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THE UNIVERSITY
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FACULTY OF INDIGENOUS HEALTH

YOOROANG GARANG

FOURTH YEAR HONOURS THESIS

TOPIC: DIABETES AND ITS EFFECT ON THE LIFE EXPECTANCY OF INDIGENOUS AUSTRALIANS.

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COORDINATOR'S COPY
By Tracy Mulheron

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ABSTRACT

It has been established that diabetes does have an effect and impacts greatly on the life expectancy of Indigenous Australians. A possible explanation is that Indigenous Australians generally have different needs, primarily because of the variation in culture differences. For this reason it is imperative that health officials have an understanding of these additional pre-disposing factors and the associated complications. Which have resulted as a part of the colonisation process. These factors including diet, nutrition, exercise, obesity and have influenced and resulted, in a change to the way of life for many Indigenous Australians, primarily from a traditional to modern diet.
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DIABETES, AND ITS EFFECT ON THE LIFE EXPECTANCY OF
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RESEARCH QUESTIONS / AIM OF STUDY

- How prevalent diabetes is in Australian Indigenous populations
- How does diabetes affect ones life expectancy
- How do social indicators for health create susceptibility to being prone to diabetes in Australian Indigenous populations

THIS STUDY WILL OUTLINE ISSUES SUCH AS

Chapter one
- What is diabetes
- How is diabetes treated
- Will diabetes affect ones life expectancy

Chapter two
Outline the number of Australian Aboriginal and Torres Strait Islander people with diabetes compared to the number of Australians with diabetes
Chapter three

What are some of the ways colonisation has impacted on Aboriginal and Torres Strait Islander peoples health

Chapter four

Could any of the factors influence Aboriginal and Torres Strait Islander people health and create a susceptibility to being prone to diabetes

- What factors effect the risk of diabetes
- What factors effect the life expectancy of diabetics

Chapter five

What are the elements/ components to a successful diabetes program?
Introduction

“Diabetes, Predominantly type II diabetes, is the major cause of morbidity and mortality for Aboriginal and Torres Strait Islander peoples” (Couros et al, 1997; de Courten et al, 1997, p 171).

“There is no evidence to suggest that diabetes or other lifestyle diseases such as obesity, cardiovascular disease or hypertension occurred among Aboriginal people when they lived traditionally” (O’Dea, 1992, p86).

This study aims to establish the validity of these statements by understanding the underlying factors associated with diabetes and the effect it has on the life expectancy, particularly of Indigenous Australians. In order to understand the full scope of diabetes and the underlying causes, susceptibilities and complications. It is important to determine if Aboriginal and Torres Strait Islander people require different health awareness and preventative measures from other Australians and people who belong to other economic groups. And if so, to define these needs and try to attempt to rationalise why these needs exist.

If differences are found it is imperative to determine the best way to meet the needs of the Aboriginal and Torres Strait Islander population. While also researching what intervention programs and policies are currently being implemented, to assist Aboriginal and Torres Strait Islander people with the diagnosis, monitoring and control of their condition. This is essential, as it is the responsibility of all health and
Government officials to ensure that every individual has an opportunity to be free of illness. It is also essential that the health of Indigenous Australians be viewed from a historical context.

Research conducted by O’ Dea (1992) suggests that prior to invasion in 1788, Aboriginal people are believed to have had a relatively healthy lifestyle, which was maintained adequately by their traditional diet. By the 1930’s it was seen that the Indigenous population had decreased too less than 70,000. This decrease can be attributed to introduce diseases such as small pox, measles and diabetes. Aboriginal people were dispossessed from their Ancestral land and any cultural ties broken and herded into missions. They were forced to adopt a more Westernised lifestyle with a diet consisting mainly of sugar, flour, white bread and tinned meat. Much Aboriginal ill health can be related to poor diet and subsequent nutritional status (Reid, Trompf, 1994).

It is the poor health and lifestyle factors Indigenous populations are subjected to, that can be seen to trigger the susceptibility of diabetes in Indigenous populations. Therefore, research suggests that Aboriginal and Torres Strait Islander populations can be seen to have a significantly higher prevalence rate of diabetes than the remainder of the Australian population (CHETRE, ISERU, 1999).

Research also indicates that Aboriginal and Torres Strait Islander populations, with the highest rates of diabetes are often those who are least economically and culturally able to deal with the burden of this disease (McCarty, 1996).
Primary research is used to help uncover answers to these questions, so as to more fully understand the influence diabetes has on Aboriginal and Torres Strait Islander people and the impact it has on their health, lifestyle and life expectancies. Only when health officials have attained an understanding of the issues involved, and see diabetes as a potential hurdle for a percentage of Aboriginal and Torres Strait Islander people to overcome, will they truly be catering for the Indigenous population and assisting individuals in an improved life expectancy.
BACKGROUND / RATIONAL  ‘Diabetes and its effect on the life expectancy of Indigenous Australians’

My increased interest in diabetes and the effect it has on the life expectancy of Indigenous Australians, I believe has highlighted the need for increased research in this area. Personal issues have provided me with the desire for an increased understanding, into the underlying causes associated between Indigenous populations their lower life expectancy and diabetes.

These resulting factors have enabled me to gain a better appreciation in how to prevent this disease becoming more ramped. While also providing me with additional insight into the effect diabetes has on Indigenous peoples life expectancy. The main aim of further research in this area is to increase awareness of the available preventative measures, both on a community and individual level. While also highlighting the need for more stringent and thorough preventative and intervention programs specifically targeted towards Aboriginal and Torres Strait Islander communities.

Diabetes and its effect on the life expectancy of Indigenous Australians is a very important and fundamentally significant area of research. Therefore requires more research within this area, as it constitutes a vital and integral part to maintaining the promotion and access of culturally appropriate services within the Aboriginal and Torres Strait Islander community. Thus, helps to establishing any predisposing
factors, which influence the causes of a lower life expectancy amongst Indigenous populations.

Research in area of diabetes highlights the importance of, not only implementing early diagnosis and treat programs for potential diabetics within Indigenous communities. But to also be able to potentially reverse diabetes within Aboriginal and Torres Strait Islander populations, with the scope to potentially preventing this disease altogether (O’Dea, 1992).

Research in this field, can also be seen to provide the knowledge, which enables Aboriginal and Torres Strait Islander people to have an increased life expectancy and a better quality of life. This view magnifies the reasoning behind, why I find this topic very significant and relevant. This forms the basis of my belief that there needs to be more in depth research in the area, of diabetes.

Having had the opportunity to actively participate within the research field, I believe this has shaped and moulded my thoughts and understandings in associated with diabetes. While assisting me in being more open minded and aware of the potentially high rate of diabetes amongst Indigenous populations and the adverse effects this has on ones life expectancy. As well as providing the insight, into how best to elevated this epidemic, which is occurring amongst Indigenous populations at an increasingly younger age.
Literature Review

In accordance with Diabetes Australia (2000), diabetes can be described as a condition in which the amount of glucose (sugar) in the blood is too high because the body is unable to use it properly. This is because the body’s method of converting glucose into energy is not working, as it should.

McLaughlin (1994) has provided a more detailed analysis of stating what diabetes is. However the closer the blood glucose level is kept to normal range the likelihood of a longer healthy life. Morris (1969) extends on this point by proposing the level of knowledge and the ability by diabetics to sort adequate preventative measures or treatment. The signs and symptoms are also variables which Morris (1969), believes determine the outcome of the treatment schedule. While recognising these influencing factors, Courten (1997) also states that with so many variables diabetes in Australia can not be accurately measured.

"There is no evidence that diabetes or other lifestyle diseases such as cardiovascular disease or hypertension occurred among Aboriginal people when they lived traditionally". As they were nomadic, lean and fit individuals, which were protected by traditional hunter-gather lifestyles (O’Dea, 1993, p86). Research has confirmed that lifestyle changes can in fact, effect the relationship that exists between diabetes and the effect it has on the life expectancy of Indigenous Australians (Couzos, 1997; McCarty, 1996; Knuiman, 1992).
In analysing this relationship McCarty (1996), has proposed that the longer the delay between the onset of diabetes and the diagnosis of diabetes. Then the greater the detrimental impact of related complications will be. In an attempt to rationalise possible causes of this association, it becomes apparent that it is the amalgamation of more then one variable. The level of which a diabetic is predominantly effected is also dependent upon the time frame in which one is diagnosed with diabetes (Harris, 1993).

The rationale behind why there is often varying degrees of complications associated with diabetes. And why there are variations in the severity of these complications, can be explained through a variety of different factors. These factors include the prevalence of undiagnosed cases (Guest, 1992), lifestyle changes (O' Dea, 1993), poor glyceamic control, lack of access to health services, lack of access to services to identify and manage complications (McCarty, 1996), as well as intervention programs (Colagiuri, 1998).

When focusing on the best way to meet the needs of Indigenous Australians in regards to the effect diabetes has on their life expectancy, there are a number of strategies available to the individual, family, friends, relatives and the community. These associated effective strategies for the detection, intervention and monitoring of diabetes can also be seen to enable the early detection of undiagnosed diabetes, and act as a key intervention in reducing the personal and community burden of diabetes and the associated effects it has on individuals resulting in a lower life expectancy (Mitchell, 1997).
A systematic review carried out by Guest (1992), examined the prevalence of undiagnosed diabetes amongst Aboriginal and Torres Strait Islanders and found a ratio of undiagnosed cases to diagnosed cases of 0.54 for Indigenous Australians compared to 1.1 for non-Indigenous Australians (Guest, 1992).

In accordance with Zimmet (1992), diabetes is recognised as a serious global health problem, resulting in substantial morbidity and mortality, which alternately lowers the life expectancy of individuals primarily from diabetes and the associated complications such as cardiovascular complications, eye and kidney diseases, and limb amputations.

Harris (1993) attributes these resulting complications to the extended time frame that individuals have had diabetes without being aware. Which leads to the asymptomatic undiagnosed of diabetes, amongst Indigenous populations for periods lasting anywhere up to twelve years (Harris, 1993).

In addition to these associated complications and lifestyle changes, play a major part in contributing to diabetes and the increased susceptibility it has on the prevalence of diabetes amongst Aboriginal and Torres Strait Islander people (Zimmet, 1992).

In contrast, McCarty (1996), Indicates that there is a variation in the exact prevalence rates associated with diabetes ranging from 7.4% to 15.6%. McCarty also highlights that the prevalence is so high in Aboriginal and Torres Strait Islander communities that they can be seen to possess the fourth highest rate in the world (McCarty, 1996).
According to Australian Bureau of Statistics & Australian Institute of Health and Welfare (1997), Aboriginal and Torres Strait Islander populations are twelve to seventeen times more likely to have a death related to diabetes (ABS & AIHW, 1997). In consideration of this point diabetes can be attributed to being the major cause of morbidity and mortality for Aboriginal and Torres Strait Islander people (Courten, 1997; Couzos, 1997).

It has been established that the proposed reasoning’s for the high prevalence of type II diabetes among Aboriginal and Torres Strait Islander populations, is a combination of lifestyle factors and genetic susceptibility. It has also be highlighted that Aboriginal and Torres Strait Islander people may be prone to “Thrifty genotype”. In today’s society this may be a detrimental component leading to increased insulin resistance and prevalence of obesity within Indigenous communities (McCarty, 1996; Nutbeam, 1993).

Harris (1993), concludes that the treatment of diabetes includes weight reduction, increased physical activity, and diet modification. Harris (1993) also proposes that this increasing trend of diabetes is developing at an increasingly younger age.

Reid and Trompf (1994), highlight that much Aboriginal and Torres Strait Islander ill health can be related to poor diet and subsequent nutritional status. For many Aboriginal and Torres Strait Islander people are now dependent upon a more westernised diet of refined carbohydrates such as sugar, flour soft drinks, and bread, together with fresh or tinned meat. This diet can be seen to be linked to triggering off
certain lifestyle factors that Aboriginal and Torres Strait Islander people are genetically or inherently susceptible towards (McCarty, 1996; Nutbeam, 1993).

Diabetes Australia (1996), highlights that diabetes is best controlled and treated by individuals who best understand their own condition. It is important for all people with diabetes to eat regular nutritious meals and avoid being overweight. The main aspect associated with good control and monitoring of blood glucose levels in diabetes type II is the provision of intervention programs aimed at increasing healthy lifestyle practices through exercise, good nutrition, maintenance of ideal body weight, cessation of smoking and reduced alcohol consumption (DCCT, 1993).

According to Colagiuri (1998), each individual copes and is effected by diabetes in a different way, however, mortality statistics are believed to be greatly underestimated, due to the fact that often diabetes is left undiagnosed for long periods of time, as well as being under-reported on death certificates. Hence, this gives rise to the associated complications of diabetes, which result in increasing disability, reduced life expectancy and the enormous health cost for virtually every society.

Therefore diabetes within the Aboriginal and Torres Strait Islander community, can be seen to be associated with mortality rates two to three times higher than the rest of the population (Riley, 1995). Aboriginal and Torres Strait Islander populations also experience 12 to 15 times more deaths due to diabetes than non-Indigenous Australians (ABS, 1997; AIHW, 1997).
These associated statistics can be linked with the higher rates of diabetes and are predominantly a major cause of mortality and morbidity amongst Aboriginal and Torres Strait Islander people (Couzos, 1997; Courten, 1997). It has been established throughout the majority of research articles read for the purpose of this study, that not only do Aboriginal and Torres Islander people have a higher susceptibility to diabetes. But that they also experience a decreased life expectancy and a higher associated mortality rate (Courten, 1997; Courzos, 1997; Knuiman, 1992; McCarty, 1996; Mitchell, 1997). The relationship between diabetes and its effect on the ones life expectancy can mostly be attributed to increases in cardiovascular disease and the associated complications (Phillip’s, 1995).

In addition, Hoy (1995), suggests a possible explanation as to why a relationship may exist between diabetes and the effect it has on Indigenous Australians life expectancy is linked with the rate in which associated complications are exposed. It has been stated that current lifestyle dietary needs fail to provide Aboriginal and Torres Strait Islander people with nutritional skills and practices which are essential for a prolonged life expectancy and quality of life (Hoy, 1995). The environment in which one lives can also influence the quality of the nutrition (National health strategy research paper 1, 1992). In addition, there is an increasing evidence of a relationship between low socio-economic status and poor health nutrition (National health Strategy research paper 1, 1992).

In a study completed by McCarty (1992), it was found that a low socio-economic status can also have a detrimental impact on ones life expectancy. It was
also found that Aboriginal and Torres Strait Islander populations with the highest rate of diabetes in the country often are the least economically and culturally able to deal with the burden of this disease (McCarty, 1992; Welbourne, 1995).

Economic status was also found to influence the level of dependence held by the individual, their understanding of the disease as well as the degree to which they can deal with the burden of this disease (Battistich, Solomon, Kim, Watson & Schaps, 1995). With consideration of all these factors, possible reason emerges to why diabetes has an impact on the life expectancy of Indigenous Australians and why Indigenous Australians may find it more difficult to adopt to current lifestyle dietary needs. As well as respectively why they may have an increased susceptibility to diabetes related complications (Hoy, 1995).

In some cases depending on the duration and degree of glyceamic control it is believed that many complications are preventable if detected and treated early (Kamen, 1996). Colagiuri (1998), throughout research material recognises and identifies the importance of the prevention and management of diabetes in Aboriginal and Torres Strait Islander communities and reducing the associated risk by addressing the underlying social and environmental factors as well as the early detection and increasing the utilisation of health services by Aboriginal and Torres Strait Islander people. So that effective management of diabetes can be developed in order to reduce associated complications to increase life expectancy amongst Indigenous Australians (Colagiuri, 1998).
Methodology

Methodology can be seen to form the systematic approach or process, which is used in order to collect and analyse a research question or questions. The methodology process forms the structural basis of the collection and analysis of data from either qualitative or quantitative research and forms the basis of the research process.

The way in which primary information is obtained for the research being reviewed in this study, on diabetes and its effect on the life expectancy of Indigenous Australians, is predominantly through a qualitative approach, and the use of a critical review of published literature. In relation to diabetes both in mainstream Australia and Aboriginal and Torres Strait Islander communities.

The literature within the research study can be seen to possess important qualities and purpose, enabling insight into the current research topic. While highlighting any results or findings from previous studies, which are closely related to the study in question (Frankel and Wallen, 1990).

This literature may also be seen to extend to any prior studies, while also being viewed on the basis of providing a framework, which highlights the importance and relevance of the study to other studies. In order to establish a benchmarks for the comparison of findings to other studies (Marshall and Rossman, 1989).
Critical analysis can be seen as a qualitative approach used to analyse any form of communication. As well as objectively recording any findings, without converting these findings into numbers or hypothesis. Critical analysis can also be viewed as an intellectual exercise in which the reader must judge, compare and contrast, the adequacy of the validity of the research material.

Critical Analysis is the most appropriate research method for the purpose of this study. As it is a vital component in effectively placing this study in the context of what has already be researched in the field of diabetes and the effect it has on the life expectancy of Indigenous Australians. Critical analysis as a research method allows comparisons to be made and provides a framework for further research. It also provides scope for the analysis and evaluation of relevant literature associated with my research topic. This provides me with the means to answer the associated research questions, which form the basis of this study.

Critical analysis forms the basis of a critical summary and the assessment of existing research material. It incorporates both what other researchers have done in the field of diabetes as well as my response to their work, findings and any conclusions they have drawn. Critical analysis as a method of research allows me to be critical and review different findings, approaches, methods and interpretations. The main aim of critical analysis is not to discredit or tear down published work, but to ensure that the reader understands the limitations and implications with respect to theory and practice (Polgar and Thomas, 2000).
In terms of my research study, critical analysis can be viewed as being a very effective research tool and has been a useful component in uncovering the associated predisposing factors associated with diabetes. As well being an "Unobtrusive research method", critical analysis provides a broad, but focused literature review.

Lupton (1999), describes "Unobtrusive methods of research as those which don't involve direct contact or interaction of the researcher with the source of data" (Lupton, 1999, p364).

Critical analysis allows the researcher access to a large amount of existing information which creates insight, meaning and experience into areas which relate to the research questions, and the study of diabetes and its effect on the life expectancy of Indigenous Australians. Critical analysis aims to focus on the specifics of what has been researched and highlights the relevant findings through looking at the validity of the research material and how it fits together and whether the various sections fit together logically. Critical analysis also aims to establish any of the possible inconsistencies, which may exist within the research literature.

When researching this study on diabetes and its effect on the life expectancy of Indigenous Australians. At first glance it was established that there was a substantial amount of literature on mainstream diabetes from a diverse range of fields, but there seemed to be a limited amount of research material in association with diabetes in Indigenous communities.
Once critical analysis was established as a research method, it allowed for a wide variety of research articles to be discovered and utilised. These articles were found to incorporate many different points of view and study types as well as different field sizes. In order of success it was imperative that these studies were representative of all states of Australia.

It is also important that there is a representation of a varying age group, cultural background and gender class. Another focal point to consider is the variety of research organisations, which were utilised, in order to gain a cross-section of the varying points of view and statistical data, available within the research field.

This study was based upon extensive library searches in Fisher library, N.S.W library and Newcastle University library. Much of the research findings were derived from key studies and material in forms of pamphlets, electronic media and reports. A large proportions of resources were sorted from the Australian Bureau of Statistics, Australian Institute of Health and Welfare and Diabetes Australia.

The literature search in order to focus on key research questions addresses issues such as the impact diabetes has on the life expectancy of Indigenous Australians. Although the vast majority of literature provides comprehensive insight into what diabetes is and addresses this epidemic. Few studies actually were found to present data with an accurate account of the exact extent of this problem within the Indigenous population.
In contrast, with the lack of research and evidence showing the exact extent of diabetes amongst Indigenous populations. There is a limited account in relation to the knowledge and understanding of diabetes in Indigenous populations.

Although a great deal of research literature can account for how diabetes affects one's life expectancy, there seems to be limited studies which focus on the impact that diabetes has on the life expectancy of Indigenous Australians. Hence using critical analysis as a research tool has enabled me to review the necessary data, which has been used in the past to aid diabetics, as well as evaluate and contrast the effectiveness of the past intervention programs and research material.

**Data Collection**

In order to broaden the scope of this research study, data collection is seen as an integral part of the research process. Providing the relevant research literature, which highlights the underlying factors associated with my research topic, of diabetes and the effect it has on the life expectancy of Indigenous Australians. The process of data collection provides insight and understanding into the availability of previously research areas and material.

In order for the data collection process, to be productive, worthwhile and of any benefit to the researcher, it is imperative that they:

1. Focus on the problem
2 Identify and define research question

3 Select variables that relate to each of the research questions within the study

4 Devise ways of meeting and answering each of the research questions

5 Select a research technique that will provide the desired information about the relationship between the research questions and study.

6 Decide on how the technique is to be implemented (Bouma, 1996, p138).

The way in which data was obtained for the study was predominantly through journals, Internet web sites, library data basis, Government policies and reports, Books, Intervention programs, newspaper articles and health promotion pamphlets.

*The founding stages of data collection began with the identification and use of key words, which include:*

1 Indigenous health (Health interventions, promotions, awareness, access, cultural appropriateness, Colonisation)

2 Health (Health complications, interventions, awareness, Government roles, standards)
3 Diabetes (awareness, intervention, control, complications, prevalence, susceptibility, education)

These key words were then used to access databases such as Ovid, Medline, Eric, Webspirs, and CINAHL in order to find the available sources. These sources consist of studies, texts and articles. Which relate to the topic of diabetes and its effect on the life expectancy of Indigenous Australians.

Information relating to Indigenous health and diabetes were found through Internet web sites such as health infonet, New South Wales Department of health, Australian Bureau of Statistics, Diabetes Australia and Medscape. These provided a vast amount of research relating to the research topic diabetes and its effect on the life expectancy of Indigenous Australians.

**Literature relevant to the research topic was also gained through**

1 Government Departments on a State, Local and Regional Level

2 Diabetes Australia

3 National Health and Medical Research Council

4 National Aboriginal Community Controlled Health Organisation
These data collection methods, have been implemented in order to extract as much relevant literature on diabetes and the effect it has on the life expectancy of Indigenous Australians. In order to gain a highly detailed overall picture of diabetes, its prevalence and the impact it has on individuals and communities in today’s society.

The next process was data analysis, for this process to be effective data was read, then categorised according to arising relevant themes. The literature was then analysed in accordance with the set research questions and either kept or rejected. The relevant literature then involved highlighting of the important themes, so that the writing process can start to begin.

**The benefits of Critical Analysis**

1. Critical analysis as a research technique can be implemented without direct contact with respondents (Lupton, 1994, p451).

2. A benefit of critical analysis is that it can be viewed as having less viewer bias and less associated research subject problems.

3. In comparisons with other methods critical analysis has no time restraints and is cost effective.
4 Critical analysis can be used as a comparative means, with data being compared to a vast array of relevant literature, helping the reader to build on their understandings and beliefs.

5 Critical analysis is based upon a text form, which allows underlying data to be compared, contrasted, tested and re-tested again for its accuracy and validity (Bouma, 1996).

Limitation of Critical Analysis

1 Often data can be dated, unreliable or biases exist, especially if there are gaps within the literature structure.

2 Often data can be hard to find and gain access to.

3 Data may not be a true representation as documents are not statistical based representations.

4 Critical analysis often is limited to what is documented within a text, as research lacks direct contact with any respondents (Bouma, 1996).

5 Critical analysis does not take into account the underlying meaning to what is said, it merely looks at the surface of what is said or communicated (Lupton, 1994, p 453).
In summary, critical analysis has been a valid research methodology for researching diabetes and its effect on the life expectancy of Indigenous Australians. It has provided a cost-effective opportunity to analyse data in a neutral form.

Critical analysis also provided the scope to eliminate researcher biases, as no direct contact was needed during the research process. This form of research tool has enabled me to be able to compare, contrast, test and re-test, literature for its accuracy and validity, in relation to the relevance of the research topic and the specified research questions.
Chapter 1

What is Diabetes And How does it Effect The Human Body?
The outstanding fundamentals outlining the concerns of diabetes can be portrayed through its medically identifiable name, Diabetes Mellitus. It can be seen to arrive from its Greek meaning, a fountain of sugar (McLaughlin, 1994).

Defining Diabetes
The International edition of the heritage illustrated dictionary of the English language, defines diabetes mellitus as "A chronic disease of pancreatic origin, characterised by insulin deficiency, subsequent inability to utilise carbohydrates, excessive sugar in the blood and urine, excessive thirst, hunger and urination, weakness, emancipation, imperfect combustion of fats, which if not treated with preventive measures or treatment schedules may lead to coma and eventually death" (Morris, 1969, p 363).

Diabetes, in accordance with Diabetes Australia, is a condition in which the amount of glucose (sugar) in the blood is too high because the body is unable to use it properly. This is because the body's method of converting glucose into energy is not working as it should (Diabetes Australia, 2000).

Normal Process
The pancreas is constructed of small bundles of cells called islets of Langerhans. These cells produce hormones called insulin. This hormone helps to regulate the amount of glucose in one's blood. The insulin is secreted in the blood as a result of high blood glucose levels. The increase in the release of insulin can also be linked to amino and fatty acids (Chandler, 1997).
Insulin can be seen to help the absorption of glucose into cells, minimising the release of glucose from the liver. This in turn limits the level of glucose in the blood and can also improve changes of glucose to fatty acid in the liver. Insulin has a stimulate effect causing protein synthesis and is also imperative for the absorption of glucose by body cells, enabling the transport of glucose across cell membranes (Chandler, 1997).

**Lack of Insulin - Cycle of effects**

If the body fails to produce the necessary amount of insulin or an insufficient level of insulin is being produced, then the task of conversion of glucose in the blood can inherently be effected by not allowing the glucose into the cells, where it is require. This then enables the levels of glucose in the blood to continue to elevate, these cells don't receive the required supply of energy and then body is required to try to correct this imbalance in order to reach homeostasis. This causes the liver to release extra amounts of glucose, resulting in the body tissue being further broken down and converted into more glucose (McLaughlin, 1994).

If this process happens for an extended period of time the blood stream becomes overloaded to the point that it can not hold any more glucose. The excess becomes excreted into the urine and the break down of fatty deposits begins (McLaughlin, 1994).

Ketones are the by-products of this breakdown which are released into the blood stream, and then into the urine. If this process is not remedied than it can lead to conditions such as diabetic Keto-acidosis or diabetic coma (McLaughlin, 1994).

With the combination of this process extra water is being dragged from the body, with the sugar causing large amounts of urine to be excreted. This process causes the person to urinate a lot making them feel dry mouthed and thirsty. This intern makes
the person drink a lot. This process allows large amounts of sugar in the urine to be lost and lowers the person’s ability to be able to store energy. This can also be attributed to causing loss of weight, tiredness and the sense of feeling unwell (Diabetes centre, St Vincent's hospital, 1997).

Type of Diabetes

Diabetes Mellitus can be categorised into two main types, known as type I and type II.

Type I: Insulin dependent diabetes mellitus

Diabetes Mellitus is generally associated with a disturbance of the body’s immune system, which depletes the insulin producing cells of the pancreas known as the Beta cells. The person generally feels of well health until 90% of the insulin producing cells are destroyed, after this depletion blood glucose levels can be seen to elevate, causing the person to become unwell (Diabetes centre, St Vincent hospital, 1997).

The outstanding features of this type of diabetes are that it can occur at any age from birth up to approximately forty years of age. It is commonly referred to as Juvenile diabetes (Diabetes centre, St Vincent hospital, 1997).

Usually the onset of signs and symptoms are sudden and come on quickly in days or weeks, rather than over a period of months. This type of diabetes is caused due to a lack of production of insulin (Chandler, 1997). Most people classified with type I or Juvenile Diabetes produce little or no insulin at all requiring artificial insulin supplements for the rest of their lives (McLaughlin, 1994).
Signs and Symptoms

Diabetes has many associated signs and systems; those associated with type I include:

* Weight loss, which tends to be sudden and dramatic.

* Needing to pass urine frequently, usually in large quantities with a presence of glucose and ketoses.

* Severe dry mouth and thirst, which can lead to dehydration.

* Sense of tiredness and fatigue.

* Blurred vision.

Type II: Late onset diabetes or non-insulin dependent diabetes

Type II can be linked to a defect in the body’s response to insulin (Diabetes centre, St Vincent hospital, 1997). In this case the pancreas still produces insulin but there is an altered sense of production, thus creating a sluggishness of the insulin producing cells. This develops gradually until middle or older age, when the blood sugar level rises above normal.

Because the increase is gradual and over an extended time frame the increase in blood glucose levels generally go unnoticed. Generally people with this type of diabetes are unaware they have higher, than normal blood glucose levels and go undiagnosed for years (Diabetes centre, St Vincent's hospital, 1997).
Although non-insulin dependent diabetes is usually late onset those forty years of age and older, it can still be evident in teenagers or young adults who are obese or have poor dietary standards (Chandler, 1997). Research shows evidence of this amongst Aboriginal and Torres Strait Islander children with 2.7% being diagnosed with type II diabetes (Braun, 1996).

**Those signs and symptoms evident in type II diabetes include:**

* Sense of tiredness for no obvious reason.

* Increased fluid consumption.

* Having to urinate, more frequently in larger amounts.

* Increased skin irritations and slower recovery.

* Decreased circulation.

* Blurred vision.

* Tingling or a sore sensation in fingers and legs.

* Slow healing process. (McLaughlin, 1994).

**How diabetes effects one's quality of life**

“It is likely that the highest prevalence of diabetes in Australian communities is found in the people least likely to be economically and culturally prepared to meet the burden” (Welbourne, 1995; p 17).
Diabetes can be seen to have a different impact on each individual and their quality of life is threatened in a number of different ways, depending on their type of treatment requirements, as well as the presence or absence of any complications. These resulting complications can be seen to pose economic burdens on both an individual level as well as on a community basis. The complications can also create a susceptibility to social, physical and psychological problems.

An International survey conducted by the International diabetes foundation confirms diabetes lifestyle restrictions are being felt by almost 60% of people surveyed, who claimed that living with diabetes restricts their lifestyle. The same numbers of diabetics also worry about experiencing complications of the disease.

According to the results released by the 61st American Diabetes Association annual meeting. The survey expresses the views of more than 1,600 people from 11 countries. This survey focuses predominately on the concerns of hypoglycaemic peaks and valleys, issues pertaining to diabetes education and management are also addressed throughout this survey. The survey demonstrates that the majority of people surveyed across all countries have increasing concerns about hyper and hypoglycaemic events, as well as the influence this has on their quality of life once diagnosed with diabetes. Despite the improvements in therapies which reduce these events from occurring (Diabetes Australia, 2001).

The complications of diabetes such as increased skin irritations, slower recovery, decreased circulation, blurred vision and tingling or a sore sensation in fingers and legs. As well as a slow healing process can be seen to adversely restrict and influence ones quality of life and self worth, once they have been diagnosed with diabetes (McLaughlin, 1994).
This can also influence how the individual perceives themselves and how they view themselves, now that they have been diagnosed with diabetes. This plays a major role in the quality of care diabetic’s deliver to themselves. Which increases the susceptibility of a reduction in their life expectancy and creates an increasingly higher susceptibility to being prone to disability (Riley, 1995).

In addition, to the health impacts diabetes imposes on individuals and their quality of life. A subsequent number of diabetics have also indicated a reduction in their social lives (Hornquist, 1995).

These factors are evident, through issues such as:

* The need to depend on others for assistance;
* Public confusion in distinguishing between type I diabetes and Type II;
* Public misconception about dietary requirements, the misconception that diabetes is contagious or self inflicted, ie eating too much sugar;
* Deciding who to tell about having diabetes;
* Feelings of loss of control and embarrassment associated with hypoglycaemia, particularly when they occur in social settings or the workplace;
* Having to test blood glucose levels away from home;
* Inflexible self care requirements which interfere with work, sporting or social activities such as having to eat regularity;
* Difficulties with obtaining and renewing drivers licenses;
* Medical cost for medications, supplies and equipment;
* Discrimination in life and travel insurance and in the workplace;
* Exclusion from certain occupations, such as scuba diving and driving public passenger vehicles (McCarty, 1996).

However, to ensure optimum health and a reduction in diabetes related complications,
so that diabetic’s can experience a better quality of life. All people with type II diabetes are required to follow a diet regime, which includes foods high in carbohydrates, high in fibre, and low in fats and sugars. It is also essential to have a regular exercise program to coincide with this diet regime, so as to increase physical activity levels in order to control and stabilise a healthy level of weight, as well as improving the body’s response to insulin. These lifestyle changes help in aiming to reduce the risks of heart disease, high cholesterol and blood pressure levels. In order to improve and maintain ones quality of life after diagnosis of diabetes, these health improvements should be implemented from the time of diagnosis (Diabetes Australia, 1996).

To maintain a good quality of life for diabetics, it is imperative that they have a continued on going support network of people, who help play a substantial role in day to day diabetes care. Therefore it is essential that family, friends, partners and carers create the opportunity for education, support, and active participation in decision making regarding diabetes care. It is also important to effectively allow the person with diabetes to take considerable responsibility in their own diabetes care and management in order to maintain substantial levels of independence (Colagiuri, 1998).

The increased and exceptionally high prevalence of diabetes amongst Aboriginal and Torres Strait Islander communities has caused many people and communities to become more aware of diabetes. As Aboriginal and Torres Strait Islander people are said to experience the fourth highest rate of diabetes in the world (Zimmet, 1992). These concerns have lead to case studies being conducted in order to illustrates how communities have worked together, to help and educate their members to, what diabetes is.
This has also enabled the community to have a better understanding of the disease while also raising awareness of diabetes, by providing education on how to combat the susceptibility of diabetes.

This is evident through the screening and collection of health data and the implementation of exercise programs and diet modifications. The case study also followed the Looma community of Western Australia and their diabetes program. It highlights the community’s involvement in improving education to what diabetes is and how diabetes affects one’s body. This is highlighted through the education of people with diabetes in understanding their condition, and developing the necessary lifestyle changes. Through weight loss, and diet and exercise programs, as well as the provision of ongoing support, encouragement and screening (Spinks, 1996).

As can be seen the impact of diabetes on the quality of life of diabetics can be substantial and requires the need for considerable lifestyle modifications and preventative measures. In order to avoid the associated complications of diabetes and an increase in the lower life expectancy being experienced by diabetics (Colagiuri, 1998).

In summary diabetes can be viewed as a complex condition, affecting peoples quality of life in different ways and at different stages in their life. Therefore to understand the full scope of diabetes, it may be quite difficult. Despite the improvements in knowledge and education many misconceptions are still evident within the community. To the different types of diabetes, their treatments and the effect on ones quality of life (Diabetes Australia, 2000).
Chapter 2

Outline the number of Aboriginal people with diabetes compared to the number of non-Indigenous people with diabetes?

Diabetes type two can be seen as a very serious medical and social problem which can be viewed as a potentially life threatening disease, if not treated properly. Diabetes can also be seen to place a large economic burden on the individual as well as society in general (McCarty, 1996).

Diabetes type two is the sixth leading cause of death and can be seen to account for 85-90% of diagnosed diabetic cases in developed countries. As well as accounting for virtually all of the diagnosed cases in developing countries (McCarty, 1996) (WHO, 1994).

The available data regarding diabetes suggest that the overall prevalence rate of diabetes amongst Aboriginal and Torres Strait Islander adults is extremely high. With between 10 and 30% of people having type two diabetes, this is at least 2-4 times that of the non-Indigenous Australians (Courten, 1997). This demonstrates why Aboriginal and Torres Strait Islander communities have been shown to possess the fourth highest rates of diabetes in the world (Cameron, 1986) (McCarty, 1996) (Zimmet, 1992).
Not only is the prevalence of diabetes in Aboriginal and Torres Strait Islander communities higher, but the average age of onset is much lower, than that of non-Indigenous Australians. According to Guest and O’Dea (1992) and McGrath (1991), the prevalence rate amongst Aboriginal and Torres Strait Islanders, for men and women varies from as low as 4.5% in Kalumburu, WA (Guest, O’Dea, 1992), to in excess of 19% in Davenport, SA (Wise, 1970).

Amongst females, there was a 9-fold difference seen with the lowest rate being 2.8% found in the Kalumburu region of WA (Guest, O’Dea, 1982) to the highest rate seen being 25.0% in Davenport of SA (Wise, 1970). In the Aboriginal and Torres Strait Islander male population a 3-fold variation can be seen, ranging from as low as 6% in Arnhemland NT (Sladden, 1996, 1997) to as high as 16.7% in Bourke NSW (Cameron, 1986).

The diagnosis of diabetes within society usually occurs around 40 years of age, with prevalence rates of diabetes being observed at younger ages and markedly increasing with the progression of age (Colagiuri 1998) (O’Dea, 1993). This is especially evident in Indigenous communities where the onset of diabetes is generally seen to occur up to a decade earlier (Zimmet, 1990).

The prevalence of diabetes amongst specified age groups is 0.1% for those aged under 15 years of age and for those who are aged 15-34 years the prevalence can be seen as (103 men and 140 women) which accounts for 2% for men and 6% for women. In the 35 years and older age group (86 men and 108 women) with the prevalence being
19% for men and 13% for women and in those aged 75 years and over the prevalence can be seen as 8.9% (Gualt, O'Dea, Rowley, McLeay, Trainedes, 1996) (National Health Survey, 1995). Compared with reported rates of 5.3% for Aboriginal and Torres Strait Islander people less than 35 years of age and 29.6% for Aboriginal and Torres Strait Islander people aged 35 years and over (O'Dea, 1993).

Similarly, Phillip's (1990) found prevalence rates amongst Aboriginal and Torres Strait Islander people to be 1.6% in men and 3.1% in women aged 25-34 years of age. In people aged over 34 years of age the prevalence rate was seen as 8.8% in men and 14.1% in women.

Research from the Australian Bureau of Statistics, highlights that in 1990 approximately 350,000 Australians had ‘diagnosed’ diabetes and an estimated 300,000 Australians had ‘undiagnosed’ diabetes. Combined, this represents 3.8% of the total population having some form of diabetes (Dalton, McCarty, Segal, Welborn, Zimmet, 1996).

There was a slight increase in those reporting ‘diagnosed’ cases of diabetes, in the Australian Bureau of Statistics 1995 survey, with about 430,700 Australians reporting diabetes at some point in their lives. These statistics account for about 2.4% of the population, women made up approximately half of all people with diabetes, overall this accounts for 52% of people (ABS, 1997).
Diabetes was also seen slightly more prevalent among women than men with prevalence rates of 2.5% in women and 2.3% in men (ABS, 1998). In contrast, diabetes was reported by 7% of Indigenous adults aged 20-44 years of age and 24% of those aged 45-54 and 17% of those aged 55 years and over.

This reporting of diabetes can be seen as being 7-8 times higher among the Aboriginal and Torres Strait Islander people than non Indigenous people aged 25-44 years and more than twice as high among those 55 years or more (Diabetes Australia, 1995) (NSW Health Department, 2000).

According to WHO Indigenous populations are classified as being of a high risk in developing diabetes on the basis of ethnicity alone (WHO, 1985). In addition, Indigenous populations, which have been influenced by western culture, tend to develop diabetes, obesity and hypertension. This is seen evident within the Australian Aboriginal population and there lies a strong suggestion that these inherent factors of western society are involved in the development of diabetes, and consequently diabetes type two being a life-style disease (Zimmet, 1992).

Consequently, diabetes type two can be asymptomatic for many years and its not until associated complications such as increasing age, ethnicity, obesity, physical inactivity, hypertension, renal disease and retinopathy, start to present themselves. That diagnosis of diabetes is given a thought, therefore it is likely that Aboriginal and Torres Strait Islanders possess one or more of these risk factors. Which leads to the exact prevalence of 'undiagnosed' diabetes not being known, often by the time
diabetes is diagnosed many people already have many of these relating complications, and could have been living with undiagnosed diabetes for a period of up to 12 years (Harris, 1993).

In one population screening program in Western Australia, 8% of the Aboriginal and Torres Strait Islander population who presented for the screening and who were not previously known to be diabetic, had undiagnosed diabetes (WHO, 1985). The prevalence of diabetes amongst the non-Indigenous population is also unclear, but a survey conducted by Servier Australian National Diabetes Study (SANDS). Using a threshold for diabetes lower than the one recommended by WHO revealed an undiagnosed diabetes prevalence of 2% (Couzos, Murray, 1999).

In addition, an Australian study conducted by Guest (1992) highlights the prevalence of undiagnosed diabetes and discovered a ratio of undiagnosed to diagnosed cases as being 0.54% for Aboriginal and Torres Strait Islanders, compared to 1.1% for non Indigenous Australians. These rates may be due to fact that often there is a long delay between the onset of diabetes and a diagnosis. And can be attributed to a combination of a lack of access to health services and the ability of health services to identify and manage complications (McCarty, 1996).

In accordance with the Australian Bureau of Statistics and the Australian Institute of Health and Welfare (1997). It has been stated that Aboriginal and Torres Strait Islander people are estimated to be 12-17 times more prone, to a death associated with diabetes than non Indigenous people (ABS & AIHW, 1997). Similarly, the annual
incidence rate of death in Aboriginal and Torres Strait Islander people from diabetes has been reported as being 150 per 100,000 persons (Couzos, Murray, 1999). These mortality rates which are associated with type two diabetes, can be viewed as being 2-3 times higher than that of rest of the population (Colagiuri, 1998) (Riley, 1995).

As stated in the National Action Plan for diabetes (NAP, 1993), it is imperative that data which outlines and qualifies the burden and prevalence of diabetes in Australia be highlighted and targeted, in order to diagnose and treat people with this disease. This data also aims to provide a baseline to measure diabetes trends over time and amongst different ethnic groups (Dalton, McCarty, Segal, Welborn, Zimmet, 1996).

Regardless of the adequate understanding that society has of diabetes and the associated complications it carries. There can only be estimations of the prevalence rates diabetes carries on a national, regional and global level. Due to the fact that only estimates of diabetes in adults, especially among Aboriginal and Torres Strait Islander people are known (Courten, 1997) (Dalton, McCarty, Segal, Welborn, Zimmet, 1996).

As only limited studies have been carried out on the prevalence rates. With majority of studies conducted having been carried out in small rural communities and not run on a national level (Welbourne, 1989, 1995).

In summary diabetes type two is predominantly the main contributing factor associated with the cause of mortality amongst Aboriginal and Torres Strait Islander people (Couzos, 1997) (Courten, 1997). Diabetes is seen to increase as one
progresses in age with women experiencing a higher prevalence rate than men.

Available data indicates that diabetes type two is 2-4 times more prevalent in Aboriginal and Torres Strait Islanders communities, with 12-17 times more deaths being attributed to diabetes (Courten, 1997).

Chapter 3

What are some of the ways colonisation has impacted on Aboriginal peoples health?

Hayden Burgess of the World Council of Indigenous people has expressed: “The earth is the seat of our spirituality, health and well being, the fountain from which our cultures and languages flourish. The earth is our historian, the keeper of events and of bones of our forefathers” (ICIHS 1998; P10).

Historically, this quote highlights that Aboriginal and Torres Strait Islander people were a society of nomadic hunters and gathers who have had a very special relationship to and ties with the land. Knowing the land not only as their primary source of food, water and life but as the central foundation of their spiritual world (Davis, George, 1998).

Aboriginal and Torres Strait Islanders peoples relationship with the land can be seen to reflect their belief in continuity across generations. As well as scared sites which hold ancestral spirits.
Aboriginal and Torres Strait Islander peoples relationship with the land, is also reflective of the many tribal secrets which hold great traditional importance for Aboriginal and Torres Strait Islander people and their culture (Davis, George, 1998).

Aboriginal and Torres Strait Islander society showed a strong intergradation of humans, animals and the essence of the mind, body and spirit. This is reflective of the holistic approach to health by Aboriginal and Torres Strait Islander people and communities, who view health not only on the basis of the absence of disease. But also fundamentally on the basis of being “not only just the physical well-being of the individual but the social, emotional and cultural well-being of the whole community. This is a whole-of-life view and a cyclical concept of life-death-life” (National Aboriginal health strategic, 1998).

Therefore Aboriginal society sees health, spirituality and culture to be inextricably linked to the land. “Aboriginal spirituality was, and is, essentially land-centred.” Thus, it is impossible to address issues pertaining to health and their management with considerable attention to all aspects of life (National Aboriginal health strategic, 1998; p9).

Colonisation can be viewed as the uncontrolled frontier, establishment of Government control, development of Government control and aftermath according to Bodley (1975).
Since colonisation of Australia by Europeans in 1788 Aboriginal people have been forced from their country, lost their independence, saw their social and religious institutions under attack from all sides (Chong, Dowd, Eckermann, Gray, Martian, Nixon, 1994).

The process of colonisation has been sustained from an early period with the intention that the Aboriginal population would die out or be assimilated into the European society (Davis, George, 1998). Australian Indigenous populations, since being disposed from their land have experienced many atrocities. These can be characterised by the loss of land, loss of hunting grounds and hence starvation, social fragmentation, war, loss of good health, loss of freedom, loss of culture and legal norms, loss of citizenship, loss of control over their lives and environment, enforced relocations onto missions and reserves, forced removal of children (Swan, 1992, Matthews, 1995).

This forced removal of Aboriginal people and their families from their own communities onto reserves had a significant effect on Aboriginal people’s health and rights and society. This outlined the total disregard the Government had towards Aboriginal people and their traditional lifestyles (Keen, 1993, Swan, 1992).

Because Aboriginal people were expected to leave their nomadic way of life and remain in one place they would have found it difficult to settle down. Many different Aboriginal groups were placed together on the one reserve, which resulted in several social problems. Because tribal groups were originally distinguished through kinship
groups and dialect, the issue of language and communication barriers as well as a conflict in cultural beliefs and health resulted (Keen, 1993).

Not only did the introduction of reserves put a great deal of pressure on the Aboriginal people socially. This dispossession was also seen as creating a health crisis, which included major nutritional deficiencies (Gracey, Sparrow, 1987). Being confined to reserves, Aboriginal people were unable to hunt and gather their own food like they were used to (McGrath, 1995).

This resulted in the elimination of the nutritious diet of lean meats, fruits and vegetables they were used to consuming. The Government in turn provided the Aboriginal people with an alternative diet consisting mainly of beef, white flour, tea, sugar, powdered milk (Gould, 1980, Keen, 1993).

Not only did “lifestyle” diseases such as malnutrition and diabetes become significantly evident, but this process was also seen to inhibit the special relationship and link Aboriginal people had with the land. Aboriginal people not only valued the land as a source for provision food, water and life but it also provided for the basis of their spiritual existence in maintaining traditional practises so felt needs could be met (Beck, 1985).

Aboriginal people were also accustom to being subjected to poor housing, inadequate water supply and other public utilities. As well as lack of employment and
dependence on public benefits, family separation and levels of stress and social disorganisation (Beck, 1985).

By removing Aboriginal peoples source of independence and the forcing of Aboriginal people to become dependent on Government and station owners for food, employment and living conditions (Beck, 1985). Now also saw Aboriginal people experiencing feelings of self-worthlessness (Chong, Dowd, Eckermann, Gray, Martian, Nixon, 1994).

As well as being forced into a sub-human existence, through restrictions on the powers of movement, work, money, and their children being taken away (Swan, 1992). These changes in social circumstances accompanied with altered patterns of disease and the process of being dispossessed as well as the loss of the hunter-gather lifestyle. Could be seen as a contributing factor to the introduction of diseases, experienced by Aboriginal populations, through the overcrowded and unhygienic living conditions in the settlements (Gray, 1991, Lee, 1996, Saggers, 1991).

This in turn, has resulted in bacterial infections such as diarrhoea, pneumonia, bronchitis, otitis media, skin infections, kidney disease, rheumatic heart disease and trachoma (Matthews, 1995). These diseases can be attributed to Aboriginal people’s low resistance and lack of hygiene on reserves, due to inadequate facilities resulting in the Aboriginal population decreasing significantly (Keen, 1993, Evans Saunders and Cronin, 1975: 96). Social diseases that would not be acquired if their social structures were not altered.
In order to comprehend the underlying poor health standards, experienced by Aboriginal and Torres Strait Islander people, in today’s society. It is vital to view these arising health standards in accordance with past historical events and atrocities which have occurred as a direct result of the colonisation process (Central Coast Area Health Service, Aboriginal and Torres Strait Islander Committee, 1997).

Prior to Australia being colonised in 1788 Aboriginal people were seen to have maintained good health qualities, possessing all the physical, social and mental well beings required for a well-balanced existence. All these components can be seen to have derived from their traditional surrounding, environment and their relationship with the land, which was also a provision of the resources for their nutritious diet.

Their diet was comprised of both protein and vegetables with adequate vitamins and minerals, furthermore, their diet was low in salt, sugar, and fat. Their lifestyle incorporated frequent exercise, to maintain optimum health status (Cowlishaw, 1978, 1981, Gray, 1991, Saggers, 1991, Swan, 1991).

Upon first contact with Aboriginal people, European settlers documented that the Aboriginal people appear to be in good health and free from disease (Reid, Trompf, 1994). We therefore gain the picture that pre-colonial Aboriginals were healthy vigorous people (White, Lampert, 1987). “There was no evidence that diabetes or other lifestyle diseases such as obesity, cardiovascular disease or hypotension occurred among Aboriginal people when they live traditionally” (O’Dea, 1992).
With the arrival of the British in the late 1700’s there was an estimated Aboriginal and Torres Strait Islander population of 750,000 people. It is believed that by the 1930’s the Aboriginal population was seen to decrease to less than 70,000, which can be attributed to introduced diseases and massacres by colonists. Apart from the devastation of disease and murder, Aboriginal people were collectively subjected to being treated paternalistically or exploited as well as neglected. The loss and removal of traditional lands and cultural contacts, have resulted in cultural dislocation, and continues to have effect on the Aboriginal people of Australia today.

Their legacy is seen as poor housing often on town margins, inadequate supplies of water and other public utilities, lack of employment, dependence on public benefits, family separation, and levels of stress and social dis-organisation. As a result, these factors associated with the colonisation process can be seen as having a profound effect on and contributing to the current poor health standards felt by Aboriginal and Torres Strait Islander people, in today’s society (Central Coast Area Health Service, Aboriginal and Torres Strait Islander Committee, 1997).

The 1994 Health survey of Indigenous Australians shows the main health problems associated amongst Aboriginal and Torres Strait Islander communities is that of drugs, alcohol and diabetes. Hollows (1982) notes that the majority of health risks associated amongst Aboriginals and Torres Strait Islanders derive frequently from their living conditions, inadequate housing, lack of fresh water and poor nutrition.
These fundamental changes that have occurred since the arrival of white man and the colonisation process, have adversely effected Aboriginal society and resulted in their loss of control and autonomy action. Much of this ill health experienced by Aboriginal people can directly be related to their living conditions, loss of relationships and links with the land, poor diet and subsequent nutritional status.

Lindheim and Syme (1983, cited in Reid & Trompf, 1994) maintain that in order for good health, both physical and mental, people need to ‘connect’ not only with each other and their biological and cultural heritage. But also with the future they need to cope with and have the opportunity to shape situations, places, and activities that effect their lives.

In summary, colonisation can be seen to have impacted negatively on Aboriginal people and their communities. Not only through the dispossesson of tradition land and culture. But also through the removal of their children and being forcibly place in missions. This lead to the loss of traditional lifestyles and diet, subjecting Aboriginal people to being prone to introduced infectious and lifestyle related diseases.
Chapter 4

Indigenous Australians and their susceptibility to diabetes

Since the early years of European colonisation in 1788, it has been evident that Aboriginal people have constitutionally been more susceptible to disease. Therefore they were seen as being less physically, socially and emotionally well and tended to be less resistant to disease (Thompson 1984).

The Government forcibly removing Aboriginal people from their traditional land and implementing them into settlements, where their traditional living patterns were disrupted, and their links to the land severed. Gave rise to Aboriginal people being exposed to poverty and the many environmental problems seen in today’s society. This process by Governments, can be seen as being fundamentally influential as well as being detrimental to Aboriginal people and subsequently their health (Cane, 1990; 1992).

This highlights the many arising health implications seen in today’s society, as well as how Aboriginal people have been deprived of their hunter and gather lifestyle. This in turn has effected the provision of the Aboriginal traditional diet, making them more dependent on missions or Government hand outs of flour, sugar, and tea or the special feeding program (Cane, 1990; 1992).
Because of this dependence on the missions, traditional food skills and practises were seen to cease and knowledge of nutritious western foods were not replaced (Matthews, 1995). Hence, leads to the environmental factors Aboriginal communities are subjected to through unclean water, poor nutrition, inadequate housing and the dreadful working conditions they have been forced to face as a result of the colonisation process (Lewis and Macleod; 1987).

These predisposing elements can be seen as contributing factors to the cause of the poor health status of Aboriginal people today. Further more, leading to ones susceptibility of being prone too infectious and lifestyle diseases such as diabetes (Harris, 1992). Evidence also suggests these elements often are exacerbated by poor nutrition, seen through insufficient food and an inadequate diet, due to the lack of availability and cost of healthy foods. As is evident, much of Aboriginal ill health can be seen to be linked and directly relates to a poor diet and subsequently a poor nutritional status (Harris, 1992, Matthews, 1995).

Many of these factors which contribute to the poor health status of Aboriginal people and communities, can be directly related to the atrocities they have had to contend with since colonisation in 1788. In addition, the history of oppression, exclusion from mainstream services, poverty, poor nutrition and the depletion of traditional beliefs as well as westernised behaviours being forced upon them (Saggers, 1991, Grey, 1991).
This has furthermore influenced Aboriginal people and communities. Predominantly, through the lifestyle changes which can be seen to contribute to diabetes, obesity, and hypertension. Leading to the epidemic proportions of diabetes which we are witnessing today in Australia (Zimmet, 1992).

Research suggests that the high susceptibility of Aboriginal and Torres Strait Islander people developing diabetes may be due to a combination of genetic susceptibility and lifestyle factors. As they have over thousands of years become highly adaptive to an environment, which has had a variation of seasonal food. Therefore this creates the susceptibility of certain populations such as Aboriginal and Torres Strait Islanders developing a ‘thrifty genotype’.

This can be seen to serves as a survival advantage in times of nutritional hardship, but now due to the changing environment constitutes as a disadvantage, in present day conditions. Where there is a focus on high energy, low fibre, processed foods, with a decline in traditional activity levels, which possibly leads to insulin resistance and obesity, within Aboriginal and Torres Strait Islander people (McCarty, 1996; Nutbeam et al., 1993).

Diabetes, obesity, hypertension and the other associated complications of diabetes in Aboriginal and Torres strait Islander communities, can be seen to be documented at 60% for those over 35 years of age (McCarty, 1996). With 75% of women and 51% of men accounting for those being overweight or obese (O’Dea, 1993).
Not only can this be viewed as serious medical problem but as also placing a larger burden on individuals and society (McCarty, 1996). The complications of diabetes can also be seen to pose many social risk factors as well as age factors, nutritional factors, obesity, physical inactivity and a degree of modernisation and poor nutrition (Riley, 1995).

Diabetes is a leading cause of premature mortality and morbidity for Aboriginal and Torres Strait Islander peoples. Which influences the associated complications and the rate at which these complications are continuing to increase dramatically. With premature mortality being viewed as the most severe complication of diabetes (Hoy, 1995, 1997, Zimmit, 1992). Not only is this prevalence much higher than the rest of society, but the onset of diabetes is also seen at a much earlier age in Indigenous populations (Zimmet, 1992).

In addition, there are many factors, which influence the risk of complications associated with diabetes amongst the Indigenous population. Often there is a large proportion of the community who are unaware they have diabetes. Therefore many remain undiagnosed for sometime, this can be the case for up to twelve years or until associated complications present themselves (Harris, 1993).

It is often this long delay between the onset and diagnosis, which contribute to these complications, as well as the poor glyceric control, and the lack of availability of services, as well as the lack of adequate education and the knowledge to manage these complications (McCarty, 1996).
Aboriginal and Torres Strait Islander people can be seen to have the fourth highest prevalence rate of diabetes in the world (McCarty, 1996). As well as experiencing higher rates of complications, than Non-Indigenous populations (NHMRC, 1997). Aboriginal and Torres Strait Islander peoples are also more widely seen to develop the onset of diabetes at a much earlier age than that of Non Indigenous populations (Couzos, Murray, 1999).

The associated risk factors resulting from diabetes include coronary artery and peripheral vascular disease, stroke, diabetic neuropathy, amputations, renal failure, vision loss, infections and pregnancy complications, these can all be seen to result in disability and a reduced life expectancy (Riley, 1995, Stern, 1988).

People with diabetes tend to be prone to higher rates of coronary artery disease compared to those without diabetes. Evidence also suggests this can be related to possessing many of the risk factors for heart disease, including obesity, hypertension, hypertriglyceridemia. As well as coronary artery disease and peripheral vascular disease, which can be linked with at least half of the deaths, associated with diabetes. (O’Dea, 1991, Welbourne, 1994) (ADA, 1989).

Up to 98 % of the population who have diabetes, will some time in the future develop some degree of vision disorders including cataracts or retinopathy (Klein, 1984). Retinopathy can be viewed as the leading cause of blindness in diabetics (Harris, 1992).
Aboriginal populations within ten years of being diagnosed with diabetes are often seen to have higher susceptibility rates of retinopathy than non-Indigenous populations (Stanton, 1985, Coworkers, 1985, Mitchell, 1980).

Another widely experienced complication of diabetes experienced by Aboriginal people is damage to the nerves resulting in neuropathy. Cigarette smoking, hypertension and hyperglycaemia can accelerate this. Neuropathy can be seen to effect the fingers, toes, legs, feet and intestinal tract. There is evidence to suggest that Aboriginal populations are much more susceptible to high rates of diabetic neuropathy and infection to that of Non Aboriginal populations (Philip’s, Colleagues, 1995).

Kidney disease is also a major cause of illness and premature death in people with diabetes, kidney disease is a progressive disease, which evolves over several years. It is associated with hypotension and the control of diabetes, but over time it can lead to renal disease, which is the second most common cause of end stage renal disease, which results in dialysis or transplantation (ANZDATA Report, 1996).

Renal disease is another major concern, resulting in major problems in Aboriginal and Torres Strait Islander People. Aboriginal and Torres Strait Islander people tend to have a considerably higher rate of end stage renal failure.
The number of Aboriginal people who develop end stage renal disease is becoming more prevalent posing grave health concerns, with the annual incidence doubling every 3-4 years, at a 26.5 times higher rate (Hoy, 1995, 1997). These figures outline that 22.3% of deaths are linked to those diagnosed with diabetes (Phillips, 1995).

In addition, these complications can be seen to influence premature mortality rates in diabetics. Exposing them to a significantly shortened life expectancy, life expectancy rates for a person over 60 years of age, can be seen to be decreased by 5 years.

Those females who have been exposed to early onset diabetes, can be seen to have a life expectancy reduced by 16 years (Knuiman, 1992).

In summary, these higher rates of complications prevalent in Aboriginal and Torres Strait Islander communities. Can be linked to findings, that Aboriginal and Torres Strait Islander people tend to be living with undiagnosed diabetes, for longer periods of time than non Aboriginal people. As well as this, they tend to be exposed more to poor glycaemic control, lack of access to health services and lack of ability and education to manage complications (McCarty, 1996).
Chapter 5

What are the elements/ components to a successful diabetes awareness program?

For a diabetes awareness program to be successful and of any benefit to its target group, there are certain elements or components required ensuring its continued success. In order to prevent diabetes, the lifestyle disease, which is so prevalent amongst Aboriginal and Torres Strait Islander peoples and communities. It is essential that the associated high rates of risk factors seen within Indigenous communities are highlighted, addressed and remedied. In order of doing so, it is imperative to elevate these associated risk problems, through the implementation of effective diabetes awareness programs. With the aim of also achieving improvements in Aboriginal and Torres Strait Islander peoples access to primary health care services.

In order for the continued success of a diabetes awareness program certain elements and components need to be addressed, in particular:

- There needs to be more education and employment opportunities for Aboriginal people

- There also is a need for more health education, for non-Indigenous as well as Indigenous people, in order to outline how the social disadvantage has left them
more susceptible to this disease, which is not seen as prominent in the rest of Australia’s population

- Cross cultural research and education is also in need to improve quality and accessibility to services for Aboriginal Australians

- Education and research in order to highlight the best possible practises associated with improved health status (Matthews, 1995).

For a diabetes intervention programs to be of any benefit or success, within Indigenous communities, there needs to be preventative measures, early intervention, diagnosis, and effective management, through treatment and rehabilitation (A&TSI health, 1999; Mooney, 1996; Warchivker, 1996; McDermot and Beaver, 1996; Scrimgeour, 1996).

The National diabetes strategy and implementation plan outlines the necessary principles and strategies vital in addressing successful components and elements in diabetes awareness and intervention programs. As well as addressing any preventive or management issues linked to diabetes in Aboriginal and Torres Strait Islander communities.

For a successful implementation program, components should incorporate:

1 on going routine clinical care
2 A part of a holistic health approach

3 culturally appropriate techniques and practises

4 Based on the needs of the community, with ongoing community approval and involvement on health requirements

5 Regular screening for complications and appropriate treatment in the detection of complications

6 appropriate diabetes education

7 Dietary assessment and education (Colagiuri, 1998).

Research reveals that intervention programs involving Aboriginal and Torres Strait Islander populations need to include consultation with local Aboriginal or Torres Strait Islander communities, in order to be successful. This is a vital component in establishing a partnership, which incorporates both collaboration and success of programs. Community involvement and control of the intervention programs helps with the development and management of programs and ensures that the communities best interest is at heart, while also increasing community acceptance of the programs (CHETRE, 1999).
For continual success of an intervention program, it must also incorporate:

1. Prevention of risk factors in healthy people developing diabetes as well as awareness to the general population

2. Interventions of risk reduction and identification

3. Identification of individuals who are seen to be more prone to diabetes

4. Research methods and preventive interventions to target 'at risk' populations

5. Community awareness of associated signs and symptoms


In addition an intervention program in order to have ongoing success, needs collaboration between Commonwealth, State and Local Governments as well as health professionals. There is also need for effective identification, promotion and monitoring of practices associated with the continuum of health care in the area of diabetes.

So that there is framework for the establishment of culturally appropriate strategies, which will aid and contribute to improved intersectional action, communication,
Commonwealth funded projects and regional plans, which focus on research into disease and risk management. As well as development in methods for the implementation of best practises and effective service delivery.

For the on going success of a diabetes awareness and intervention program there needs to be Government support of the program, on a number of levels. The Government on a Commonwealth level can be seen committed to surveillance and the monitoring of socio-demographic data. As well as the over seeing of the administering and monitoring of Medicare payments and policies changes, in regards to rebates in screening programs (Colagiuri, 1998).

This can be associated with the prevention of diabetes, and the provision of independent advice in regards to health issues and the funding of health and medical research. While also providing provisions of information systems to monitor progress and fund national diabetes awareness and prevention programs (Colagiuri, 1998).

The State and Territory Governments can also be seen to play a role in the success of Intervention programs through the administering and allocating of funding to regional health services for acute care (public hospitals), community based services (health awareness and early intervention programs), Health protection (Disease monitoring and intervention). While also taking an increased role in local needs assessment, health surveillance, health promotion and disease prevention (Colagiuri, 1998).
The local Government can also be seen to add to the success of intervention programs by its contributions to the community's health requirements. Through local schemes aimed at health promotion and disease prevention and intervention. As well as waste disposal services of needles and syringes, aimed mainly at people in the community with diabetes (Colagiuri, 1998).

Hence, this influences and highlights the strategies for the prevention, monitoring and control of diabetes in Australia, which have been established by the World Health Authority (Who, 1994). However before these programs or strategies are put into practise, it is essential that health professionals know the full extent of the number of people affected by diabetes and the number who are at risk developing diabetes in the future.

Furthermore, intervention and prevention strategies relating to adult lifestyle diseases such as diabetes should incorporate certain elements within their programs, in order to have continued success. These should pertain to the promotion of optimum nutrition, weight control programs, exercise programs and education in the area of spiritual, mental and physical well being. As well as identifying the ‘high risk’ communities, so that they can be appropriately targeted and attempted to be rectified (Van Buynder, 1993; Hoy, 1996).
The successful prevention of diabetes incorporates three basic levels

1 primary prevention

2 secondary prevention

3 tertiary prevention

Primary prevention’s main aim is to prevent diabetes from becoming prominent in susceptible individuals or populations, especially Aboriginal and Torres Strait islanders who possess the fourth highest susceptibility rate of diabetes in the world (McCarty, 1996; Who, 1994).

Primary prevention also highlights and addresses issues of employment, education, transport, food storage and costs. Which are an essential element in the combating and the implementation of healthy lifestyle and risk reduction awareness programs (Segal and Dalton, 1996).

Primary prevention focuses largely on the modification of environmental and behavioural risk factors such as obesity, inactivity, and poor diet. Which is increasingly evident amongst Aboriginal and Torres Strait Islander populations as their diet continues to become more westernised (McCarty, 1996; Nutbeam et al, 1993) Primary prevention also aims to rectify and remedy current health practises individuals possess, before the onset of any symptoms of diabetes presenting themselves (Who, 1994; Zimmet, 1992).
Primary prevention addresses the importance of early detection of diabetes, while also aiming to promote and encourage a healthy living approach through identification of the underlying social and environmental factors which effect Indigenous communities and their access to health services (Colagiuri, 1998).

Primary prevention can also be seen to focus on health promotion, and the increasing of awareness, through the implementation of preventative measures to reduce and prevent the prevalence of common risk factors. Such as obesity, exercise, and the avoidance of a high fat diet, instead encouraging a high fibre diet (Zimmet, 1992).

Improvements through implementation of preventive initiatives regarding the socio-economic status of Aboriginal and Torres Strait Islander people and their health. Have been described as “necessary precursors to reducing the prevalence of type 2 diabetes” (Nutbeam, 1993, p. 35).

Secondary prevention encompasses the detection of individuals, who present with potential signs and symptoms of diabetes. It aims to combat promptly the treatment and control of this disease (Couzos, 1999; WHO, 1994; Zimmet, 1991).

Secondary prevention focuses on preventative measures, such as screening programs, establishment of local registers, educational and reinforcement strategies. As well as the correction of other associated risk factors, through improvement of glycemic control (Couzos, 1999).
Secondary prevention can be seen to play a vital role in highlighting the prevalence of these risk factors amongst Aboriginal and Torres Strait Islanders, while also implementing strategies to help with reducing cigarette smoking, dyslipidaemia, hypertension and obesity. Secondary prevention can be seen to help influence the elimination of associated symptoms and aim to reduce any long-term complications. The establishment of local registers plays a role in the identification of individuals who are potentially susceptible to diabetes and impaired glucose intolerance, so that these factors can be controlled or reversed (WHO, 1994).

Tertiary prevention incorporates programs aimed at the prevention of complications and disability in people who have been diagnosed with diabetes (WHO, 1994). These programs are aimed at targeting the associated complications, through routine screening of retinopathy in order to prevent premature blindness, especially within Indigenous populations who experience higher rates of retinopathy than non-Indigenous Australians after 10 years of diagnosis (Coworkers, Stanton, 1985).

Tertiary prevention also addresses foot care programs to eliminate the prevalence of chronic ulceration and amputations as well as screening for elevated blood pressure. And urinary microalbumin screening to prevent or delay the onset of renal failure. Preventive screening is also seen imperative to lessen the risks of cardiovascular disease (Couzos, 1999; Javitt, 1989; Songer, 1992; Sussman, 1992; WHO, 1994).
In order to improve the quality of diabetes care in Australia, it is imperative that intervention programs are implemented. So as to lessen the impact and extent of the problem of diabetes, and lessen the burden of ill health as well as the associated costs to society (Couzos, 1999; Dalton, McCarty, Segal, Welborn, Zimmet, 1996).

In response to these concerns, intervention programs have been coordinated on a national basis, in order of improving quality and accessibility of diabetes care. While also reducing the complications, through the prevention and early detection of diabetes (CHETRE, ISERU, 1999).

Therefore, there lies a need to highlight the relevant aspects and components to ensure the successfulness of an intervention and prevention program. In order of outlining these successful elements and components associated with diabetes awareness, there needs to be individual and community input.

This can be seen evident through prevention programs such as:

**The National diabetes visual impairment prevention program**

The visual impairment prevention programs main aim is to improve health-related quality of life, and reduce complications and premature mortality in people with type II diabetes. Diabetic retinopathy is the commonest cause of visual loss in adults under the age of 60 years. Retinopathy places all people with diabetes at risk of blindness. Therefore the objective of this prevention program is to reduce visual impairment and new blindness in people with diabetes.
The reduction of visual loss is dependent on two variables, screening and treatment of retinopathy through laser therapy. Routine screening is mandatory, since retinopathy is symptomless in the early stages of onset, and more likely to be treatable. Therefore making the screening process an integral factor in the prevention of visual loss (SIGN 3, 1996).

The office of Aboriginal and Torres Strait Islander Health Services indicates the concern that Indigenous communities have poorer access to and a lower use of mainstream services, which can be evident in there higher susceptibility of retinopathy. With almost half of the Aboriginal people having retinopathy at diagnosis and overall one third have retinopathy and in almost half it is vision threatening (Markey, 1996).

Therefore Involvement of representatives of Aboriginal and Torres Strait Islanders and Commonwealth and State organisations is essential in the planning of any program for Indigenous Australians in order of making it a successful preventative program (Colagiuri, 1998).

The National diabetes cardiovascular disease prevention programs
This prevention programs main aim is to reduce the prevalence of people developing cardiovascular disease. While also aiming to improve the outcome and quality of life for those diabetics who are diagnosed with cardiovascular disease (Colagiuri, 1998).
Cardiovascular disease is the most common cause of mortality in people with diabetes. There are many associated risk factors associated with cardiovascular disease, which include smoking, hypotension and obesity.

Cardiovascular disease effects those with diabetes, at younger age than those without diabetes. As well as subjecting them to a worse outcome, after a cardiovascular event, than that of their counter parts, who are not diabetic. The risk of cardiovascular disease can be seen to be greater, in female diabetics than in males and with a risk factor of 2.7 for women and 1.7 for men (Colagiuri, 1998).

Cardiovascular disease can be seen to be highest in lower socio-economic groups. This disease is a particular problem amongst Indigenous Australians and significantly decreases their life span (Kannel & McGee, 1979).

Prevention programs are required to regularly assess and screen individuals with diabetes. So that, at risk groups can be targeted and educated on the need for preventive screening, in order to decrease associated risk factors associated with cardiovascular disease (Colagiuri, 1998).

The National diabetic foot disease management program

This prevention programs main aim is to improve health related quality of life. Through the reduction of diabetes complications and related premature mortality in those with type two diabetes. This programs main focus lies with the numbers of
people with diabetes, who consequently develop foot ulcers and require foot amputations (Colagiuri, 1998).

Diabetic foot problems account for the most common reason for hospitalisation of people with diabetes (Young, 1993). Subjecting diabetics to being 15 times more prone to amputations of the feet.

As a direct result, these amputations can be linked to the increased number of lower extremity ulcers. With consequently 50% of all amputations being directly related to diabetes (Most & Sinnock, 1983).

Preventative programs regarding diabetics and adequate foot care need certain components to ensure their ongoing success. There needs to be sufficient health care professionals to screen for potential risk factors, associated with diabetic foot disease. Another imperative factor for the ongoing success of the prevention program is adequate resourcing and availability of screening materials to ensure that the needs of the programs are being met.

The National early detection of type II diabetes program
The main goal of this prevention program is to achieve through early diagnosis of diabetes an improved health status for diabetics. Ensuring a better quality of life through the reduction of associated complications and decreasing the susceptibility of premature mortality.
Many people who are diagnosed with type II diabetes present with one or more complications at diagnosis. The main reasoning behind this is because often they remain undiagnosed for several years. The potential risk factors associated with type II diabetes is increasing age, ethnicity, obesity, physical inactivity, family history of diabetes, smoking (Colagiuri, 1998).

Therefore the prevention programs aim is to identify individuals at risk or who present with symptoms of diabetes. Through the implementation of a screening initiative for these at risk individuals, so that measurements such as venous plasma glucose, urine glucose, HbA1c and oral glucose tolerance levels can be determined, so as to determine whether further testing is required (ADS, 1997) (WHO, 1994; ADA, 1997).

The National type two diabetes prevention program

The main goal associated with this prevention program is to prevent or delay the development of type II diabetes. It aims to prevent or delay the development of risk factors for type II diabetes in healthy populations. By reversing or reducing modifiable risks in individuals or communities deemed high risk of type II diabetes (Colagiuri, 1998).

Therefore there needs to be increased community awareness of the risk factors for type II diabetes as well as awareness to the relationship between lifestyle factors and type II diabetes. This prevention program has addressed these issues successfully through the implementation of educational awareness to the importance of performing
regular physical activity, achieving a healthy weight, and eating a healthy diet. As well as prevention strategies which address environmental issues such as the food supply and the opportunity for physical activity (Colagiuri, 1998).

As can be seen diabetes awareness and prevention programs highlight the possible solutions to diabetes, as well as the effect it has on ones quality of life and life expectancy. They also aim to optimise and improving the provisions of patient diagnosis and the long-term outcome of living with diabetes. While at the same time trying to minimising cost so programs can be better utilised and more services provided.

Through the provision of prevention programs education can be seen as a focal point and an integral component of good diabetes management. Education can also help the individual to become more knowledgeable about their disease and how to manage their condition adequately (Colagirui, 1998).

In summary research, suggests that the most successful preventative programs are those which are tailored to self-care management needs, of individuals and their community. As well as those which make the individual active in their own care. It is also an essential component that individuals receive knowledge to adequately monitor glucose levels, and adhere more readily to prescribed diets.

As well as maintaining exercise programs and increasing the individuals understanding of the associated symptoms of hyper-and hypoglycaemia.
As well as providing the individual with the knowledge, in how to monitor peripheral sensational change. These prevention programs can be seen as an empowerment tool for individuals and consequently motivate them to learn more about their condition. Therefore the success of diabetes prevention programs rely on the effectiveness of the programs methods and the materials used (Colagiuri, 1998).
Results

Research conducted by the Australian Bureau of Statistics (1998) defines diabetes mellitus as a chronic condition resulting from deficiencies in the production or use of insulin. This is the hormone, which enables the body to absorb glucose and other nutrients.

On the other hand diabetes mellitus is described as not one disease, but a collection of closely related diseases. This classification is based upon differences in aetiology, natural history and clinical presentation of the disorder (Harris, 1992; Zimmet, 1992).

The Australian Bureau of statistics has detailed that in 1998, 2.4% of Australians reported having diabetes at some point in their lives. In contrast, Courten (1997) states that the overall prevalence of diabetes is unknown due to small-scale studies and people remaining undiagnosed. However, Courten estimates that the rate of people who have diabetes is 2 to 4 times less than the Aboriginal and Torres Strait Islander people. In Australia diabetes currently affects approximately 900 000 people and is an epidemic which is continuing to increase. It is estimated that by the year 2010, 1.15 million Australians will have developed this disease (McCarty, 1996).

It is apparent throughout the critical examination of research material that diabetes does especially effect the life expectancy of Indigenous Australians. All research material focused on throughout this study agrees that Aboriginal and Torres Strait Islander people generally
have a higher prevalence rate of diabetes and that the prevalence of diabetes can be seen to increase as one progresses with age.

Research has suggested that the reason that higher rates of diabetes is seen amongst Aboriginal and Torres Strait Islander communities is because of a combination of genetic susceptibility and lifestyle factors. When looking at the amount of Indigenous people who have diabetes, there appears to be a discrepancy in the representation of figures.

Colagiuri, (1998), has published a document highlighting the susceptibility of diabetes as being 7.4% to 15.6% within the Aboriginal and Torres Strait Islander community. In contrast, Courten (1997) indicates that results of their studies found 10% to 30% of Indigenous Australians are affected with diabetes. As compared to Couzos (1999), who states that 4.5% to 19% of Indigenous people, are seen to possess diabetes. It is therefore hard to arrive at a precise baseline measurement of the number of Indigenous people who have diabetes.

In addition, women can be seen to account for approximately half of all people with diabetes, possessing an overall percentage of 52%. Therefore diabetes can be seen slightly more prevalent among women with 2.5% being affected, where as men can be seen to have a prevalence rate of 2.3% (ABS, 1998).

Premature mortality can be seen as one of the most severe complication diabetes can have on the life expectancy of Indigenous Australians. With Aboriginal and Torres Strait Islander people experiencing mortality rates 2-3 times higher than the rest of the population
(Colagirui, 1998; Riley, 1995). This mortality rate can be seen as being 12-17 times more prevalent amongst Aboriginal and Torres Strait islander people than non-Indigenous Australians (ABS, 1997; AIHW, 1997). This premature mortality rate can also be attributed to significantly shortening the life expectancy of diabetic individuals, by 5 years for males aged over 60 years of age and reduce the life expectancy up to 16 years for females with early onset diabetes (Knuiman, 1992).

Research also indicates that it is thought that Aboriginal and Torres Strait Islander people experience high rates of complications related to diabetes including renal disease, retinopathy, and neuropathy (NHMRC, 1997). Often these associated high rates can be attributed to the long delay between the onset of diabetes and diagnosis, the poor glycaemic control, lack of access to health services, and lack of access to services to identify and manage complications (McCarty, 1996).

Research conducted by Stanton (1985), highlights that not only do Aboriginal and Torres Strait Islanders, with diabetes present at an earlier age than non-Indigenous Australians But that they are also seen to possess more diabetic related complications, and higher rates of retinopathy within ten years of diagnosis then non- Indigenous Australians. These complications are seen to impact negatively on diabetics reducing their life expectancy as well as posing an enormous health cost for virtually every society (Riley, 1995). It is also quite likely that the highest prevalence of diabetes in Australian communities is found in the people least likely to be economically and culturally prepared to meet the burden (Welborn, 1995).
In summary research material shows diabetes to be a continuing concern, with it increasing to epidemic proportions. Research highlights that Aboriginal Torres Strait Islander people have a greater susceptibility to higher prevalence rates of diabetes than non-Indigenous Australians, as well as being diagnosed with diabetes at an increasingly younger age.

Research has also shown that Aboriginal and Torres Strait Islander people experience more related complications associated with diabetes. This in turn can be seen to contribute to the lower life expectancy and higher mortality rate at which diabetics experience. A possible explanation for the high associated mortality rates is that there are usually long periods of time between the diagnosis and treatment of diabetes.
Discussion

When critically examining the research undertaken, it becomes apparent that there are some factors, which may constitute limitations. A major limitation this study experiences is the availability of accurate up to date statistical data, of the prevalence rates of diabetes, that exist within Australian and Indigenous populations. As the majority of studies, where research has been carried out have only been done on a small scale and not on a national basis. Another limitation experienced during this study was that a large proportion of people, are unaware that they possess diabetes, therefore this creates the susceptibility of a misrepresentation of statistical data.

Due to the small scale of this study and the restrictions that provided boundaries for the amount and depth of research that could be undertaken, this study looked at diabetes effect on the life expectancy of the Indigenous Australian population as a whole. For more detailed results it would be beneficial to compare and contrast the needs, experiences and outcomes to other Indigenous populations with similar life experiences in future research.

Having considered the arising implications, the information uncovered throughout this study, highlights the need for more research on how to best combat the impact diabetes has on the life expectancy of Indigenous Australians. This is evident through the limited availability of preventative measures and the lack of research into the evaluation of these suggested practises.
Therefore there lies the need for improvements in the area of screening, diagnosis, and prevention. In order to educated and generate knowledge of the importance of healthy lifestyle practices.

As well as to the implications of the possible associated complications of diabetes if not effectively controlled and monitored. There is also scope for National awareness to the ramifications of diabetes and its effect on the life expectancy on Indigenous Australians.
**Conclusion**

Diabetes is a condition in which the glucose contained in the bloodstream is too high, due to the body not being able to use it properly. This is because the body’s method of converting glucose into energy is not working as it should (Diabetes Australia, 2000). Diabetes is best controlled by a combination of diet and exercise, if these two methods are not successful then medication may be necessary (Diabetes Australia, 2000).

Aboriginal and Torres Strait Islander people have the fourth highest rate of diabetes in the world (Cameron, 1986). This can be seen as having a negative impact on ones life expectancy as it is linked to a premature mortality rate and increased susceptibility to associated complications.

Research highlights that within the Aboriginal and Torres Strait Islander community there is a higher susceptibility of diabetes which increases with the progression of age (O’Dea, 1993; Phillip’s, 1990). This can be attributed to colonisation and the introduction of a westernised diet as well as the potential of a ‘thrifty genotype’ (O’Dea, 1993). These factors can also lead to the susceptibility of being prone to diabetes and the development of associated risk factors such as obesity, hypertension, renal disease, and retinopathy and physical inactivity (O’Dea, 1991a, b).

The complications of diabetes can be seen to have a negative impact on the quality of life as well as the life expectancy of diabetics (Colagiuri, 1998) (McCarty, 1996). In order to
combat the high prevalence of diabetes amongst Aboriginal and Torres Strait Islander communities, there need to be culturally appropriate preventative programs put into place. These prevention programs need certain successful components including preventative measures, early intervention, diagnosis as well as education on the effective management and treatment of diabetes. As well as community approval, acceptance and participation of the preventative programs (A&TSI health, 1999; Mooney, 1996; Warchivker, 1996; McDermot and Beaver, 1996; Scrimgeour, 1996).
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