly informed about the prevalence of smoking in South Africa. Two-thirds (66\%) of the 3\textsuperscript{rd} year and about half (51.1\%) of the 5\textsuperscript{th} year students gave incorrect estimates. Lack of adequate knowledge concerning prevalence is important for several reasons. Underestimating the prevalence rate may reduce appreciation of the enormity of ill-health effects that will present in the future due to tobacco use. Overestimating the prevalence rate may render a feeling of helplessness of the situation or may promote the feeling that it would be normal to smoke. More work may have to be done to bring the facts to the majority of the students who did not know.

4.3 Knowledge of cessation techniques

Over the last 25 years, scientific studies have investigated the role of general practitioners in smoking cessation. The studies have demonstrated that even
minimal advice by doctors is effective in reducing prevalence rates among smoking-patients. A 1979 study by Russell et al\textsuperscript{101} and a more recent one (2004) by Cooper et al\textsuperscript{96} were even more specific in demonstrating that following a simple advice from their general practitioners (GP) about 5% of smokers would quit. Saloojee et al\textsuperscript{102} contend that “in South Africa, if our 200,000 registered health professionals each helped one patient to stop smoking per month, this would produce 2.4 million ex-smokers a year. Within 3 years there would be no more smokers in South Africa”.

Nicotine Replacement Therapy (N.R.T.), bupropion and behavioural counselling can substantially increase long-term abstinence rates in smokers motivated to stop. Doctors can make an important contribution to reducing tobacco use through counselling their patients to quit.

A quarter (n=44) of the 5\textsuperscript{th} year students were well informed about tobacco-cessation techniques compared to less than one-tenth (n=12) of the 3\textsuperscript{rd} years students. This is comparable to what was obtained in the study carried out by Fakhfakh et al (1996)\textsuperscript{103}, in Tunisia, where it was found that many final year students did not have adequate knowledge and skills to counsel patients about smoking. This was also similar to Tessier et al’s 1989 study\textsuperscript{104}, where it was found that only 27% of European students knew about tobacco cessation. In two other separate studies (1992\textsuperscript{105} and 1993\textsuperscript{106}, respectively) Tessier et al. again found that 29% and 16% of medical students knew about cessation techniques in Asia\textsuperscript{108} and USSR\textsuperscript{106}, respectively.
The quality of advice given by doctors can have a significant impact on the health of patients. Regrettably, due to the inadequate knowledge of cessation techniques, the advice patients will receive from the majority of the graduates will be of an unacceptably poor standard. There was however no information obtained by the researcher as to whether more knowledge was to be imparted later in their 5\textsuperscript{th} year of study and in their 6\textsuperscript{th} year of study either in their course work or during their clinical sessions.

4.4 Knowledge of health issues and aspects of addiction

While the overall knowledge about the health effects of smoking was high, it is of concern that even a small proportion of future doctors were unaware of the links between smoking and health outcomes. This should be a cause for considerable concern for educators. Doctors have a vital role to play in educating their patients about the good health practices, but if they themselves disbelieve or are ignorant of the risks, they cannot fulfil that role adequately.

In general the 5\textsuperscript{th} year students were significantly more aware of the health risks of smoking than the 3\textsuperscript{rd} year students. A sizeable number (9\%) of students either did not know or did not accept the dangers and they may very well carry this lack of adequate knowledge into practice. In the Netherlands, for instance, 12\% of physicians, as of 1992, were unsure about the association between smoking and leukemia and only 43\% knew of the relationship between smoking and cancer of the bladder\textsuperscript{110}. Richmond et al\textsuperscript{98} also established that the 5\textsuperscript{th} year students in their study had a better knowledge of the harmful effects of tobacco than the 1\textsuperscript{st} year students that they had studied in Australia.
Judging from the fact that smoking is the second leading cause of death and that about 25,000 scientific studies have thus been published on the association between smoking and ill-health, it is considered unacceptable that some participants were still unaware of the dangers of smoking and therefore more work may have to be done to educate medical students about the link between smoking and disease.

An attempt was made to link beliefs about the association between smoking and its consequent health dangers to the smoking behaviour of the participants. Only about 14% of the “occasional” and “daily” smokers felt that smoking was not so dangerous and that “smokers may live to a ripe old age”. Also, the smoking status (never smoked, quit or currently smoke) of the participants did not affect their responses pertaining to the dangers of smoking. This therefore meant that both the smokers and the non-smokers had similar (non-statistically different) beliefs about the dangers of smoking. This presents a situation, whereby the need for opportunities and avenues for tobacco cessation treatment and advice may have to be made available within the medical school environment to assist smokers willing to quit.

Noteworthy gaps with respect to knowledge of the dangers of smoking were observed: 40% of the students erroneously agreed that low tar cigarettes were less harmful than regular cigarettes, about one-third of the participants did not know or were unsure about the relationship between smoking and reduced fertility and almost a quarter of the participants did not know of the link between smoking and sudden infant death syndrome.
Unexpectedly, 12% of the 3rd years students and 4% of the 5th year students agreed that smoking with its consequent environmental pollution was “beneficially” linked to reduced lower respiratory tract infection in exposed passive smoking children. Similarly, unexpected responses were observed pertaining to the link between smoking and the development of gallstones. This may indicate a tendency for students to give a sustentative answer when “don’t know” would have been a more appropriate response. Further more, more students agreed that smoking causes gallstones, than disagreed (9%) indicating that there may have been an acquiescence bias, which is the tendency to agree rather than disagree with statements. However, since about 77% of the respondents recorded an “unsure” response to this question, it does indicate that the majority answered questions truthfully. Some caution is however required in assessing the true extent of their knowledge.

The participants generally believed that smokers would like to quit and that quitting the habit was not difficult. Only about 15% of the respondents believed that smokers would not like to quit and 22% of the respondents felt that quitting the habit was difficult. It may indicate a tendency for students to believe that most smokers would like to quit but are postponing it.

4.5 Tobacco control

In 2003, the World Health Assembly (WHA) adopted a Framework Convention of Tobacco Control (FCTC) and it came into effect in February 2005. The FCTC is an international treaty designed to promote measures of tobacco control based on current and relevant scientific, technical and socio-economic considerations.
Included as fundamental recommendations of the FTCT are; regular increases in tobacco taxes, the banning of smoking in public places, the placing of health warnings on the packages of tobacco products and the banning of sale of tobacco products to minors.

Increasing tobacco taxes is perhaps the single most important short-term determinant of tobacco use. Tobacco advertisements glamorises smoking and promotes tobacco use while a ban on advertisement lowers sales. Restriction of smoking in public places not only protects non-smokers from tobacco smoke pollution but reduces opportunities to smoke and establishes non-smoking as the social norm and thus renders smoking more anti-social. Health warnings can better inform smokers of the harms of tobacco use. Prohibiting sales to minors if effectively enforced can slightly reduce underage sales.

Since 1983, the South African government had already enacted recommendations similar to the FCTC’s and this study examined the students’ beliefs about the effectiveness of these measures.

The students in general did not believe that these measures were effective in reducing tobacco use. Only a third of the 3rd year and half of the 5th year students respectively, agreed that increasing the price of cigarettes would reduce consumption. To the extent that medical students may represent a relatively well-off subpopulation group in the country, this later opinion may be a reflection of improved economy of South Africa, with related increases in disposable income. This further supports the view that the decline in smoking observed in the past may have come to a plateau as reflected by the fact that more 3rd years are
smoking compared to 5th year. There is indeed more room for higher price increases of cigarettes.

About half of the students believed that banning smoking in public places was effective in lowering the prevalence of smoking. The students studied by Birkholitz et al (1996) in Pretoria South Africa\textsuperscript{82} were more positive in that 55% of the smoking and 85% of the non-smoking medical students had already acceded by then, that the banning of smoking in public places would reduce prevalence rates. More recently, in the Tirana-Albania study\textsuperscript{84}, most health care students believed that smoking should at least be restricted in hospitals.

About a quarter believed that health warnings and the prohibition of sales to minors worked and more intensive measures were called for as 83% of the participants supported the placing of illustrative health warnings on the packages of tobacco products.

South Africa has already distinguished herself and has been lauded for successes it has achieved in developing policies that have reduced the prevalence of cigarette smoking from about 34% in 1993 to approximately 25% in the year 2000\textsuperscript{14,15,16}, yet the students largely seemed to be unaware of the importance of these measures. If the students better understood the importance of these public health interventions and their impact, it might influence them to become more actively involved in advocacy. The rest of Africa and the developing nations in general, have however not been this successful\textsuperscript{108}. In Asia, for instance the prevalence of smoking use is still about 60% among the male
population and this consequentially means a high level of environmental tobacco smoke. 

Imparting knowledge of the association between restrictions and legislation with the reduction of the prevalence rates needs further attention.

4.6 The image of doctors

Since 1994, tobacco control has been high on the political agenda in South Africa and doctors have played some part in achieving this both as individuals and through their membership of professional organizations and they have had a powerful influence at a political level.

Society believes that doctors are influential members of the general public and if this is acknowledged by the students, it should encourage them as future doctors to avoid smoking and to participate in tobacco-cessation counselling as they deal with patients daily on a personal basis.

The reason why more (91%) of the 5th year students agreed that doctors were perceived as role models than their 3rd year counterparts (73%) could be due to the fact that the 5th year students were already in contact with patients and were thus able to appreciate the way society regards them. The combined positive figures of 82% in the 3rd and 5th year of study was however more encouraging than what was obtainable elsewhere, even though, about 9% of the participants in this study, were unsure if doctors should set good example by not smoking.

Again the majority of the respondents (83%) were in support of the fact that doctors should not smoke. The tendency for more students in the 5th year to
believe that doctors should not smoke could stem from the fact that the students who were already in contact with patients might have perceived an aversion on the part of the patients to the odour of cigarette smoke and doctors implicated in the addiction. It could also mean that the 5th year students who smoked had realised that it was more uncomfortable to advice smoking patients about the dangers of smoking. Some studies\textsuperscript{77,79} have found that doctors’ smoking status reflects on their willingness to advice patients to quit. Only 50% of doctors who smoke are willing to advice patients to quit as opposed to 85% of the non-smoking doctors\textsuperscript{77,79}. Concerning this, attitudes and perceptions seem to be improving. Previously, for instance, 71% of medical students in the UK did not see the relevance of the doctor’s smoking habit in a 1983 report by Elkind\textsuperscript{109}. In a study by Baldwin et al\textsuperscript{110} of senior medical students in 23 schools in the US, the majority of the respondents did not see the need for any action to be carried out against doctors who smoked and between 45 and 69% of these medical students agreed that doctors should desist from smoking in the presence of their patients. Grant et al in their 1989 Cape Town study, found that students believed that a doctor’s smoking habit influenced the patient and doctors should desist from smoking in the presence of their patients\textsuperscript{81}.

4.7 The advocacy role of doctors

Doctors have a duty to project themselves as exemplars of good health practices by not smoking. Anti-tobacco organizations, made up of doctors form a powerful lobby group that will influence the machinations of the legislative process, due to
the esteem with which doctors are viewed and the fact that they have access to influential people.

Measures that will promote doctors’ routinely advising patients to quit will have a major impact on reducing prevalence rates, because this will provide an effective, inexpensive far-reaching intervention measure that requires the simplicity of the doctor just talking to the patient. This will contribute to interventions targeted at individual behaviour changes which have been successful in some studies\(^7\)\(^9\). The students generally displayed willingness to advice patients to quit and to participate in speaking to the community, but tended not to be desirable of any form of activism, with respect to belonging to anti-tobacco organizations.

Over one third of the respondents would not like to belong to an anti-tobacco organization. This may call for the further sensitisation of the students as to the important roles that doctors could play if they assisted more in addressing issues of tobacco control as members of an organisation. Almost all the respondents (97%) stated that doctors should advice smoking-patients to avoid smoking around children. Again, even though the respondents (96%) generally agreed that doctors should render routine advice to their patients about quitting, opinions were divided as to whether the patients would take advice to quit, with about 27% of the study group stating their lack of certainty as to whether patients would respond favourably to advice from doctors. In Vakefliliu et al’s study\(^8\)\(^4\), fewer (50%) of the students were willing to regularly advise their smoking patients to quit. A more promising observation, similar to that obtained in this study was however noted in the broader CDC collaborated 2005 study of ten randomly
selected countries, where it was noted that 86.6% to 99% of students agreed to routinely advising their patients to quit, the only exception being health care students in Croatia (71.7%)\(^{19}\). The fifth year students agreed more than their third year counterparts that current legislation and restrictions were effective in reducing prevalence rates of tobacco. Grant et al\(^{81}\) state that, even without a policy and legislative stance in place, 50 to 60% of doctors were taking steps to discourage patients from smoking. Birkholtz et al\(^{82}\), while accentuating the unique position of health-care workers also advocate for the importance of targeting students as a group that will significantly help in the solving of the tobacco pandemic.

4.8 Anti-tobacco education

Doctors require specific anti-tobacco cessation training and the quality of the training must be high, for them to be able to carry out their tasks more efficiently. Saloojee contends that the University of the Witwatersrand has already set off on the right footing, being the only medical school with a teaching block on tobacco control\(^{113}\). Another policy laying down set standards in what tobacco-control modules medical schools should teach will be highly beneficial.

An appreciable number (39%) of respondents across both class groups stated that doctors were not well trained and 84% of the respondents felt that doctors required specific training. This suggests a possible gap in the medical curriculum as perceived by these students, with regards to specific anti-tobacco training, which may need to be investigated and addressed.
The 3rd year students of the Wits medical school were lucky in that they were going to receive a one-week module in tobacco cessation later in the year. This will make them fall into the little group (5 to 37%, globally) of medical schools that were formally trained, by their 3rd year of study, in counselling as found in the 10 randomly selected countries selected by the CDC collaboration in their study19.

4.9 Study limitations

Even though more than 80% of the possible respondents participated in this survey, arguments can be made on the level of accuracy, with respect to the representativeness of the sample population. This is because the choice of subjects was not achieved by selection but by availability. Also, the study participants were drawn from two, out of the six years of study at the medical school and therefore not necessarily be representative of all the medical students. But, overall, the response rate being about 86% across both population groups was considered adequate.

There were very few “coloured” students (n=6) and they were all females, so it was difficult to make generalizations about this group. Participants were recruited mainly from students who were present in class on the days of questionnaire administration. Participation was therefore voluntary.

In interpreting the data, certain limitations of the study were kept in mind. This was a cross-sectional census, which measured various variables at one point in time and thus could not establish causality. It is therefore limited to providing information about the relationship between the year of study of the participants and their tobacco use habits as well as their knowledge, attitudes and
perceptions to the factors investigated. The influence of other socio-demographic characteristics like age, cultural as well as economic backgrounds on the beliefs of the subjects was not investigated. Also, the relationship in the smoking habits of the participants and their beliefs was not investigated. In any case, a more accurate measure of changes in perception over time would require a longitudinal study (cohort study).

The results were entirely dependent on the truthfulness of the students. The open-ended question to determine the students' knowledge of cessation techniques may have encountered some problems in grading and rating of the responses. This is due to the wide variety of ways in which the participants elected to display such knowledge.

Other sources of bias may have occurred, however, due to the fact that medical students may respond in a manner they considered more appropriate, have a tendency to agree, rather than disagree (acquiescence bias) and be tempted to choose an option when responding, rather than choose nothing. Being medical students, therefore, there might have been a tendency to respond in a manner considered socially acceptable to questions they deemed threatening, embarrassing or sensitive.

The study is meant to be a baseline survey and results may not necessarily be representative of the views and aspects of all the medical students at the University of the Witwatersrand or medical students from other institutions.
These were put into consideration and thus efforts were made with respect to precise wording, form and placement of questions in order to minimize such errors.