FOETAL ALCOHOL SPECTRUM DISORDER: Mediating Interventions through Pregnant Women's Responses and Choices

Johanna de Waal

Thesis presented in partial fulfilment of the requirements for the degree of MPhil (Social Science Methods) at Stellenbosch University

Supervisor: Mr Jan Vorster (University of Stellenbosch)

Co-supervisor: Dr Sandra Marais (SA Medical Research Council)

March 2010

Declaration

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the owner of the copyright thereof (unless to the extent explicitly otherwise stated) and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Date: 10 February 2010

Abstract

The study examines the implementation of an intervention aimed at stopping alcohol consumption during pregnancy in order to decrease Foetal Alcohol Spectrum Disorder (FASD) and how this affected changes in alcohol consumption. FASD is a growing concern in South Africa where the prevalence rate is almost 12/100 at some schools in the Western Cape; the highest reported FASD rate in the world. FASD is caused by alcohol consumption during pregnancy and it is an irreversible mental and physical disability in children. FASD is preventable through abstinence from alcohol consumption during pregnancy.

The intervention study (referred to as the Ceres Intervention Study), utilised a cluster-randomised trial design, with a control and intervention group, where the control arm of the study received basic screening and information on FASD, while the intervention arm of the study received a more comprehensive intervention, consisting of a variety of screening and counselling techniques. The study took place during 2007/2008 in the Witzenberg sub-district in Ceres in the Western Cape Province of South Africa. The Study used research techniques combined with therapeutic methods and techniques to mediate behaviour change in pregnant women.

From the Ceres Intervention Study it was found that 60% of pregnant women changed their drinking behaviour, which led to questions around how this behaviour change took place. The main aim of this study therefore is to examine how pregnant women changed their drinking behaviour during this intervention and also what facilitated the change that was observed. In order to examine the behaviour change, data from the intervention arm and control arm of the study was analysed and a profile of the women was developed. A focus on the intervention arm of the study resulted in distinguishing further between two sub-groups within the intervention arm, namely, the change and no-change groups.

Mainly quantitative data was obtained with the use of various tools, however from the comments and experiences of participants, qualitative data could be used as complementary to quantitative data to provide more clarity as to how behaviour change was facilitated in the study.

Results from the study suggest that there is a dialectical interplay between client and counsellor which facilitate generative mechanisms that may lead to behaviour change.

Opsomming

Hierdie studie lig die implementering van 'n intervensie toe met die doel om die gebruik van alkohol gedurende swangerskap te stop teneinde Fetale Alkohol Spektrum Afwyking (FASD) te verminder en die gepaardgaande gedragsverandering by swanger vroue te ondersoek. FASD is 'n groeiende probleem in Suid-Afrika waar die voorkoms van FASD by 12/100 kinders by sommige skole in die Weskaap gerapporteer is. FASD word veroorsaak deur alkohol-gebruik tydens swangerskap en kan permanente verstandelike en fisiese gestremdheid by kinders veroorsaak. FASD kan voorkom word deur geen alkohol tydens swangerskap te gebruik nie. Die intervensie (of die Ceres Intervensie-studie) maak gebruik van 'n kliniese ontwerp met 'n kontrole en 'n intervensie groep, waar die kontrole arm van die studie basiese assessering asook inligting oor FASD ontvang het, terwyl die intervensie arm 'n meer omvattende intervensie bestaande uit 'n verskeidenheid assesserings sessies en beradingstegnieke ontvang het. Die studie is gedurende 2007/2008 in die Witzenberg sub-distrik in Ceres in die Weskaap, Suid-Afrika, geïmplementeer. Die studie maak gebruik van navorsingstegnieke gekombineer met wetenskaplik gebaseerde intervensie metodes en tegnieke om gedragsverandering by swanger vroue te onderhandel.

In die Ceres Intervensie-studie is bevind dat 60% van die swanger vroue hul alkohol-gebruik gedrag verander het. Dit het aanleiding gegee tot vrae rondom hoe hierdie gedragsverandering plaasgevind het. Die hoofdoel van hierdie studie is dus om te kyk na hoe swanger vroue hul alkohol-gebruik verander het gedurende die intervensie asook wat hierdie verandering in gedrag moontlik gemaak het. Om hierdie gedragsverandering te ondersoek is data van die intervensie arm en kontrole arm ontleed en is 'n profiel van die vroue saamgestel. Die fokus op die intervensie arm van die studie het aanleiding gegee tot die verdere onderskeiding tussen twee sub-groepe binne die intervensie arm, naamlik, die groep wat verander het en die groep wat nie verander het nie.

Kwantitatiewe data is hoofsaaklik ingesamel, alhoewel kwalitatiewe data wat verkry is uit opmerkings en ondervindings van deelnemers as aanvullende inligting tot die kwantitatiewe data gebruik is teneinde die gedragsverandering wat plaasgevind het toe te lig. Bevindinge uit die studie dui op 'n dialektiese verhouding tussen klient en berader wat skeppende meganismes teweeg bring en sodoende moontlike gedragsverandering bevorder.

Acknowledgements

I wish to thank my supervisor, Mr Jan Vorster, for his help, guidance and encouragement in the completion of this thesis. My thanks also go to Dr Sandra Marais, co-supervisor, for her support and input. Thank you also to Me Esmè Jordaan, independent statistician to the Medical Research Council, for her contribution. The Foundation for Alcohol Related Research and the Medical Research Council are also hereby acknowledged for the use of data.

Many thanks also to the people at the Department of Sociology and Social Anthropology of the University of Stellenbosch for their support.

Finally, to my children, family and friends; a special thank you. Without their love and wonderful support, it would have been a lonely endeavour.

Contents

List of tables

List of figures

Glossary of terms

AA	- Alcoholics Anonymous
AAST	- Abuse Assessment Screening Test
AEP	- Alcohol-Exposed Pregnancy
AUDIT -	- Alcohol Use Disorders Identification Test
ARQ	- Alcohol Record Questionnaire
ARBD	- Alcohol-Related Birth Defects
ARND	- Alcohol-Related Neurodevelopmental Disorder
BAC	- Blood Alcohol Concentration
BMI	- Brief motivational interviewing
BI	- Brief interventions
BMAST	- Brief Michigan Alcohol Screening Test
BQ	- Bonding Questionnaire
CAGE	- Cut, Annoyance, Guilt, Eye-opener
CBT	- Cognitive-Behaviour Coping Skills Treatment
CCSA	- Canadian Centre on Substance Abuse
CDC	- Centre for Disease Control and Prevention
CG	- Control Group
CIS	- Ceres Intervention Study
CMO	- Context-mechanism-outcome pattern configurations
CAQDA	- Computer Assisted Qualitative Data Analysis
df	- Degrees of freedom
DSD	- Department of Social Development
EPDT	- Edinburgh Post-natal Depression Test
FARR	- Foundation for Alcohol Related Research
FAS	- Foetal Alcohol Syndrome
FASD	- Foetal Alcohol Spectrum Disorder
FRAMES	- Feedback, responsibility, advice, menu, empathy, self-efficacy
f	- Frequency
HIV	- Human Immuno-deficiency Virus
IG	- Intervention Group
ICD 10	- International Statistical Classification of Diseases and Related Health Problems 10th Revision
IE	- Intervention Effect
MAST	- Michigan Alcohol Screening Test

MCWH	- Maternal, Child and Women's Health
MET	- Motivational Enhancement Treatment
MRC	- Medical Research Council
NGO	- Non Governmental Organisations
OR	- Odds Ratio
PAQ	- Personal Assessment Questionnaire
PFAS	- Partial Foetal Alcohol Syndrome
PHC	- Primary Health Care
p	- Probability level
SA	- South Africa
SAS	- Statistical Analysis Software
SCOPES	- Community-Oriented Programmes Environment Scale
SBI	- Screening and Brief Interventions
SD	- Standard Deviation
SES	- Socio-Economic Status
STI	- Sexually Transmitted Infection
T-ACE	- Tolerance, annoyance, cut, eye-opener
TB	- Tuberculosis
t-test	- Statistic of mean difference
TSF	- Twelve Step Facilitation
TWEAK	- Tolerance, worried, eye-opener, amnesia, (c)kut
UK	- United Kingdom
USA	- United States of America

Chapter 1

Introduction and background

1.1 Introduction

I am a social worker and passionate about my career. For close to thirty-four years I have seen the dark side of life, the hardships and trauma of families destroyed by alcohol abuse, but even more tragically, the effects of alcohol on those children whose mothers consumed alcohol during pregnancy. During the early nineteen-seventies and eighties I removed many children who suffered from neglect and abuse due to their parents' drinking. At the time Foetal Alcohol Syndrome (FAS) was in its early stages of clinical recognition by the medical profession in South Africa and in the world. As a social worker I came to know the small shrivelled-up children with their flat "old-man's" faces and non-stop crying, their unspoken agony and empty eyes. To add to their misery, many of these children suffered hunger and malnutrition, Tuberculosis and constant illness. More than thirty years later, the debilitating effects of Foetal Alcohol Syndrome are still prevalent in large sectors of the South African society and not much has been done to stop this irreversible condition.

Foetal Alcohol Syndrome is caused by maternal alcohol consumption during pregnancy. Abstinence from alcohol during pregnancy is the only way to prevent FAS, which is the largest preventable cause of mental retardation in children (McKinstry, 2005:1097). South Africa has recorded some of the highest prevalence rates for FAS in the world. Different theories exist on this high prevalence rate. Some blame historical factors such as the "dop" or tot system introduced by colonialists, and the history of alcohol consumption and legislation during the "apartheid" era (McKinstry, 2005:1097-1099) contributed to the fact that FAS and Foetal Alcohol Spectrum Disorder (FASD) has become a serious public health problem in South Africa (Viljoen, Craig, Hymbaugh, Boyle & Blount, 2001).

It was against this background that I became involved in May 2006 in a FAS intervention study in Ceres of the SA Medical Research Council (MRC) and the Foundation for Alcohol Related Research (FARR). The study had to be developed

from scratch as we could not find any reference to previous FASD community intervention studies in South Africa which included a research as well as a counselling component based on a cluster-randomised trial (Chapter 3).

My primary role in the Ceres Intervention Study was to manage and conduct recruitment and counselling activities. These activities ran concurrently. To undertake a research study while engaging in therapeutic counselling at the same time takes extreme commitment to the pregnant women in particular and thereafter to the research objectives. However, what was most important in this study is the rapport that was built with the pregnant women. Central to the relationship between the counsellor and the pregnant woman was a non-judgemental attitude and unconditional acceptance of her and her situation. An empathetic approach could enhance her belief in herself and that she can change her behaviour. A trusting and empathetic relationship is believed to contribute to behaviour change (Walsh Dotson, Henderson & Magraw, 2003:759). The complex nature of changing addictive behaviour and the spectrum of issues that requires professional input makes it important for counsellors to be properly trained in behaviour change methods and techniques.

1.2 The Ceres Intervention Study

There is a growing need in South Africa for interventions that can address addictive behaviours at micro levels in community settings. The aim of the Ceres Intervention Study was to test the effect of brief interventions (BI) on the drinking behaviour of pregnant women. A cluster-randomised trial was used where eight clinics in the Ceres Witzenberg sub-district were randomised into two clusters, with four clinics to each cluster. One cluster was assigned as the control group (CG) and the other one as the intervention group (IG) (Chapter 3). Two interventions were implemented: the CG who received two sessions (assessment, screening and take-home brochures) while the IG received four sessions of information-sharing, brief advice and motivational counselling and continuous monitoring. The outcome of the study showed that 60% of the pregnant women in the IG reduced their drinking while 41% of the women in the CG changed their drinking behaviour.

While the results of the study by the MRC and FARR showed that brief interventions definitely had an effect in changing the drinking behaviour of a significant proportion of pregnant women, an interesting question is how and under what conditions did

behaviour change occur. By utilising data from the broader Ceres Intervention Study, my thesis further investigates the question of how behaviour change took place. In order to find answers to this question, primarily data from the intervention group were analysed because more data were available on this group. Two groups were identified in the intervention arm of the study, the “change group” where 60% of the women changed their behaviour and the “no-change group” where 40% of women did not change their drinking behaviour. I will analyse and compare the profiles of the women in the two groups, apply a conceptual framework to analyse programme implementation and examine techniques and methods used in the intervention process. While quantitative data provided valuable information, it did not on its own answer the question on how behaviour change was facilitated in the Ceres Intervention Study. In addition, qualitative data derived from interview schedules were used to develop a deeper understanding of how behaviour change came about. The study design and methods are discussed in more detail in Chapter 3.

Most of the literature studied on behaviour change and brief interventions does not provide information on how behaviour change takes place. The studies reviewed were mainly undertaken in primary health care or emergency room settings which differ substantially from the community-based setting in Ceres. The results obtained in the Ceres Intervention Study reflect a much higher rate in behaviour change than observed in other studies. Very few of the studies on brief interventions and brief motivational interviewing explain how behaviour change is arrived at.

As will be discussed in Chapter 2, changing alcohol drinking behaviour is not always easy due to the complex life context and interplay of social, physical and emotional factors that cause barriers to abstinence in the case of some women (Walsh Dotson, Henderson & Magraw, 2003:757). Mechanisms of behaviour change generally refer to the underlying, basic psychological, social, and neurophysiologic processes that drive therapeutic change. Grancavage and Norcross (1990:372-378) identified 35 therapeutic factors common to psychotherapy and grouped them into five broader categories: client characteristics, therapist qualities, change processes, treatment structures, and relationship elements. More recently, Lambert and Ogles (2004:139-193) divided common factors into support, learning and action factors.

Over the past decade a vast array of behaviour change models developed, especially in the field of HIV/AIDS (Rosenstock, Strecher & Becker, 1994:5-24). For the Ceres Intervention Study, behaviour change theories that developed in the addictions field

were mainly used. These include brief intervention (BI) and brief motivational interviewing (BMI). BI methods derive from Social Learning Theory, which is based on the extensively-researched idea that feelings of high self-efficacy are very important and "…that it is in the world of doing and watching others making changes that people are successful; not just in the world of talking about doing, as occurs in the consulting room" (Bandura, cited in Rollnick, Mason & Butler, 2005:92).

BMI is a guiding counselling approach and was developed over a ten year period. The method is based on the Stages of Change Model (DiClemente & Prochaska 1998) and the patient-centred counselling approach (Stewart, cited in Rollnick, Mason and Butler, 2005:11). The technique uses active listening, simple open questions and reflective listening (Rollnick, Mason & Butler, 2005:33). These methods are discussed in more detail in Chapter 2.

1.3 Research aims and objectives

The aim of this study is to describe and explain how pregnant women changed their drinking behaviour during the Ceres Intervention Study. In order to do this, the study focuses on the intervention group (as mentioned) who received the full intervention. In the intervention group, 60% of the pregnant women changed their drinking behaviour while 40% of the women did not change their behaviour. The question is then: Why did some women in the intervention group change their behaviour while others did not? The 40% who did not change their behaviour received the same intervention, were from similar backgrounds and socio-economic status, they were seen under similar circumstances by the same counsellor, yet they did not stop drinking.

In order to examine the question of why only some of the women in the intervention group changed their behaviour, the study has the following objectives:

1. To compare the intervention and control arms of the Ceres Intervention Study and to determine the profiles of the women;
2. To compare the change and no-change groups (within the IG) in terms of describing and explaining the behaviour change that was observed with the aid of:
    a. Quantitative data obtained from:

- The Alcohol Use Disorders Identification Test (AUDIT) scores in the first and last AUDIT.
- Question 2 of the Alcohol Record Questionnaire (ARQ, Appendix 3) used in sessions 2, 3 and 4 to measure the process of behaviour change.
- Their readiness for change which relates to their motivation and confidence to change.
- Determining the risk and protective factors from Question 9(a) and 9(b) on the alcohol record questionnaire (ARQ) in the second session.

b. Qualitative data obtained from the comments and experiences of participants in order to illuminate the quantitative data.

3. To develop and apply a conceptual framework.

It is hoped this research will add to the existing body of knowledge on behaviour change, especially in relation to the broader scholarship on addictive behaviour.

1.4 Structure of the thesis

The next chapter (Chapter 2) provides an overview of the literature review and discusses Foetal Alcohol Spectrum Disorder (FASD) and alcohol consumption in South Africa in more detail, prevention and intervention strategies nationally and internationally and characteristics of women at risk. In the last section of Chapter 2, behaviour change and intervention techniques and methods are discussed.

Chapter 3 focuses on the research design and methodology, sampling, data collection and data analysis.

Chapter 4 covers the data analysis guided by main themes and concepts from the literature.

In Chapter 5 findings and conclusions are discussed and recommendations are made.

Chapter 2

FASD in South Africa and mechanisms of behaviour change

2.1 Introduction

In this chapter, the South African context is examined in terms of alcohol consumption and prevalence of Foetal Alcohol Syndrome (FAS). From this discussion, various characteristics of women who engage in risky drinking are identified, as well as possible screening tools used to screen pregnant women for alcohol use disorders. Prevention and intervention strategies in South Africa and internationally are discussed, with specific reference to intervention techniques such as brief interventions, and brief motivational interviewing. Due to the fact that interventions mostly target the behaviour of pregnant women and aim for a change in this behaviour, a discussion on models of behaviour change is also included.

2.2 Foetal Alcohol Spectrum Disorder and alcohol consumption in South Africa

Since the turn of the 20th century, reports on the effects of parental drinking on children are well documented by various researchers (Streissguth, 1997:36). Historical references have also been frequently made to the effects of alcohol on infants and even bridal couples, for instance, were prohibited by ancient laws to drink alcohol at their wedding and, as far back as 1726, the College of Physicians reported to the British Parliament that "…parental drinking is a cause of weak, feeble, and distempered children" (Streissguth, 1997:35). However, it was only in 1968 that Dr Paul Lemoine and colleagues from Nantes in France, described Foetal Alcohol Syndrome for the first time where after clinical recognition was given to the condition in 1973 by Smith and Jones who introduced the name "Foetal Alcohol Syndrome" (FAS) for the first time in the United States of America (Streissguth, 1997:38-39).

In South Africa, the Syndrome was first observed from 1973 on and first recorded in 1978 in a Cape Town hospital maternity unit (Rendall-Mkosi, London, Adnams, Morojele, McLoughlin & Goldstone, 2008:13). Shortly after this, Beyers & Moosa (1978) reported on a FAS case study that included four newborn babies at a Cape Town hospital maternity ward and expressed concern that the condition is

"…probably more common than is realised and that minor abnormalities may easily be overlooked" (Rendall-Mkosi, *et al*, 2008:13). In 1985, Palmer reported another 14 infants born with FAS features at the Somerset Hospital in Cape Town and further found that one out of 281 infants were born with facial and dysmorphology features resembling Partial Alcohol Effects (1985:779-80). It was only much later, in 1997, that community level research was undertaken to determine the prevalence of FAS in high risk communities in the Western Cape (Rendall-Mkosi, *et al,* 2008:13).

Due to the variety of maternal alcohol consumption-related conditions in children, the following diagnostic terms have been recommended to describe alcohol-related abnormalities (alcohol-related teratogenesis) in decreasing order of severity of effects: Foetal Alcohol Syndrome (FAS), Partial FAS (PFAS), Alcohol-related Birth Defects (ARBD) and Alcohol-related Neuro-developmental Disorder (ARND) (Rendall-Mkosi, *et al*, 2008:7). These diagnostic terms all fall under the term Foetal Alcohol Spectrum Disorder (FASD), which is an umbrella term used to describe the continuum of abnormalities observed from mild to severe. It is a constellation of irreversible and variable physical, cognitive, and behaviour abnormalities caused by the effects of foetal alcohol exposure during pregnancy. The concept of FASD was first developed and used by The Centre for Disease Control (CDC) in the United States of America in 2004 (Rendall-Mkosi, *et al*, 2008:7).

According to the literature (Rendall-Mkosi, *et al,* 2008), Foetal Alcohol Spectrum Disorder is often intergenerational and women who were exposed to alcohol themselves in utero*,* and who grew up in an environment where excessive drinking occurred, are at a higher risk to start drinking at an early age and have unplanned pregnancies due to poor cognitive abilities and social judgement (Rendall-Mkosi, *et al,* 2008:7). There is a myriad of risk factors associated with FASD, such as generational alcohol abuse and poverty (with more than 62% of the South African population earning less than R1 500 per month) (Armstrong, Lekezwa & Siebrits, 2008:8-9), binge drinking during pregnancy (almost 50% of women in the Western Cape Province consume alcohol during pregnancy) as well as maternal age, poor nutrition, genetic influences, gravidity, poor housing conditions, unemployment, lack of education and life skills, boredom, a lack of recreational facilities in townships and on farms, peer pressure and lack of choice, decline in moral values and low socio-economic status (May, 2005:1190).

The most severe condition caused by prenatal alcohol exposure is FAS which is characterised by a particular pattern of facial anomalies, growth retardation combined with central nervous system anomalies and developmental abnormalities in the central nervous system that often include mental retardation (Hankin, 2002:59), which results in a variety of developmental challenges for the child. FAS is the leading cause of preventable mental retardation globally and in South Africa. It is caused by the mother's alcohol consumption during pregnancy (Viljoen, in Adnams *et al,* 2003:1). FAS is representative in all ethnic groups and populations and socio-economic factors, poor housing conditions and poverty play a role in the prevalence rates of FAS (Viljoen, in Adnams, *et al,* 2003:1).

In some parts of the Western and Northern Cape provinces of South Africa, FAS has reached epidemic proportions. Research undertaken by Viljoen and colleagues (1997, 1999 & 2002) revealed that the prevalence rates of FAS and Partial FAS combined in these two provinces are among the highest in the world with 40 to 119 cases per 1000 children. In some schools studied, it is estimated that almost 12% of children may have FASD. As can be seen in Table 2.1 below, the prevalence rate in the Western Cape is of the highest in the world with 48 to 75 cases per 1000 of the population. However, recent studies revealed a much higher rate in a town in the Northern Cape, closer to 122 cases per 1000 (Marais, 2006:8). When comparing South African prevalence rates to the USA's average FAS prevalence rate of between 0.05 and 2.0 per 1000 children and the average for the developed world of 0.97, as well as high prevalence rates of 8.5 per 1000 children in certain sectors of the Native American Indian population**,** it becomes clear that FAS is a serious problem in South Africa (Viljoen, *et al,* 2005:593-604). What is even more concerning for South Africa is that there is no national prevalence data available on FAS and the continuum of FASD, which makes it impossible to know the extent of the problem in South Africa (Rendall-Mkosi, *et al*, 2008:13-15). This is further exacerbated by the fact that FASD is one of the few birth defects that is 100% preventable through changes in maternal drinking behaviour.

Table 2.1: Prevalence of FAS per 1000 children

Country	FAS prevalence rates
United States of America	0.3-2.2
France	1.2
Sweden	1.3
Certain sectors of the Native-American Indian population	8
Western Cape, South Africa	48-75
An isolated Canadian-Indian Community	125

Viljoen, in Adnams, *et al*, 2003: 6

In Canada the prevalence of FASD is 1 to 2 per 1000 children while alcohol-related birth defects (ARBD) and alcohol-related neuro-developmental disorders (ARND) rates are estimated to be much higher. These rates are comparable, and in some instances much higher than the rates for Down Syndrome and Spina Bifida, two well-known forms of developmental disability (Roberts & Nanson, 2000:4). May and Gossage (2001:159-167) caution that prevalence rates are presently established through basically three research methods, i.e. passive surveillance systems, clinic-based studies, and active case ascertainment methods. Some of these methods have more advantages than others. Access to populations where a high number of cases can be found is frequently studied and might skew understanding of the true characteristics of the problem (May & Gossage, 2001:159-167).

In Gauteng, Professor Denis Viljoen (previous CEO of the Foundation for Alcohol Related Research or FARR) and colleagues from the Department of Human Genetics at Witwatersrand University, conducted FAS prevalence studies in four communities in Gauteng during 2001 and found that 19 out of 1000 children suffered from FAS (Viljoen & Craig, 2001:1-4). It was thus found that FAS is not restricted to wine-growing areas only but that the problem is much wider than estimated before. The studies prompted further research, which extended to the Northern Cape and the Eastern Cape and led to FAS training workshops by the National Department of Health (Olivier, 2006:1-3). It has not yet been established how effective these have been in raising awareness on FAS.

The social and economic costs of alcohol abuse in South Africa are estimated at R9 billion per year, and amounts to R1 billion per year for the Western Cape Province (Parry, 2005b:20-24). In 2006 the government spent up to R800 million a year in providing emergency services to people involved in incidents linked to liquor abuse

(Schneider, Norman, Parry, Bradshaw & Pluddemann, 2007:664-672). The amount of absolute alcohol consumption in South Africa was estimated at 10.3 litres per drinking adult (who are self-declared drinkers) a year in 2000. Recent data show there has been an alarming increase and it is now almost double the amount – closer to 20 litres per drinking adult a year (Schneider, *et al,* 2007:664-672). If the amount of beer consumed in traditional settings is added to this, South Africa can be placed among the highest per capita alcohol-drinking nations in the world (A Liquor Policy for the Western Cape, *White Paper final draft:* 2005). In South Africa, one in four adult males and one in ten female adults experience symptoms of alcohol problems, and one in four high school learners have reported binge drinking in the past month (Schneider, *et al,* 2007:664-672). A factor contributing to these consequences of alcohol misuse is the fact that alcohol has become easily accessible through *shebeens* where alcohol and drugs are illegally traded. It is estimated that between 20 000 and 30 000 shebeens are currently operating illegally in the Western Cape Province alone (A Liquor Policy for the Western Cape, *White Paper final draft:* 2005).

Further evidence of the high levels of alcohol abuse and problems as a result of this in South Africa is provided by studies conducted by the Medical Research Council in 2002 and 2003, which revealed that more than one in two non-natural deaths in Cape Town had alcohol levels ≥0.05g/100ml. Alcohol in particular has been linked to a range of other problems such as risky sexual behaviour (which impacts on HIV prevalence rates), family violence, academic failure and absenteeism from school. Furthermore, one in five HIV positive patients met the criteria for current alcohol abuse or dependence (Parry, 2004:1). In keeping with trends in the general population, pregnant women also tend to follow these patterns of alcohol consumption. It was found that alcohol consumption during pregnancy is present in between 40% to 50% of pregnant women in the high-risk communities of the Western Cape with a prevalence of heavy drinking in 24 out of 100 of these women. In the USA, 20% of women consume alcohol during pregnancy and 1 out of 100 of these women is a heavy drinker (Viljoen cited in Adnams, *et al,* 2003:5).

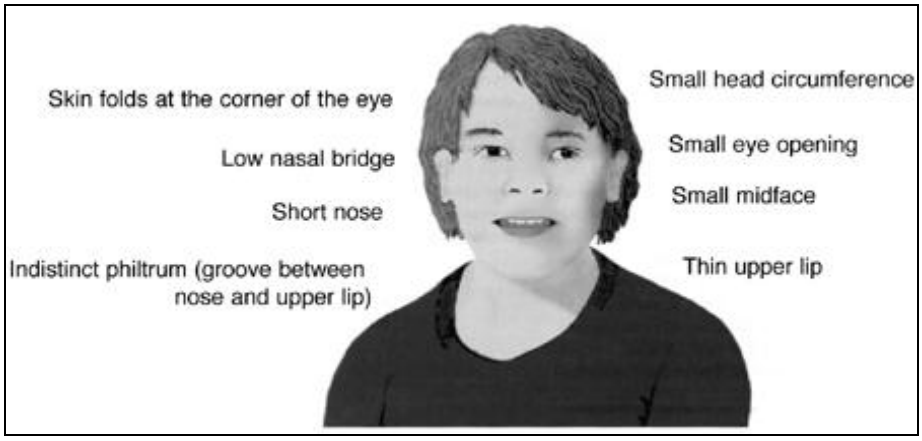
Five standard drinks taken more than twice a month or two standards drinks taken daily, is often described as high-risk drinking during pregnancy. (Viljoen, in Adnams, *et al,* 2003:5). One standard drink is measured as 15 ml of pure (or absolute) alcohol, which is equivalent to one glass of wine (150 ml), one can of beer (340 ml) or 50 ml of spirits (Babor & Higgens-Biddle, 2001:31). It was found in the rural areas of the Western Cape that three or four women usually drink together at home by sharing

750 ml of beer or two litre containers of wine (Viljoen cited in Adnams, *et al,* 2003:5). Women also mostly tend to engage in binge drinking, which is very dangerous for the fetus as very high blood alcohol concentrations can occur (Viljoen, cited in Adnams, *et al,* 2003:5). Passaro and Little (cited in Roberts & Nanson, 2000:4) warn that the extent of the damage of alcohol on the fetus depends on the threshold amounts of alcohol in the blood, drinking pattern of the mother and timing of alcohol exposure. It is further suggested that other factors such as maternal health, age, nutrition, genetic vulnerability and use of other substances may influence the health of the baby.

The threshold for foetal alcohol exposure that leads to FASD has not yet been determined (Roberts & Nanson, 2000:4). However several studies conducted over the past 30 years provide confirmation that behavioural changes are caused in children by even low levels of alcohol consumption (Roberts & Nanson, 2000:4). For instance, children exposed in utero to any level of alcohol, compared with those not exposed, showed 3.2 times greater possibility of displaying delinquent behaviour (Mukherjee, Hollins, Abou-Saleh & Turk, 2005:375-376). It would seem, "abstinence from alcohol is the only safe message in pregnancy" (Mukherjee, *et al,* 2005:375-376). This highlights the need for more studies to be conducted to clarify the "dose-response relation". According to the United States of America's CDC (Tversky, 2001:15) alcohol is most harmful for organ systems between the third and eighth week of pregnancy. This is a very serious finding with far reaching implications for FASD prevention strategies as most women are not aware of their pregnancies before they are six weeks pregnant.

Figure 2.1 below shows the facial characteristics of Foetal Alcohol Syndrome in a young child which are indicative of the clinical features of FAS. These characteristic facial features include small eye openings, a smooth and thin upper lip, low nasal bridge, flattened mid face and short nose, as well as minor ear anomalies (Warren & Foundin, 2001:153-158). Central nervous system anomalies such as microcephaly, skull and brain malformations, varying mental abilities, impaired fine motor skills, neurosensory hearing loss, ocular anomalies, poor hand-eye co-ordination and poor movement are indicators for a clinical diagnosis of FAS (Warren & Foundin, 2001:153-158). Behaviour anomalies and learning difficulties (especially mathematics and language), short concentration spans, poor memory, hyperactivity and poor judgement are some of the characteristic findings in children with FAS (Wilton & Plane, 2006:299-300).

Figure 2.1: Facial characteristics of Foetal Alcohol Syndrome in a young child



Warren & Foundin, 2001

From the above discussion, it is imperative that South Africa begins to seriously examine the problem of FASD and in particular FAS. In order to address FAS in South Africa, it is vitally important to not only consider alcohol consumption during pregnancy but to begin to acknowledge the pervasive problem of alcohol abuse in the South African society which has as one of its effects FAS.

2.3 Identification of women at risk of maternal drinking

A variety of studies have been conducted that show how certain women are at higher risk of engaging in maternal alcohol consumption during pregnancy. For instance, Godel *et al,* (cited in Roberts & Nanson, 2000:6) reported on alcohol consumption patterns in two communities in the Inuvik region of the Northwest Territories in Canada. Of 162 pregnant women surveyed, 34% drank alcohol during their pregnancy. Consumption rates were highest amongst women from mixed racial groups (48%). Binge drinking of five or more drinks per occasion was identified as the result of the decreased head circumferences observed in the newborn babies of these women (Roberts & Nanson, 2000:6). Decreased head circumference is a sign of decreased brain development and one indicator of FASD. Another study by Dow-Clarke *et al* (cited in Roberts & Nanson, 2000:7) found that 49% of pregnant women reported drinking alcohol after their pregnancy was identified whereas 70% reported drinking alcohol prior to pregnancy and 90% during the last year (Roberts & Nanson, 2000:7).

In the United States of America, studies indicated that approximately 12% of women (18 - 44 years) report “risk drinking” (seven or more drinks per week or five or more

drinks per occasion) while 3.5% of women who knew they were pregnant reported risk drinking (Roberts & Nanson, 2000:7). In another study by Kvigne *et al,* (cited in Roberts & Nanson, 2000:7), 177 United States of America Northern Plains Indian women were screened for substance use during pregnancy. Women who drank during pregnancy were compared to those women in the same tribal group who did not drink. It was found that women who drank were more likely to be single, have lower levels of education, have less access to transportation, smoke, use other substances and have a history of alcohol related problems in their family. (Roberts & Nanson, 2000:7). They were also more likely to have experienced physical and sexual abuse. Fifty six percent of the women reported drinking during their pregnancy and almost half of them reported binge drinking of more than five drinks per occasion (Roberts & Nanson, 2000:7). Zahnd and Klein (cited in Roberts & Nanson, 2000:7), further reported that many women who have drinking problems also report a drinking problem on the part of a parent or spouse (more than 70%).

2.3.1 Characteristics of risky maternal drinking and risk factors

There are a variety of characteristics of women who are at risk of having a child with Foetal Alcohol Spectrum Disorder although many of these characteristics mainly originate from clinical populations and may not necessarily reflect the full range of women whose drinking patterns place them at risk. Some of these characteristics include:

- decreased perceived risk in women who drank during their first pregnancy and had a healthy outcome which leads to increased drinking in further pregnancies (Roberts & Nanson, 2000:9);
- a woman's age which can influence the outcome of a baby affected by FASD (Roberts & Nanson, 2000:9).
- the fact that many women are introduced to substance use by a partner or spouse and that women self-medicate mental illness and other family problems by using substances. When they seek help for related problems, their substance abuse problem is many times overlooked (Roberts & Nanson, 2000:9).
- women who have given birth to a child affected by FASD are at high risk of giving birth to another affected child (Roberts & Nanson, 2000:9).
- women who have low levels of literacy, are of minority status, or are living in poverty (Roberts & Nanson, 2000:9-10).

- mothers of children diagnosed with FASD began drinking early in their lives, had histories of severe unresolved abuse, had mental health problems, were generally living with partners who did not wish them to enter treatment, were involved in drinking subcultures, feared abandonment by family or friends if they stopped drinking and 20% had alcohol-related organic brain dysfunction (Roberts & Nanson, 2000:9-10).

Common risk factors associated with heavy maternal drinking and possible resultant Foetal Alcohol Spectrum Disorder, Alcohol-related Birth Defects (ARBD) and Alcohol-related Neurodevelopmental Disorder (ARND) are listed in Table 2.2 below (May & Gossage, 2001:165).

Table 2.2: Common risk factors associated with heavy maternal drinking

Influential Element	Maternal Risk Factor
Health	• Older than 25 years when FAS child is born • Already have three or more children when FAS child is born • Use of other drugs, including tobacco and illicit substances • Morbidity or premature mortality from alcohol-related causes
Socioeconomic status (SES)	• Low SES • Social transience • Unemployment or marginal employment
Drinking pattern	• Early age at onset of regular drinking • Frequent binge drinking (i.e. consuming five or more drinks per occasion 2 and more days per week) • Frequent drinking (i.e., every day or every weekend) • High blood alcohol concentration • No reduction in drinking during pregnancy
Psychological profile	• Low self-esteem • Depression • Sexual dysfunction
Family social traits	• Alcohol misuse in family • Alcohol misuse by the women's male partner • Tenuous marital status (i.e. cohabitation, never married, separated or divorced) • Loss of children to foster or adoptive placement
Local culture and community	• Relatively tolerant of heavy drinking

May & Gossage, 2001:165

As seen from above, there are indications that prevalence rates for FAS and alcohol-related abnormalities are greater in lower socio-economic families and communities. This has prompted the development of programmes to address broader health issues such as substance abuse, mental health and violence (Ernst, *et al,* cited in Roberts & Nanson, 2000:13).

FASD prevention policies should be developed nationally and ongoing surveillance methods are necessary to monitor FASD and alcohol use during pregnancy. Training of health care professionals and community workers are a priority and prevention strategies should also address women of child bearing age, public health officials, policy makers, health care providers and communities. School children are an important population to target, given the high rates of teenage pregnancies (Rosenthal, Christianson & Cordero, 2005:1099). In order to aid intervention strategies, screening tools are necessary so that women who are at risk are identified and targeted for intervention. As will be discussed in the next section, there are a variety of screening tools that can be used for the identification of women at risk, which can be seen as the first step in any intervention.

2.3.2 Screening tools to identify women with substance use problems

Routine screening, education and counselling are important intervention activities to enhance alcohol reduction in pregnant women (Burd, Klug, Martsolf & Martsolf *et al,* 2006:87). Anderson *et al* (cited in Roberts & Nanson, 2000:22) have recommended that women are screened in a non-judgemental way and that no degrading measures are used against them. Brief screening tools are easy to use and simple application can determine whether a person has a substance abuse problem or not. Questionnaire screens can be used quickly and in various settings but have some limitations as respondents tend to underreport their alcohol use. By increasing the specificity of screens, fewer mothers who drink less heavily are identified but are still at risk of producing a child with FAS/ARBD. Bio-markers (such as blood and urine tests) have been used as screening tools and it was found to be effective but can only be conducted with a woman's informed consent and is costly (Roberts & Nanson, 2000:23).

Screening tools to identify alcohol consumption have been developed and used in different cultural settings but few have been tested in developing and rural areas. The two screening tools that were used in the Ceres Intervention Study is the alcohol use

disorders identification test (AUDIT) and the CAGE test. A summary of some screening tools including the AUDIT and the CAGE are provided below:

2.3.2.1 AUDIT questionnaire

The AUDIT was developed by the World Health Organisation (WHO) in 1988 and validated by Bohn, Babor and Kranzler, during 1995, and later by Allen, Litten, Fertig and Babor, during 1997 (Tversky, 2001:20). Table 2.3 illustrates the advantages and disadvantages of the AUDIT.

Table 2.3: Advantages and disadvantages of the AUDIT

Advantages	Disadvantages
• Consistent with ICD-10 (International Classification of Diseases, 10th revision) criteria of alcohol dependence and harmful alcohol use. • Tested and evaluated over more than two decades. • Validated in six countries. • Designed to identify problem drinkers in primary health care settings. • Designed for international use. • Identifies hazardous and harmful alcohol use. • Identifies possible alcohol dependence. • A brief, rapid and flexible test. • Designed for primary health care workers. • Focuses on recent and last 12 month alcohol use. • Sensitive for males. • Sensitive for the injured. • Often used as part of a clinical procedure. • More sensitive for women compared to some other tests. • Cut-off point for women can be lowered to seven to achieve better results.	• The AUDIT does not measure amount of absolute alcohol consumed. • The possibility of underreporting of drinking due to self reporting measurements exists. • A lack of being tested in rural and community settings. • Does not include a rapid test for abuse of other substances (which was included by the team in the Ceres Intervention Study).

Babor, Higgens-Biddle, Saunders & Monteiro, 2001

The AUDIT questionnaire consists of ten questions. Alcohol consumption over the past year is tested in terms of “alcoholic beverages” consumed, and answers coded

in terms of “standard drinks” measured as 15ml of pure alcohol (Viljoen, cited in Adnams, *et al,* 2003:5; Babor & Higgens-Biddle, 2001:37). Each of the questions has a set of responses to choose from and each response has a score ranging from 0 to 4. A total score of more than 8 is recommended as indicators of hazardous and harmful alcohol use, as well as possible alcohol dependence. The AUDIT will be discussed in more detail in Chapter 3.

2.3.2.2 CAGE questionnaire

The CAGE Questionnaire developed in the late 1960s in North Carolina and was reviewed by Ewing in 1984 (cited in Tversky, 2001:20). The CAGE is a mnemonic derived from four items having to do with the person being screened feeling they should: ***c****ut* down on drinking, feeling ***a****nnoyed* by people criticising their drinking, feeling bad or ***g****uilty* about their own drinking, and taking a drink first thing in the morning (***e****ye*-opener) (Cherpitel, 2001:292). The CAGE consists of four questions, scoring one point each. Two or more positive answers are indicative of alcohol abuse (Tversky, 2001:20).

Sensitivity for the CAGE has been found to range from 61% to 100%, and specificity from 77% to 96%, based on a positive response to two or more items (Cherpitel, 2001:292). “Sensitivity” is understood as the percentage of respondents correctly classified as meeting criteria for harmful drinking or alcohol dependence, while “specificity” implies the percentage of respondents correctly classified as not meeting the criteria (Cherpitel, 1995:135).A sensitivity of 100% and a specificity of 78% for alcohol dependence were found. In addition, the CAGE questionnaire may be recommended for use in other rural South African communities.

In another study in South Africa, the AUDIT and CAGE questionnaires were compared in coloured tuberculosis patients at the Brooklyn Chest Hospital where the CAGE did slightly better than the AUDIT, by correctly identifying problem drinkers in 62% of the cases as opposed to 57% found by the AUDIT (Tversky, 2001:21). It was decided, based on evidence from these two studies, to use the AUDIT as screening tool in the Ceres study and the CAGE questionnaire as monitoring instrument. It has been suggested by researchers that by using more than one tool for screening women, by inviting them to talk through their responses during the interview and by lowering the threshold for positive alcohol screens, better results can be achieved

(Tversky, 2001:21). Table 2.4 illustrates the advantages and disadvantages of the CAGE.

Table 2.4: Advantages and disadvantages of the CAGE questionnaire

Advantages	Disadvantages
• Evaluated against the DSM-IV (Diagnostic and Statistical Manual of Mental Disorders, 4th Revision) (American Psychiatric Association, 1994) for substance abuse and dependence. • Developed to identify alcoholics in clinical settings. • Evaluated in South Africa in the North West Province. • Evaluated in a rural, primarily Afrikaans-speaking coloured community, with high rates of alcohol abuse. • Recommended for use in rural South African communities. • Provides information on "feelings" about drinking and problem recognition. • Can be used as an alcohol use monitoring instrument.	• Does not measure alcoholic beverages consumed. • Does not measure standard drinks taken. • It does not test interpersonal violence as a result of drinking.

Ewing, cited in Tversky, 2001

2.3.2.3 MAST and BMAST questionnaire

The MAST (Michigan Alcohol Screening Test) validated by Selzer in 1971 (cited in Tversky, 2001:20), is one of the older screening tools and consists of a 25-question interview in which items are weighted 0,1,2, or 5 and the end scores range from 0 to 53. An abbreviated version, BMAST is often used and consists of a 10-item subset of the original 25-item MAST. The MAST and BMAST have been found to be highly correlated. Sensitivity for the BMAST has ranged from 30% to 78% and specificity from 80% to 99% (Cherpitel, 2001:292). Table 2.5 illustrates the advantages and disadvantages of the MAST.

Table 2.5: Advantages and disadvantages of the MAST questionnaire

Advantages	Disadvantages
• Developed for doctors and lay health workers. • Validity been tested in identifying heavy drinkers in both clinical and general populations. • A shorter version, the BMAST, has been developed consisting of ten items to improve the instrument.	• Time consuming, lengthy and very old questionnaire. • When tested in different settings the BMAST performed poor over all subgroups.

Selzer, cited in Tversky, 2001

2.3.2.4 TWEAK questionnaire

The TWEAK was initially designed to identify "at risk" drinking in prenatal populations (Cherpitel, 2001:292). It is a mnemonic that asks questions that have to do with ***t****olerance* (measured by the number of drinks one can hold), friends or relatives ***w****orried* about a person's drinking, taking a drink first thing in the morning (***e****ye*-opener), blackouts (***a****mnesia*), and feeling a need to cut (***k****ut*) down (Cherpitel, 2001:292). The instrument was validated by Russel in 1994 and is a five-item combination of the CAGE and BMAST questionnaire and includes a question on passing out from alcohol consumption. Except for the first indirect question, the other four questions also resemble those contained in the AUDIT. Table 2.6 illustrates the advantages and disadvantages of the TWEAK.

Table 2.6: Advantages and disadvantages of the TWEAK questionnaire

Advantages	Disadvantages
• Designed to identify risky drinking in pregnant women. • Designed to identify problem drinkers in primary health care settings (as with the AUDIT). • Includes all the advantages of the CAGE but for the question on passing out from alcohol consumption and alcohol tolerance. • Includes questions from the AUDIT	• Similar disadvantages to that of the CAGE.

Russel, cited in Cherpitel, 2001

2.3.2.5 T-ACE questionnaire

The T-ACE questionnaire was validated by Sokol *et al,* (Tversky, 2001:20) and contains four items, three of which are similar to TWEAK (tolerance, cut down, and eye-opener) and three of which are similar to CAGE: Have people annoyed you by criticizing your drinking and the cut down and eye-opener questions. Two points are awarded for the tolerance question, as in TWEAK, and one point each for the other three questions, for a possible total of five points. Table 2.7 illustrates the advantages and disadvantages of the T-ACE.

Table 2.7: Advantages and disadvantages of the T-ACE questionnaire

Advantages	Disadvantages
• Validated in several populations. • Validated in emergency-room settings. • Validated with people from different backgrounds. • Similar to the CAGE and TWEAK.	• Have not been validated in rural and community settings. • Similar disadvantages to the CAGE.

Sokol *et al,* cited in Roberts & Nanson, 2000

2.3.2.6 Summary of screening tools

Cherpitel (cited in Roberts & Nanson, 2000:22) has reviewed and compared several brief screening instruments and found the AUDIT and TWEAK to be more sensitive for women than the CAGE or the BMAST. All of the screens were found to be more sensitive for males than for females. By lowering cut-off values on the TWEAK, CAGE and AUDIT, sensitivity was improved without lowering specificity for women (Roberts & Nanson, 2000:22).

Russel *et al,* and Midanik *et al,* (cited in Roberts & Nanson, 2000:22) revised the CAGE questionnaire by asking women about “past 12 months use” rather than “life time use”. It was found that this instrument was more effective in identifying adult women than adolescents with alcohol problems.

The next section provides more insight into international trends and best practices for prevention of FASD. The epidemiology of FASD as well as epidemiology of alcohol consumption and pregnancy is also discussed. Primary, secondary, and tertiary prevention activities are highlighted. The focus is on intervention methods and includes brief interventions and brief motivational interviewing as intervention tools.

2.4 FAS intervention and prevention strategies

According to Olivier, (2006:1) the Mother, Child and Women's Health sub-directorate (MCWH) of the Department of Health in the Western Cape Province has been involved in the identification and prevention of FAS since the 1980s and various FAS research projects have consequently been undertaken in this Province. However, up to now, not many of these studies have been undertaken to develop intervention programmes to address the problems of alcohol consumption during pregnancy. May *et al, (*cited in Rosenthal, Christianson & Cordero, 2005:1099) highlight the importance of identifying risk factors for the prevention of FAS (as discussed in section 2.3 above). Binge drinking during pregnancy, maternal age, poor education, inadequate nutrition, genetic causes, pregnancy and poor socio-economic circumstances provide indicators for identifying women at risk and eligible for the implementation of effective interventions. May *et al, (*cited in Rosenthal, Christianson & Cordero, 2005:1099), further pointed out that prevention should address social improvement, proven techniques of birth control, treatment for alcohol abuse and screening for alcohol use during prenatal services.

FASD is a maternal and child health issue (MCH) that has been recognised in the South African National Policy Guidelines for the Management and Prevention of Genetic Disorders, Birth Defects and Disabilities (Rosenthal, Christianson & Cordero, 2005:1099). FASD prevention programmes could therefore be integrated with national MCH programmes for the prevention of HIV and sexually transmitted infections (STIs). Such integrated programmes could ensure wider support, planning, resources and finances. May *et al,* (cited in Rosenthal, Christianson & Cordero, 2005:1100) emphasise "training" as a crucial element of a prevention strategy. According to him, health care workers at all levels should be trained to screen, diagnose, prevent, and treat maternal alcohol consumption during pregnancy (Rosenthal, Christianson & Cordero, 2005:1100).

According to Marais, (2006:9), the best prevention strategy to eliminate or reduce alcohol consumption during pregnancy includes the following:

- life skills training programmes designed to teach personal and social skills to help young people resist social influences to use substances,
- routine screening of pregnant women for use of alcohol and other substances in various settings,

- brief interventions in prenatal settings (such as clinics) which are effective low-cost means of helping pregnant women with early-stage alcohol consumption problems, and
- intensive case management for high-risk pregnant women can be effective in promoting family planning, facilitating access to substance abuse treatment, ensuring retention in treatment, reducing consumption and promoting connections to community services.

The Canadian Centre on Substance Abuse (CCSA) undertook a review of more than 500 papers to formulate the best practices on Foetal Alcohol Syndrome, Foetal Alcohol Effects and substance use during pregnancy. The project, commissioned by Health Canada, took place during 1999 and was supported by a national steering committee (Roberts & Nanson, 2000:1). The focus of the project involved two main elements; firstly, formulating best practices based on literature reviews and, secondly, an evaluation of FAS-related activities across Canada (Roberts & Nanson, 2000:1). From this review, it can be seen that "best practice" definitions for the prevention of FASD are grouped around three distinct activities:

1. awareness-raising before onset,
2. identification, and
3. dealing with the consequences of FASD.

For this review, "best practice statements" were based on the opinions of experts, practitioners, educators, consumers as well as scientific evidence. Literature and other information were classified into "some" evidence, "moderate" evidence and "good" evidence, depending on the involvement of a control group to back empirical findings (Roberts & Nanson, 2000:2). It was found that many FAS-related intervention studies have not been empirically tested, especially with the use of a pre-test post-test design with an experimental and control group. In such a study, the control group receives no intervention. This however, entails major ethical considerations (Roberts & Nanson, 2000:2).

Prevention takes place at three different levels, namely primary, secondary and tertiary levels (Roberts & Nanson, 2000:3). Primary prevention is aimed at raising awareness with the general population to promote physical and emotional health (raising public awareness, community education and alcohol control measures). Secondary prevention activities aim to address a problem before it becomes too

severe or persistent (outreach, screening and referral of pregnant women or women of child-bearing age who are abusing alcohol). Tertiary prevention activities are aimed at women who already gave birth to a child with Foetal Alcohol Spectrum Disorder or who are suffering from FASD themselves, by providing substance abuse treatment and birth control services. Identification of FASD involves screening, referral and diagnosis of newborns, children, adolescents or adults affected by prenatal alcohol use. Intervention activities are intended to prevent or reduce the harm associated with primary and secondary disabilities (Roberts & Nanson, 2000:3).

Finkelstein (cited in Roberts & Nanson, 2000:5) explains that it is important to understand the nature and scope of a problem when planning an intervention. In this case the nature and scope would be the amount of alcohol consumption and the circumstances under which alcohol is used by women of child-bearing age, pregnant women and women who have given birth to a child affected by alcohol consumption. However, limited information is available due to a lack of screening and under-reporting of alcohol use by women in clinical interventions (Roberts & Nanson, 2000:5).

Due to the multi-faceted nature of behaviour change, interventions reflect this complexity in order to facilitate the targeted change in behaviour. The next section explores the different approaches to interventions and emphasises the complex interplay that exists between the intervention and the targeted beneficiary of such an intervention.

2.5 Intervention approaches and theories

For the purpose of this study, evidence based social work interventions are discussed in order to understand an intervention process as it is applied in the field of social work. Critical realism and the concept of generative mechanisms are explored as useful perspectives to reveal the interviewing processes and explain the way human change is arrived at in social work practice in the case of the Ceres Intervention Study. The focus of this discussion is to explain briefly that social work is carried out on different levels; for example, community development work, group work or case work. In this context, the focus is on the micro level. At this level, social work practice helps individuals and groups to achieve self-fulfilment referred to by Payne (1997) as the reflexive-therapeutic perspective or individualist-reformist, where social worker-client relationships are essential (cited in Morén & Blom,

2003:40). Social work practice is carried out under tense circumstances at the level of individuals and the level of society. On the one side, there is the individual's inadequacy and aspirations to (trans-) form their lives, and, on the other, there are expectations to adjust to societal demands.

2.5.1 Evidence based social work interventions

In social work practice, both psychological and sociological skills are needed because social work practice is characterized by dialectics between human agency, social structure and praxis of human actions. This brief characterisation of social work gives an indication of the relationship to the basic elements of the philosophy of critical realism. Social workers are expected to identify social problems, thoroughly investigate them and take adequate measures to address them. Therefore, social work is generally seen as a problem-solving activity. Social work procedure expresses a certain view of the world whereby the person is seen within the context of his or her material existence in the world and that human change is a rational and planned process based on some knowledge of the situation of the person. Against this background of the conception of the task, social work is based on a rationale that does not always understand or explain the complex aspects of human change. Social work is contextual and characterised by complex and dynamic client-worker relations and it is therefore important to question whether and to what extent interventions in social work are reducible to standardised methods (Morén & Blom, 2003:41).

There has been an increasing demand in Europe and the United States of America for evidence-based social work interventions. Evidence-based social work interventions imply that work modes and methods should be based on empirically proven, well-founded knowledge about the effects of interventions on clients. There seems to be a vast lack of knowledge regarding the content of the working process and the possibilities for describing interventions (Morén & Blom, 2003:37). In South Africa, very little has been done to empirically test the effects of interventions on clients.

Firstly, the evidence-based approach of social work is located in empiricism as its epistemology (Bhaskar, in Morén & Blom, 2003: 42). Therefore in social work practical experience is seen as the sole source of knowledge which becomes its theory on the nature of knowledge and understanding. Secondly, on the other side of the coin we find post-modern ideas that involve the assumption that there are no

absolute truths, only more local accounts of reality (Morén & Blom, 2003:42) and thirdly, a critical realist approach that is based on the ontological assumption (questioning the ultimate origin of the concept) that there is a reality independent of our knowledge about it. However, this knowledge cannot be practically accessed.

According to authors such as Danermark *et al,* and Bhaskar (cited in Morén & Blom, 2003:44) there are three overlapping ontological domains: the empirical, the actual and the real. The empirical domain consists of what we experience, directly or indirectly. The actual domain is where things happen whether we experience them or not and in the real world we find forces or mechanisms that can produce events in the world, therefore the implications of this is that it is not only methods or interventions and results that are of interest, but *who produces them.* Thus, causal analysis is about explaining why what happens actually does happen. If we know what is lying behind a certain course of events, we can influence the future development to make it coincide with our intentions and goals (Morén & Blom, 2003: 44).

It is important to recognise the fact that social work practice is carried out under "open conditions". Social work takes place within social systems "…that are necessarily people" (Morén & Blom, 2003:38). In searching for real explanations in understanding what allows results to *emerge* from social work interventions, it is perhaps of great value to explore the critical realist approach strongly advocated by Pawson and Tilley (1997). The underlying assumption is that "generative mechanisms", which make things happen, are to be found beneath or beyond the immediate empirical surface (Morén & Blom, 2003:39). These underlying forces must be explained and necessitates the need to develop theoretical models that can enlighten how human change takes place from interventions in social work practice in different settings (how B from A under what conditions C). According to Pawson and Tilley, (cited in Morén & Blom, 2003:39) "A mechanism is thus a theory – a theory that spells out the potential for human resources and reasoning". It is one thing to know that certain interventions bring on certain results but it is a different matter to be able to explain how and why results such as client effects, in social work practice, *emerge* from certain interventions. The basis for this kind of knowledge is certainly empirical observations and provides conceptual and theoretical understanding of the way interventions work.

Interventions are not only based on organisations and social workers; the client is an integral participant in the intervention. James and Coleman (cited in Morén & Blom, 990:304) state that "Clients do not react like billiard balls that are hit - rather, interventions are always mediated by and through client's responses and choices". To explain social work practice is paramount to explaining the significance of clients' resources and capacities as part of the response to social workers' interventions.

In the problem-solving approach, results are measured in terms of goals set or decisions taken beforehand – separately from the intervening process of change. In terms of human change however *results emerge as a process*, not only as a final finding, as clients' choices may be unpredictable. These theoretical processes require the development of an "intervention language" to express the dynamics in social work practice and adhere to basic trends in critical realism: the two-sided character of reality, the dialectics of organisation and structure, the generative viewpoint on causality and the inclination of underlying generative mechanisms (Pawson & Tilley, 1997:68).

Pawson and Tilley (1997:17) build on this critical realist approach and state that social reality is stratified by nature and that causal forces that make change happen must be found on levels beneath the empirical surface. They maintain, "…evaluators need to penetrate beneath the surface of observable inputs and outputs of a programme". They distinguish two perspectives on causation: successionist and generative perspectives (Pawson & Tilley, 1997:17). For the purpose of this study, generative perspectives are of importance. Generative theory holds that there is a *real connection* between events that we understand to be connected causally. In the generative perspective it is important to explain how and why observed connections and regularities occur – thus leading to theory. Explanations should seek to penetrate the real underlying issues leading to the mechanism approach in critical realism (Pawson & Tilley, 1997:17).

To understand social and human change, we need to look at generative mechanisms and how and why results emerge from an intervention. Aside from external causal factors that influence change, we need to make sense of the potential for change that is inherent in the phenomena. For instance, how and why does a socially disadvantaged person choose to change the direction of their life as a reaction to the intervention by social workers? In this context, it is imperative to explore the influence

of generative mechanisms. Hedström and Swedberg (cited in Morén & Blom, 2003:39) distinguish three types of social mechanisms. These are:

1. Situational Mechanisms (macro-micro level),
2. Action-Formation-Mechanisms (micro-micro level), and
3. Transformational Mechanisms (micro-macro level)

The focus is on the second type of social mechanisms, that of action-formation mechanisms. The focus is thus on how actors (social workers and clients) through their interactions and actions generate micro-micro outcomes in terms of interventions and effects. The reason why action-formation mechanisms were chosen for the Ceres Intervention Study was because of the one-on-one counselling situation that generated micro-micro level outcomes.

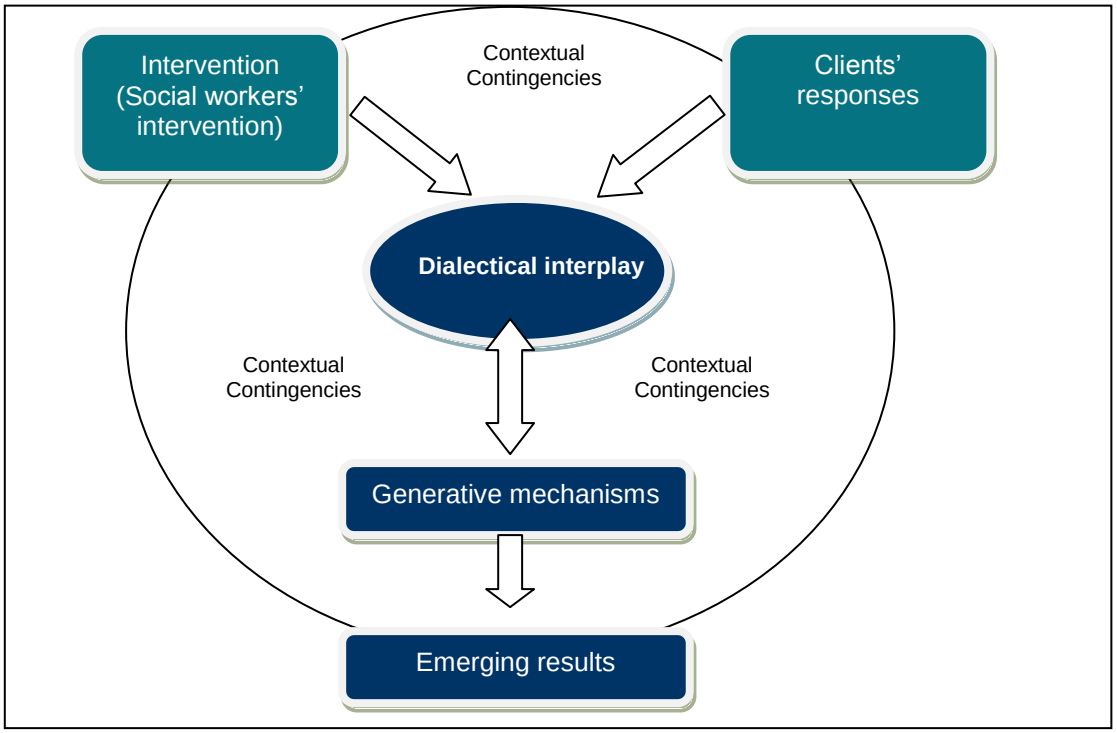
The idea of a stratified world (Pawson & Tilley, 1997:17) as "different layers" of reality in social explanation has vital implications for the way we think about causation. When we say that the mechanism that explains the regularity is located at a different "layer" of social reality, we employ a distinctive and generative conception of causality. These types of constructs are at a middle range level meaning that they are on a level between pure descriptions and universal laws. Furthermore, generative mechanisms are ongoing within a context but always work through people's actions. In the human dimension of change "…it is not programs that work, as such, but people cooperating and choosing to make them work – programs work through their subject's liabilities" (Morén & Blom, 2003:48).

Pawson and Tilley (1997:8) explain that explanations are usually constructed through three most vital components of any initiative: context (C), mechanism (M) and outcome (O). Different cases may vary in terms of context and interventions and likewise different mechanisms may be at work that might lead to different outcome patterns. The propositions that combine these explanatory components are described as *context-mechanism-outcome pattern configurations* (or CMO configurations) (Pawson and Tilley, 1997).

The understanding of how interventions work and the way human change emerges from these interventions leads to theoretical models that are perhaps valid but do not guarantee change in all cases (Pawson & Tilley, 1997).

Interventions can be implemented at micro-micro levels but if the role players do not commit themselves to the intervention process, the intervention will fail. The type of intervention and implementation process, the personality, skills and experience of the counsellor are important factors in the change process. This is shown in Figure 2.2, which shows a model derived from Morén and Blom's work (2003) on interventions in social work practice. The model focuses attention beyond the intervention to how this intervention is received by the client within his or her own context. According to this model, interventions are constituted by both social workers' and clients' contributions in a dialectical interplay. Generative mechanisms are activated by interventions and generate actions and effects within clients in a certain context and contingency. In critical realist terms, it is not interventions as such that bring about change; interventions create ideas and resources that clients choose to use or not – depending on readiness and prevailing circumstances. In that sense, interventions are always mediated by the actors' considerations and choices. Consequently, it is incorrect to describe interventions one-sidedly in terms of methods and work modes.

Figure 2.2: Dialectical interplay between social workers' interventions and clients' responses



Adapted from: Morén & Blom, 2003:54

Morén and Blom, concluded from their empirical studies that a durable and trusting relationship to one or several social workers mediated both a challenge to the clients'

destructive and habitual way of life and a conviction that change was possible. These relationships are characterised by an *oscillation between threats and offers*, between obtrusion and letting be. In addition, they observed that interventions are carried out in a balancing act between a role of representing the authority and a role of representing oneself as a professional. They further observed many expressions of a *social-psychological transformation*, meaning that the *inter-action* between social worker and client gradually changed into an *intra-action*. The social worker became part of the *client's inner dialogue* and the process of change went on without the social worker's immediate presence (Morén & Blom, 2003:55).

As the above discussion emphasises, interventions are only one piece of the puzzle. What clients do, how they act or react to the intervention is another, very critical piece which must be taken into account when looking at interventions. This piece has to do with individual autonomy and how changes in behaviour take place, which is the focus of the next section.

2.6 Behaviour change: models and mechanisms

Some of the behaviour change models that developed since the 1950s, were modified over the years and include the following:

- the Health Belief Model that attempts to explain and predict health behaviours by focusing on the attitudes and beliefs of individuals (Rosenstock, Strecher & Becker, 1994: 5-24);
- the AIDS Risk Reduction Model provides a framework for explaining and predicting behaviour change efforts in relation to the sexual transmission of HIV (Catania, Kegeles & Coates, 1990:53-72),
- the Stages of Change is based on a behaviour change continuum (Prochaska, DiClemente & Norcross, 1992:1102-1114), and
- Social Learning Theory that focuses on specific, measurable aspects of behaviour and views the individual as an active participant in his or her behaviour by interpreting past experiences for selecting a course of action. This model views self-efficacy – the belief a person holds in his or her own ability to meet certain specific demands – as central to behaviour change (Bandura, 1986)

As mentioned before, for the Ceres Intervention Study behaviour change theories that developed in the addictions field were mainly used. These include brief interventions (BI) and brief motivational interviewing (BMI). Mechanisms of behaviour change normally refer to the basic psychological processes (mental, affect, learning, perception) social processes (persuasion, interaction, context, social control) and neurophysiologic processes (neurotransmitters/receptors, second messengers, neural networks) that initiate therapeutic change. Examples of potential mechanisms of change include therapeutic alliance, client expectations, therapist empathy, therapeutic ordering, confronting problems, behavioural self-regulation and social control. Grancavage and Norcross (1990:372-378) identified thirty-five therapeutic factors common to psychotherapy, and grouped them into five general categories: client characteristics, therapist qualities, change processes, treatment structures, and relationship elements. In more recent literature, Lambert and Ogles (2004:139-193) divided common factors into support, learning and action factors.

There is a difference between mechanisms of behaviour change (also referred to as mediators) and “moderators” of change. Mediators are the processes through which change occurs (e.g., good therapeutic alliance leads to or mediates a reduction in heavy drinking). Briefly, mediators are the instigators that drive behaviour change. Moderators refer to characteristics (e.g. gender, affective response style, endophenotypes) that have an influence on behaviour change. For example, levels of mental ability may moderate the potential for change in the context of alcohol treatment. Those with high levels of alcohol-related cognitive impairment are less likely to change in the context of treatment than those with low levels of cognitive impairment (Bates, *et al,* 2002:193-212). It is important to note that “mediators” and “moderators” of behaviour change are related and that the underlying mechanisms for behaviour change (mediators) can differ depending on the characteristics believed to moderate change (Kazdin & Nock, 2003:1116-1129).

Examples of potential mechanisms of change can be found in various studies on alcohol treatment programmes. Therapeutic alliance or the working relationship between client and therapist is an important component of the behaviour change process and places emphasis on a collaborative relationship that consists of an emotional bond and shared attitudes regarding the tasks and goals of the treatment programme (Connors, *et al*, 2000:139). While the therapeutic alliance has been examined extensively concerning treatment outcomes, less attention has been given to factors associated with the establishment of the therapeutic alliance itself. The

limited information available suggests that both client and therapist variables may contribute to the nature of the alliance itself (Connors, *et al*, 2000:140). However, most of the empirical research has focused more on client than therapist variables. Client variables were grouped by Horvath (1994) into three categories: interpersonal variables (e.g. family and social relationships), intrapersonal variables (e.g. motivation) and diagnostic variables (e.g. illness classification and severity). The results of Horvath's review suggest that both interpersonal and intrapersonal variables predict the therapeutic alliance. It was noted that symptoms and severity of illness was not related to the reported establishment of the therapeutic alliance. Much less research has been conducted on the therapist variables that might influence the therapeutic alliance. Although it has been assumed that a positive therapeutic alliance necessitates a therapist with good relational capabilities and the ability to be empathic and affirming, there is little empirical work in this area (Connors, *et al*, 2000:140).

These findings were tested in Project MATCH in the United States of America. Three treatments were chosen for their potential relevance to matching, i.e. Twelve Step Facilitation treatment, Cognitive-Behaviour Coping Skills Treatment and Motivational Enhancement Treatment. The Twelve Step Facilitation treatment is based on the concepts of alcoholism as a spiritual and medical disease, with stated objectives of fostering acceptance of the disease of alcoholism, developing a commitment to participate in Alcoholics Anonymous (AA) and beginning to work the twelve steps. The Cognitive-Behaviour Coping Skills Treatment is grounded in social learning theory and viewed drinking behaviour as functionally related to major problems in an individual's life with an emphasis on overcoming skills deficits and increasing the ability to cope with situations that commonly precipitate relapse. The Motivational Enhancement Treatment is based on principles of motivational psychology and focused on producing internally motivated change. The following measures were taken during the three different interventions: client and therapist background characteristics, treatment alliance and participation, client drinking history, alcohol consumption and related consequences, and client psychological functioning (Connors, *et al*, 2000:141-145).

A variety of factors that may contribute to the therapeutic alliance were identified during the Project MATCH study. The alliance was positively predicted by client's age, motivational readiness to change, socialisation, level of perceived social support, client being female, level of overall alcohol involvement, severity of alcohol

dependence, negative consequences of alcohol, therapist age (the mean age for therapists ranged from 37.7 to 39.2 years and 60% to 64% of the therapists were women) and level of education of therapist. Therapeutic alliance was negatively predicted by client educational level, level of depression and meaning seeking (Connors *et al*, 2000:146-147). Data from the Project MATCH study indicated that several client and therapist variables predict the client's perception of the therapeutic alliance and that motivational readiness to change their drinking behaviour is the most important predictor for the alliance in relation to the other variables in these analyses. Motivated clients are more likely to see themselves as more in synchrony with the therapist in terms of goals, tasks and the bond of the working alliance (Connors, *et al,* 2000:147).

In Montana in the United States of America, Walsh Dotson, Henderson and Magraw (2003:758-761) undertook a project to study a prevention intervention model among women at risk. The study was guided by theories of human ecology, self-efficacy and human attachment. Human ecology theory emphasises the importance of social context as an important influence on human development. Self-efficacy activities help to increase women's confidence in their ability to change behaviours that lead to positive outcomes while human attachment guides the relationship the clients will have with their children, other family members and friends. The programme provided home visiting services to pregnant women with risk behaviours, and worked with those women to improve their pregnancy outcome.

Principals of motivational interviewing and case management formed part of the intervention programme. Care coordination services, including home visits are frequently used to promote healthy birth outcomes among women at risk. A team of public health nurses, social workers and nutritionists administered the programme. Para-professionals and home-visiting "advocates" were used (Walsh Dotson, Henderson & Magraw, 2003:758-761). Characteristics of "advocates" included empathy, problem-solving skills, tenacity, and a direct, honest but non-judgemental manner. An important factor was a strong belief in the essential worth and promise of each client regardless of her past and a commitment to working with clients long enough to allow for gradual change to occur. In addition, it was found that an important characteristic of the paraprofessional was a shared history with clients and subsequent personal achievements. The relationship that the paraprofessional support specialist developed with participants proved to be a key factor in keeping

women engaged in the programme and making positive changes (Walsh Dotson, Henderson & Magraw, 2003:758-761).

In another study in the United States of America, the Project Choices Intervention Research Group (2002:1131-1134) undertook a study to test the feasibility and impact of a motivational intervention in reducing drinking and/or increasing effective contraception in women who are at risk for an alcohol-exposed pregnancy. The study provides evidence that providing four sessions of motivational interviewing plus a contraception counselling session are feasible and strongly suggests that this intervention can decrease the risk of alcohol-exposed pregnancy in women in high-risk settings. Incorporating a dual focus of alcohol reduction and contraception in the intervention was an important component of the study. The results showed that some women chose to change only their drinking; others changed only their contraceptive practices, while the remainder changed both. Offering choice can be an important part of a preventative intervention because people tend to be more committed to goals that they establish for themselves. It was further found that women who self-identify problems and seek out treatment would be expected to have a higher rate of compliance with session attendance than women who did not necessarily see themselves as having a problem. It is possible that tailoring the intervention to the participant's choice played an important role in nearly two thirds of the women completing all four motivational interviewing sessions. An unexpected finding was that there were few predictors for success. Women who had lower AUDIT scores were less likely to be at risk during the follow-up interval, especially those with lower scores on items that measure dependence symptoms and consequences of drinking. On the other hand, women who felt more tempted to drink were less likely to succeed. Leading from this, these findings suggest that a woman's beliefs about her ability to deal with temptation may mediate outcomes (The Project Choices Intervention Research Group, 2002:1131-1134).

In order to determine the success of the treatment it is necessary to examine the intensity and the duration of the treatment (Moos & Finney, 1983:1038). This assessment can be done by either recording what was done by counsellors or by demonstrating that treatment produced ultimate positive behaviour change. In both cases, to estimate the degree of treatment implementation, the congruence between the intervention as actually conducted or responded to must be explored as opposed to how it was intended to be applied or experienced (Moos & Finney, 1983:1038).

According to Moos and Finney (1983:1038), intervention programmes are most often not implemented as planned or delivered to recipients in a fixed, standard manner. Treatment often varies from patient to patient therefore researchers are advocating a more differentiated view of treatment processes and to explore the relationship between treatment factors and outcome. Powerful extra-treatment or life-context factors can affect the relative benefits of intervention programmes. Factors that may influence treatment outcome may be length of treatment and the "delivery" of specific treatment components to general standards in successful programmes. Finney and colleagues found in a study in 1981 that lack of intensity of treatment may explain why length of stay is not related to outcome in some programmes (Moos & Finney, 1983:1037). Information on treatment components refers to the quantity of treatment activities, while "treatment quality" refers to the manner in which such activities are conducted. One of the indicators of treatment quality is provided by data on the "social climate" of treatment settings and can be assessed by using specifically designed scales to test the quality of interpersonal relationships, treatment goals, enhancement of autonomy and self-understanding, stability of the setting and openness to change (Moos & Finney, 1983:1038).

Information about the causal mechanisms through which a treatment exerts its effects – including the extra-treatment factors that enhance or impede positive outcome – can help generate new and potentially more effective intervention strategies. Reorganising those stressful or relapse-inducing life situations (risk situations) that are bound to occur, researchers have begun to identify coping resources (protective factors) that clients can acquire to help them deal with these situations more effectively (Moos & Finney, 1983:1042).

Risk situations and alternatives to prenatal drinking were researched by Chang, *et al*, (2006(a):419). The purpose of the study was to examine the impact of a prenatal drinking goal selected during a brief intervention for 115 pregnant women and their partners on subsequent consumption. It was found that women who had their first pregnancies were more likely to choose abstinence as a drinking goal over drinking reduction. Goal selection was highly predictive of subsequent drinking behaviour. It was recorded that those women who were abstinent at enrolment and who chose to remain abstinent had the highest rate of abstinence. The women who chose cutting down on drinking were the least likely to drink less even though they recognised more situations that put them at risk of drinking. They also identified more alternatives to alcohol consumption. The researchers concluded that goal choice in

behavioural self-management of alcohol use by pregnant women is critical. The study found that more than 80% of the pregnant women in the study named their baby's health as the primary reason for making any change in their alcohol use while older women were less likely to be abstinent at enrolment and more likely to choose cutting down as their prenatal drinking goal (Chang, *et al*, 2006(a):419-423). The women who were abstinent at enrolment listed fewer risk situations than the group who were not abstinent, while women who were not abstinent listed more alternatives to drinking, regardless of their goal. These women could also list more risk situations and named celebration occasions as potential risk situations for prenatal alcohol use nearly three times the rate as those who were abstinent at enrolment. The following alternatives to risk situations were identified by pregnant women in the study: avoid risk situation, modify alcohol use, non-alcoholic alternative, positive reinforcement, relaxation, focus on healthy habits, intellectualise and use support of partner (Chang *et al*, 2006(a):425).

A strong tool to assist with identifying risk situations and alternative situations to drinking was the self-help manual used in a study by Bien, Miller & Tonigan (1993:315-336). Collateral reports were used to confirm alcohol consumption reported by participants. Again, counsellor style reflected in behaviour counts from tapes was strongly predictive of client outcomes. It is interesting to note that a more confrontational style was linked to more negative outcomes one year later. The study found that assessment of drinking behaviour may in itself change behaviour. This is a familiar scientific problem that observation alters the phenomenon being observed. Therefore, the reduction in drinking often observed in control groups may be more than natural history, reflecting a reactive effect of assessment. However, according to Bien, *et al,* (1993:320) change does not appear to be attributed to initial assessment and brief treatment alone. Motivational characteristics of the population, the reactivity of self-monitoring, or the mere passage of time may contribute toward the change. Brief intervention studies have often included repeated follow-up visits and produced substantial differences between control groups and intervention groups. Sustained follow-up has more generally been recognised as a factor favouring change and maintenance. However, many studies on brief interventions documented behaviour change immediately following the brief intervention, without the benefit of repeated follow-ups. An important finding by Harris & Miller (cited in Bien, *et al*, 1993:329) that could have implications for treatment programmes within the South African context, is that brief interventions are preferable to waiting for treatment. It was suggested that agencies with waiting lists of problem drinkers (or health care professionals unable to

find an immediate referral) should consider providing an initial brief evaluation and intervention, rather than merely instructing clients to wait until therapy is available (Bein, *et al*, 1993:329).

2.6.1 The intervention as implemented in the Ceres Intervention Study

As mentioned before, the intervention programme lies at the heart of any study on alcoholism intervention. The intervention programme, outlined in Chapter 3, is only a guideline since intervention programmes are usually tailored according to the needs of recipients and often vary across clients (Cronbach, cited in Moos & Finney, 1983:1037).

The programme outlined was not completely implemented as intended. The intention was to tailor the intervention according to the emergent needs and AUDIT test scores of pregnant women. However, it was decided to provide the same intervention to all the women (simple advice, brief counselling and continuous monitoring) because of the tendency by pregnant women to underreport their drinking or the possibility that they could start drinking again later on in the pregnancy (Hankin, 2002:62). No other changes were made to the implementation of the intervention.

The delivery of the programme focuses on the quantity and quality of treatment activity (Suchman cited in Moos & Finney, 1983:1038). This assessment can be accomplished either by documenting what was done by treatment providers or by demonstrating that treatment produced intermediate changes in clients leading to ultimate positive outcomes. In either case, to estimate the degree of treatment implementation, the resemblance between the intervention as actually implemented or experienced and the intervention as it was intended to be applied or experienced, must be determined. Relevant standards for assessing treatment quantity and quality have been developed from information derived from other programmes, theoretical analysis or expert judgement (Sechrest, West, Phillips, Redner & Yeaton cited in Moos & Finney, 1983:1038).

Researchers compared the length of treatment and the “delivery” of specific treatment components to general standards in successful programmes and found that the mean length of a programme that produces positive outcomes was between six to twelve weeks, with weekly or more sessions (Costello cited in Moos & Finney,

1983:1038; The Project Match Research Group: Matching Alcoholism Treatments to Client Homogeneity, 1997a:13).

Information on intervention components refers to the quantity of treatment activities, while treatment quality refers to the manner in which such activities are conducted. Indicators of treatment quality relate to the social climate of treatment settings, quality of interpersonal relationships, treatment goals such as enhancing independence and self-understanding, and the degrees to which the setting maintains stability and is open to change. According to Moos (1983:1038), treatment indicators can be measured by using specific scales such as the Community-Oriented Programmes Environment Scale (SCOPES). The quality of the treatment is also dependent on the client-counsellor relationship and the treatment milieu. Therapist empathy proved to be a good predictor of treatment outcome (Moos & Finney, 1983:1040). As mentioned before, programme outcomes are largely influenced by extra-treatment factors. Intervention programmes are part of “open systems” and are only one of the range of influences a client is involved in during the intervention process (family and work environments etc.). It is very important to understand how the intervention was implemented and this is presented in the next section on the conceptual framework.

In the Ceres Intervention Study, brief interventions (BI) and brief motivational interviewing (BMI) were chosen as the main intervention techniques due to the success of the methods documented in various studies (Rollnick, Mason & Butler, 2005). Brief intervention and brief motivational interviewing techniques provide a variety of intervention techniques that can be adapted and tailored to the specific needs of the client. For this reason, I attended special training in these methods provided by Dr Steven Rollnick and his team from the United Kingdom. In addition, BI and BMI combined with extensive experience in the implementation of social work intervention methods and the conceptual framework by Morèn and Blom (2003), describing the “dialectical interplay” in interventions guided the intervention process.

2.6.1.1 Brief interventions

Brief interventions have proved to be a valuable intervention tool to manage individuals with alcohol-related problems (Babor & Higgens-Biddle, 2001:4). BI methods are based on social learning theory which promotes the idea that feelings of high self-efficacy are very important (Bandura, cited in Rollnick, Mason & Butler, 2005:92). Brief interventions are a low-cost, effective intervention tool, increasingly

used by health-care workers and policy makers to fill the void between primary prevention efforts and more intensive treatment for persons with serious alcohol-use disorders. It can serve as treatment for hazardous and harmful drinkers, and facilitate referral of more serious cases of alcohol dependence to specialised treatment. Brief interventions is defined as those practices that aim to identify a real or potential alcohol problem and motivate an individual to do something about it (Babor & Higgens-Biddle, 2001:6). However, in spite of the proven effectiveness of brief interventions in the general population, few control group studies for using this technique have been conducted with pregnant women (O'Connor & Whaley, 2007:252).

Yahne and Miller (as cited in Roberts & Nanson, 2000:25) summarised the elements of most successful brief interventions and uses the acronym *FRAMES* (feedback, responsibility, advice, menu, empathy and self-efficacy) for identifying the different counselling steps. These are:

- providing information and inviting feedback on personal alcohol consumption levels,
- assuming responsibility for own behaviour change,
- advice is given in a supportive and non-judgemental manner,
- different options and strategies are provided to the client to choose from according to their own needs,
- the counsellor provides empathetic, reflective, warm and supportive interventions and reinforces self-efficacy (i.e. the client's expectation or belief that she can change).

It was found that heavy drinkers reduced their drinking after screening and a single session of brief intervention, compared to a wait-list control group who received no intervention (Roberts & Nanson, 2000:25).

2.6.1.2 Brief Motivational Interviewing (BMI)

Brief motivational interviewing (BMI) is a derivation of motivational interviewing. The method was developed over a ten-year period and was tested on real and simulated consultations with excessive drinkers, smokers and people with diabetes. The method is taken from two broad sources: the addictions field (Miller 1983, Miller & Rollnick 1991) and the stages of change model on the one hand (DiClemente &

Prochaska 1998) and on the other, the patient-centred approach to the consultation (Stewart *et al,* cited in Rollnick, Mason & Butler, 2005:11).

BMI provides practitioners with a spectrum of possibilities in communication techniques that are matched with the individual patient's readiness to change. The principles of brief motivational interviewing can be applied to any consultation that involves behaviour change and helps clients explore and resolve their own ambivalence about change (Mash, 2003:592). The "spirit" of the method is very important and is more a "collaborative conversation about behaviour change", based on a client-centred style where the client is encouraged to be an active decision-maker. The practitioner provides structure and direction (to the discussion on behaviour change) and expert information where appropriate, and guides patients to talk about their own aspirations and views about behaviour change. The client always has the freedom of choice and is assisted to make an informed choice about whether or not to change their behaviour (Rollnick, Mason & Butler, 2005:32).

Central to the client-centred approach are the use of specific techniques; simple open questions, listening and encouraging with verbal and non-verbal prompts, clarifying and summarising, and reflective listening (making statements in order to understand the client's meaning). Key characteristics of the method are:

- respect for the autonomy of the client,
- the right to self-determination by allowing the client to choose what behaviour, if any, to focus on,
- a non-confrontational interviewing style,
- skilful information exchange,
- monitoring of readiness to change,
- how important change is for the client and how confident the client is that he/she will succeed in changing their behaviour.

The role of the counsellor is to provide structure, direction, support, and information, and to elicit and respect the client's views and aspirations while negotiating change sensitively. The client is an active decision maker in the process (Rollnick, Mason & Butler, 2005: 30, 31, 38).

Chang *et al* (cited in Roberts & Nanson, 2000:24) tested the effectiveness of a 45-minute intervention in a controlled study with pregnant women. Respondents in the control arm received an initial two-hour assessment of alcohol use and other

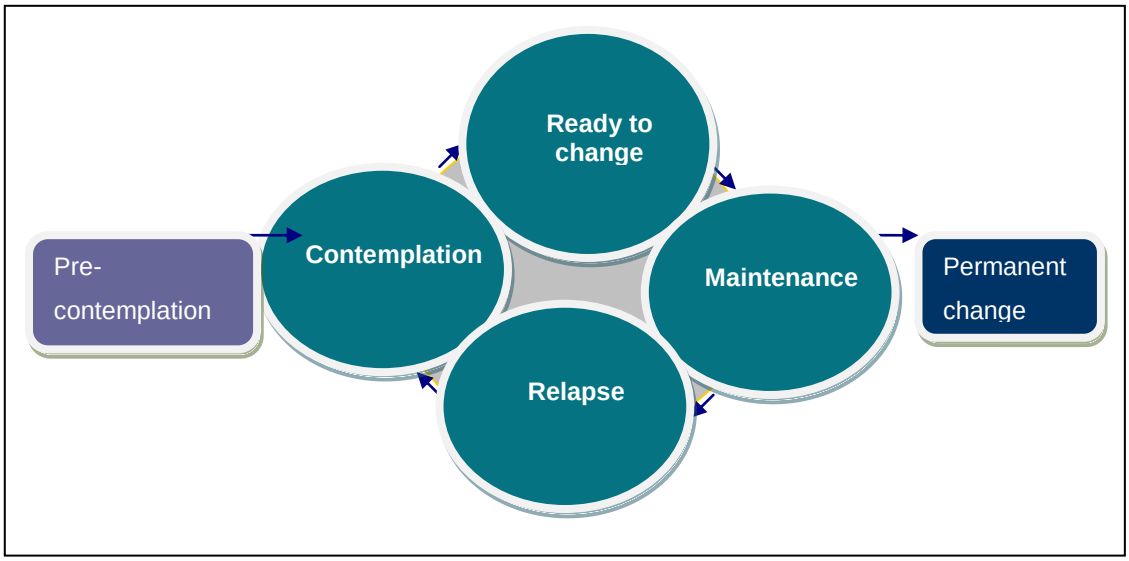
problems. The experimental group received the assessment followed by a brief intervention which included revision of the women's general health and course of pregnancy, revision of lifestyle changes made since pregnancy, articulation of drinking goals while pregnant, identifying temptations and summarising the session in terms of four key points i.e. drinking goal, motivation, risk situations and alternatives while noting them in a take-home manual. This study showed an overall decline in consumption for both the control and the experimental groups following the assessment (Roberts & Nanson, 2000:24-25). However, the control group showed a greater decrease, prompting the investigators to speculate that the intervention may have been too short, or that comprehensive assessments may have therapeutic value in themselves (Roberts & Nanson, 2000:25).

As mentioned, brief motivational interviewing is based on the "stages of change" model, describing the stages that people go through in deciding whether to change. The model identifies five stages:

1. pre-contemplation,
2. contemplation,
3. ready to change,
4. maintenance and
5. relapse control.

Figure 2.3 below provides an illustration of the stages of the change model (Mash, 2003:593). The model shows how behaviour change is contemplated by actors and how different stages are moved through which either lead to permanent change taking place or not. Specific communication skills are used for each stage and the counsellor should assess and respect the stage at which the client is.

Figure 2.3: Stages of change model



Source: Mash, 2003:593

Another tool that has been developed to assess clients' readiness to change is the "readiness to change ruler" (Miller, 1999) where the client can indicate readiness on a scale from 1 to 10 in terms of the importance of change, and confidence in ability to change (with 1 being not important/not confident and 10 being very important/very confident). Clients who score on the lower end of the scale are pre-contemplators. Those who score in the middle range (4-6) are contemplators, and those scoring in the higher range should be considered ready to take action (Babor & Higgens-Biddle, 2001:24; Mash, 2003:593).

The timing for discussing change is very important and permission should be obtained from the client to initiate a discussion on behaviour change. (Mash, 2003:594). In the pre-contemplation phase, the client often shows a complete lack of motivation to change and the role of brief motivational interviewing is to help the client to shift in readiness to change. One of the techniques used in BMI to bring about this shift is the "elicit-provide-elicit" method (Rollnick, Mason & Butler, 2005: 54-56). In this method the potential relevance of the information is tested (elicit) by asking the client to provide feedback or what he/she wants to know more about. The information is then provided (provide) in a neutral way. The possible impact of the information is then discussed (elicit) by asking the client what he/she thinks about it. The clients are finally enabled to internalise and process the information for themselves.

In the contemplative phase clients look at the pros and cons of change and experience mixed feelings about change and fluctuating levels of motivation. Brief motivational interviewing helps the clients to explore their own ambivalence and to make a more conscious decision to change. Clients who are ready to change are highly motivated and are assisted to set concrete and specific goals, to enlist trusted support and to focus on practical aspects of how to change and how to deal with difficult situations. Clients may resist change at any stage and direct persuasion or advice-giving can reinforce resistance, resulting in non-adherence. The social context within which behaviour change occurs (poverty, unemployment, etc.) plays an important role in the change process and should be taken into account by the counsellor (Mash, 2003:596).

There is consensus among experts (Roberts & Nanson, 2000:20-23, 27) that screening of pregnant women for alcohol use is important and that screening tools such as the AUDIT, CAGE and others can identify women who abuse substances. There is good evidence that brief interventions and brief motivational interviewing can be used in prenatal settings to help women with early stage alcohol problems to reduce or stop their alcohol use during pregnancy (Roberts & Nanson, 2000: 23-26, 28).

In the next section, effective behaviour change techniques in intervention studies are discussed.

2.7 Effective behaviour change techniques in intervention studies

In developing interventions to change behaviour, increasing recognition is given to theories of behaviour change and the importance of categorising intervention content into its component techniques. In order to do this, a detailed description is necessary for evaluating effectiveness and for understanding mechanisms of change (Michie & Abraham, 2004:29-49). According to Michie (Michie, *et al,* 2008:5), interventions are likely to be more effective if they target causal determinants of behaviour and behaviour change while theory-based interventions provide insight and understanding into why particular interventions work and form a basis for developing better interventions across different contexts, populations and behaviours. Theory can be advanced only if interventions are theoretically informed (Michie, *et al,* 2008:5).

Theories cited in the work of Michie (Michie, *et al,* 2008:5), included the stages of change/trans-theoretical model, social cognitive theory, the theory of reasoned action, the precaution adoption model, precede-pro-cede model, behaviour modification principles and organisational theory. Many of the studies used more than one model. In the Ceres Intervention Study the Stages of Change Theory (Prochaska, DiClemente & Norcross, 1992) was used and social cognitive theory as applied within brief intervention studies (Babor, *et al,* 2001).

Literature studies undertaken by Michie (Michie, *et al,* 2005:5), aimed to describe the evidence base for the effectiveness of health behaviour interventions that target low-income groups. The aim of the studies under review were to reduce smoking, unhealthy eating, or an increase in physical activity. The studies also focused on the component techniques of the interventions, the theories used to develop the interventions and associations between theory and intervention content, and between intervention content and effect. Twenty-one electronic databases were searched (January 1995 to September 2006) using search terms related to a low-income population and three behaviours related to health: smoking cessation, healthy eating, and physical activity. Twenty-four health experts in the health inequalities field assisted in the study. Studies from four countries were included in the review (United States of America, United Kingdom, Canada and the Netherlands). Only thirteen of the 7 821 papers screened were identified to meet inclusion criteria (Michie, *et al,* 2008:6,14). Where the study investigated more than one behaviour it was included separately in the review. The information derived from the thirteen papers was relevant in terms of evaluating intervention techniques and methods that were used in the Ceres Intervention Study and explained to some degree how behaviour change was facilitated.

The intervention techniques used in the Michie study (Michie, *et al,* 2008:14) were very dissimilar and the studies incorporated any from four to nineteen techniques (refer to the list of techniques below in Table 2.8). Those used more frequently (in at least ten of the seventeen interventions) were: providing general information; providing information about the consequences of a particular behaviour; helping to form an intention to change a behaviour; setting specific goals; identifying barriers to changing behaviour; and planning social support or social change and providing rewards contingent on performing the behaviour (Michie, *et al,* 2008:14).

Table 2.8: Intervention techniques

No	Intervention technique	% Frequency
1	Provide general information	85%
2	Provide information on consequences	75%
3	Prompt intention formation	70%
4	Prompt specific goal-setting	60%
5	Prompt barrier (risk) identification	55%
6	Plan social support/social change	50%
7	Provide contingent rewards	45%
8	Relapse prevention	45%
9	Provide instruction	40%
10	Provide general encouragement	40%
11	Teach to use prompts/cues	35%
12	Set graded tasks	30%
13	Provide feedback on performance	30%
14	Provide opportunities for social comparison	30%
15	Model/demonstrate behaviour	25%
16	Prompt monitoring of behaviour	25%
17	Use follow-up prompts	20%
18	Prompt identification as role model	20%
19	Stress management	20%
20	Prompt practice	15%
21	Motivational interviewing	15%
22	Provide information about other's approval	10%
23	Prompt review of behavioural goals	10%
24	Time management	10%
25	Agree behavioural contract	5%
26	Prompt self-talk	5%
27	Prompt use of imagery	5%
28	Environmental restructuring	5%

Source: Adapted from Michie*, et al,* 2008

According to Michie, *et al,* (2008:17), the most frequently used intervention techniques observed in their review of low-income groups and behaviour change interventions were providing information (for example, about the consequences of the behaviour) and prompting people to form intentions and to set goals. There are two suggestive findings from this review. The first is that more focused interventions involving a small set of techniques may be more effective than interventions combining a large number of different techniques. The second suggestive finding is that the most common techniques (providing information and facilitating goal setting) may be helpful for low-income groups. These two sets of techniques may be working

additively, in that providing information about the benefits of changing behaviour may increase people's motivation to change, while helping people to form specific, realistic goals, help people to translate motivation into action. This has some parallels with a finding from Coulter and Ellins's systematic review of patient-focused interventions (Coulter & Ellins, in Michie, *et al*, 2008:17). They found that providing information, on its own, had little effect on people's knowledge about their own health. However, if this knowledge is combined with a professional consultation or advice, it could improve knowledge and recall, especially where the information was personalised. Disadvantaged populations benefited more than other groups, possibly because their knowledge base was less, so they had more to gain from health information. Providing information changed behaviour only when accompanied by active, behavioural strategies such as teaching self-management tools (Coulter & Ellins, in Michie, *et al*, 2008:17).

Goal-setting is a key behaviour change technique in evidence-based theories of behaviour change and self-regulating theory (social cognitive and control theory). Setting goals that are realistic and achievable help people feel more confident about being able to change their behaviour and make them more aware of their current behaviour. Breaking down large, long-term goals into smaller, short-term goals allow people to build on small successes, leading to greater feelings of control or "mastery". This may be especially important for those in disadvantaged situations, who often experience little control over their circumstances and therefore feel powerless to bring about change. Goal-setting is a relatively simple technique that can be successfully taught to a wide range of people varying in educational and social background, but disadvantaged groups may have more gain if their confidence and skills base is lower (Heneman, *et al*, in Michie, *et al*, 2008:17-18).

2.8 Conclusion

Foetal Alcohol Spectrum Disorder is recognised as a public health risk in South Africa. Amongst the highest prevalence rates for FASD in the world are recorded in the Western Cape Province. High levels of alcohol consumption in South Africa and pregnant women who drink are associated with high risk factors for children being born with FASD. To change alcohol drinking behaviour is complex, therefore behaviour change methods and techniques used in the addictions field are best suited for intervention programmes. In the Ceres Intervention Study behaviour change methods were derived from Social Learning Theory, The Stages of Change

Model and the Patient Centred Approach (Rollnick, Mason & Butler, 2005). Brief interventions and brief motivational interviewing methods were explored and screening tools were used to assess and monitor alcohol use disorders.

In Chapter 3, the research design and methodology is discussed and the research process is explored in terms of the research objectives and implementation process.

Chapter 3

Research design and methodology

3.1 Introduction

In response to the immense need in South Africa for interventions that address addictive behaviours, Dr Sandra Marais from the South African Medical Research Council (MRC) in collaboration with the Foundation for Alcohol Related Research (FARR) launched a study on Foetal Alcohol Spectrum Disorder (FASD) in Ceres in the Witzenberg sub-district in the Western Cape Province of South Africa during 2007. The aim of the study was to test an intervention aimed at helping pregnant women change their drinking behaviour by reductions in alcohol consumption during pregnancy so that they could deliver healthy babies. The study was a community-based intervention and took place from March 2007 to February 2008. In May 2006, I was invited to be involved with the design and implementation of the study and I accepted.

The focus of the Ceres Intervention Study was to explore the effect of brief interventions (BI) on the drinking behaviour of pregnant women in Ceres, measured by the alcohol use disorders identification test (AUDIT), in a population with risky behaviour, using a cluster-randomised trial design (Marais, Jordaan, de Waal, Poole, Viljoen & Olivier, 2010). The outcome of the study showed a remarkable difference in behaviour change. Sixty percent of the women in the intervention group (compared to 41% of women in the control group) changed their drinking behaviour. Based on other studies of this nature, on average a change of 25% in drinking behaviour can be expected due to the use of brief interventions compared to no intervention (Bien, Miller & Tonigan, 1993:315-335).

The behaviour changes that took place during the intervention process prompted further questions as to why some women in the intervention group changed their behaviour and others not. The focus of my study is to take the original study, which looked at whether there was a change in behaviour between women in the intervention group (IG) compared to women in the control group (CG), but to specifically examine women in the IG in terms of those who reduced their drinking

(the “change” group) and those who did not (the “no-change” group). This allows for examining the differences within the intervention group, which refers to the change and no-change groups.

3.2 Research aims and objectives

Although behaviour change took place in both control and intervention groups (as both received an intervention – refer to the section on methodology), the behaviour change that was observed in the intervention group became the focus of this thesis, firstly because a more comprehensive intervention was administered to this group and secondly, more information has been obtained from this group that could possibly assist in understanding the change in behaviour that took place. The question addressed in this study is: What facilitated the behaviour change? The study therefore aims to examine the change that occurred in the so-called change group in the intervention arm of the study, to identify intervention methods and techniques that were used to facilitate the change and to apply the conceptual framework derived from Morèn and Blom (2003) (discussed in Chapter 2) to explore the behaviour change that was observed in the intervention group.

In order to do this, data from the intervention and control arm of the study is compared to each other and the behaviour change that was observed in the intervention arm within and between the change and no-change groups is described and explained. A further aim is to examine the intervention process in terms of methods, techniques, and outcome. Morèn and Blom’s conceptual framework is provided in Table 3.1 below as a useful framework according to which the intervention process is framed within the context of the dialectical interplay which develops between the client and the counsellor.

Table 3.1: Intervention and Stages of Change model

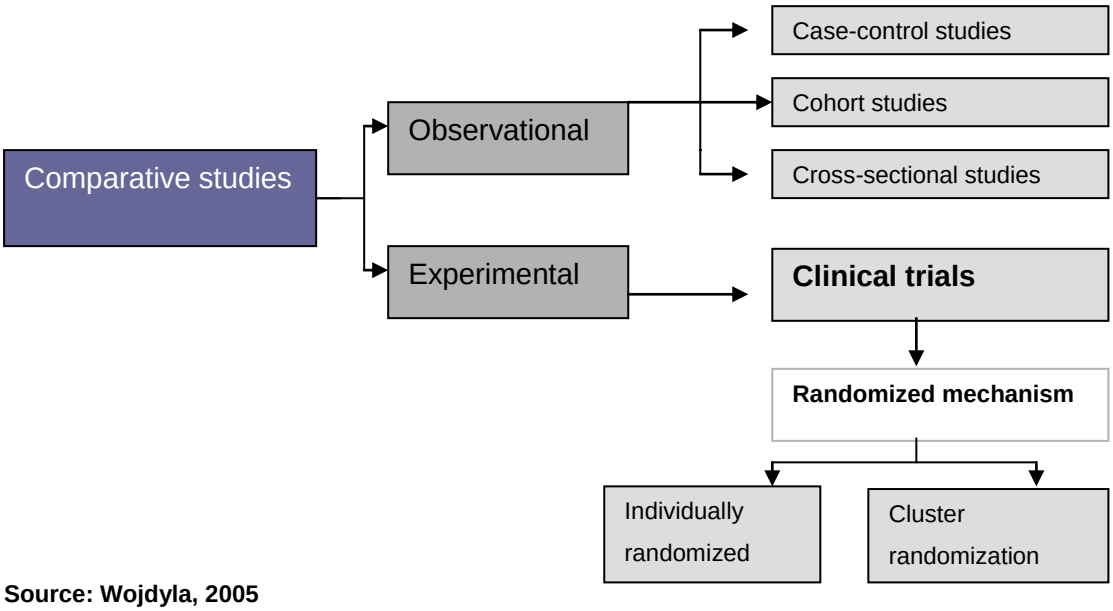
Counsellor's Interventions	Dialectical interplay	Client's Response - Readiness to change
Methods	**Techniques**	**Outcome**
1. Provide general information and information on consequences	Consciousness raising through skill full information exchange	Pre-contemplation
2. Prompt intention formation	Interviewing skills, work modes and principles/self-re-evaluation	Contemplation
3. Prompt specific goal setting and barrier (risk) identification	Interviewing skills and presentation of new options/ self-liberation	Preparation for Action through choosing protective factors
4. Engage social support and rewards	Information exchange, and interviewing and counselling skills/reinforcement	Action
5. Relapse Prevention	Screening, monitoring and Information sharing skills	Maintenance/relapse or permanent behaviour change Offer + Choice = Response

Adapted from: Morén & Blom, 2003

3.3 Research design and methodology

As mentioned, the Ceres Intervention Study explored the effect of brief interventions and brief motivational interviewing on the drinking behaviour of pregnant women in a population where there is a high incidence of drinking amongst pregnant women. The study utilised a cluster-randomised trial design. Cluster-randomised trials are experiments where groups of individuals rather then individuals are randomly allocated to intervention groups. These social groups include communities, clinics or hospitals, schools, families etc. Cluster-randomised trials are also referred to as group-randomised trials (Higgens & Green, 2008). In this design the unit of analysis is the cluster or the group. A common mistake that is made with cluster-randomised trials is that the data is incorrectly analysed as if the unit of analysis had been the individual participants rather than the cluster. This can result in incorrect outcomes on the intervention effect. However, recently statistical methods have been developed to enable statistical analysis of individuals in a cluster while accounting for the clustering in the data. The desired information to extract from a cluster-randomised trial is the direct estimate of the required effect measure (for instance the odds ratio with its confidence interval) from an analysis that clearly explains the cluster design (Wojdyla, 2005). A cluster-randomised trial forms part of comparative studies and can be illustrated as follows:

Figure 3.1: Cluster-randomised trials



Source: Wojdyla, 2005

The reason why this design was used is that it measures the outcome of the intervention and uses a between groups experiment (comparison group design) where the question is asked whether *X* (independent variable = the intervention) has an effect on *Y* (dependent variable = behaviour change). A causal hypothesis is formulated as follows:

IF a counsellor engages with a client to bring about a dialectical interplay ***THEN*** generative mechanisms will be activated to influence the emerging results (based on Morèn & Blom, 2003).

3.3.1 Strengths and limitations of the design

Strengths of the cluster-randomised design are:

- It assists with the need to minimise or remove contamination in the event of subjects in different intervention groups sharing information.
- Application of the design is applicable in situations where basic feasibility is a consideration.
- In situations where intervention programmes use mass education, randomised-control trials are a natural choice.
- The experimental unit that is analysed is also the unit of analysis however inferences are often made at the individual level while randomisation is applied at the cluster level.

- Clustering effect can be measured through intra-class correlation that measures the degree of similarity among responses within a cluster and it gives a measure of how much the sample size in each group have to be increased to achieve the same statistical power as would be achieved with individual level randomisation (Wojdyla, 2005).

Limitations of the design are:

- Recruitment bias can affect the study when individuals have prior knowledge of randomisation of the trials and which type of intervention is implemented in the different clusters.
- Baseline imbalances can occur in the clusters and with individuals due to small numbers of clusters or lack of concealment of an allocation sequence.
- Complete clusters may sometimes be lost from a trial and have to be excluded from the analysis and may lead to bias.
- Many cluster-randomised trials do not take the cluster into account and therefore use incorrect statistical analysis methods.
- The estimated intervention effects being estimated may have to be considered in different clusters and individually randomised trials (Higgens & Green, 2008).

Cluster-randomised trials are usually applied in medical or clinical settings such as in the Ceres Intervention Study where clinics were the units of randomisation. It was first thought that the study could be implemented at the Ceres Provincial Hospital where participants could be seen after they had attended a sonar scan but plans were altered after the pilot study revealed a lack of referrals which made it impossible to proceed as planned. Some clinics referred pregnant women for sonar scans while others hardly made any bookings. It was then decided to use the community clinics as units of randomisation. The design however does not lend itself to qualitative interrogation. Statistical advice was used in the Ceres Intervention Study for developing the cluster-randomised trial.

The Ceres Intervention Study consisted of an Intervention Group (IG) and a Control Group (CG). The IG received brief interventions (in the form of four contact visits and ongoing support and monitoring) while the CG only received two contact visits and much less support and monitoring. The outcome of the study showed a remarkable change in the drinking behaviour of all the pregnant women, regardless of which

group they were in. Sixty percent of the women in the IG changed their drinking behaviour of which 57% stopped drinking. Forty-one percent of the women in the CG reduced their drinking although 10% of women in this group increased their drinking.

Two programmes were implemented; one for each of the groups:

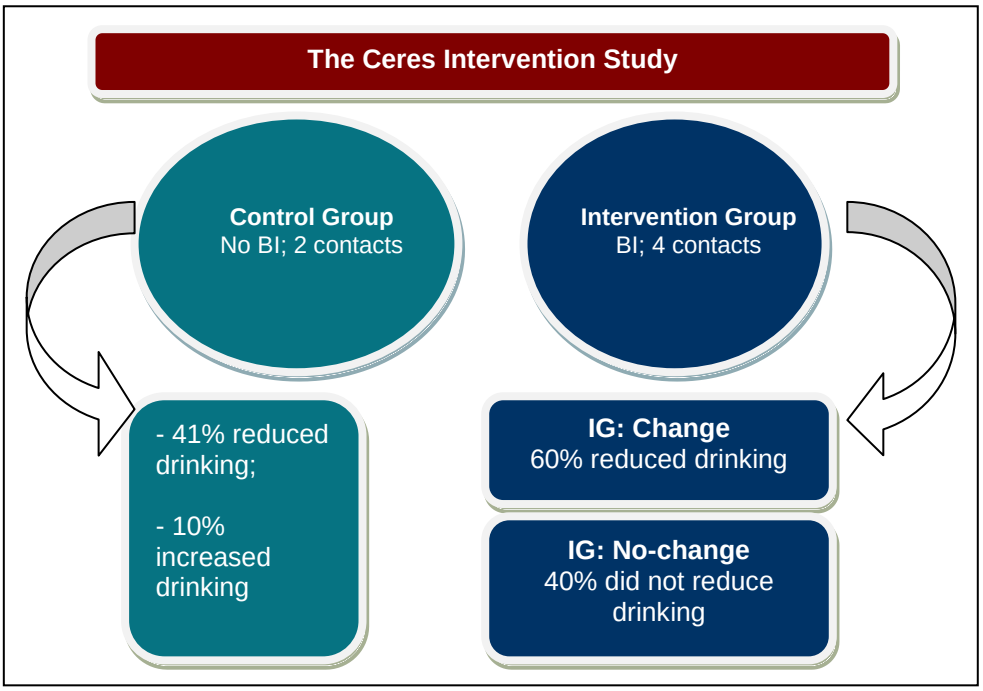
- The control arm programme - the first session used pre-test screening and provided information in a take-home format. The second session was delivered in the $7^{th}/8^{th}$ month of pregnancy and included post-test screening and information sharing.
- The intervention arm programme - consisted of pre-test screening in the first session and included four intervention sessions based on information sharing, counselling and support, and a post-test in the $7^{th}/8^{th}$ month of pregnancy.

For this study, the independent variable (the intervention) was manipulated and a comparison group (control group) was used. A standard quantitative analysis, such as a comparison of mean scores between the intervention group and the control group and a t-test (or analysis of variance) would be used to indicate if there is a statistically significant difference between the pre-test and post-test for participants. A statistically significant difference implies that any differences that are observed between a mean pre-test score and a mean post-test score is not due to chance factors but (most likely) indicate true differences (Babbie & Mouton, 2001:349). Findings for the Ceres Intervention Study showed a statistically significant difference in the total Alcohol Use Disorders Identification Test (AUDIT) scores between the control group and the intervention group after the intervention ($f=9.54$, $p=0.002$). The difference was two units (SE=0.6) (Marais, *et al,* 2010).

However, two groups, the change and the no-change groups, emerged from the intervention arm of the study and prompted further questions on the behaviour change that occurred. While 60% of the pregnant women in the intervention group changed their drinking, 40% did not change. A within group analysis was therefore undertaken to clarify and examine the process of change that occurred or did not occur in the intervention arm of the study.

Figure 3.2 below shows how the intervention group has been further divided into two groups, the change and no-change groups.

Figure 3.2: Diagrammatic representation of the Ceres Intervention Study



3.4 Sampling

As mentioned, a cluster-randomised trial design was implemented and the eight clinics were the unit of randomisation. All eight clinics in the Ceres sub-district were included in the study. The clinics were randomised into clusters of four intervention clinics and four control clinics. The randomisation of clinics was done by a statistician as independent researcher in the study. The geographical area where the clinics are situated served a population of 1219 women attending antenatal services in 2007. The intervention clinics were the Annie Brown Clinic (Ceres), Bella Vista Clinic (Ceres), Witzenville Clinic (Tulbagh) and Montana Clinic (Wolseley). Women on farms utilised mobile clinics connected to the town clinics. Control clinics included Nduli Clinic (Ceres, mainly isiXhosa speaking women - a translator was used to communicate with them), Prince Alfred's Hamlet Clinic, Op-Die-Berg Clinic and Breërivier Clinic. Women in the control arm of the study living on farms also utilised mobile clinics connected to the town clinics.

Pregnant women were recruited at the clinics closest to their homes where they attended antenatal checkups for the duration of their pregnancy. Four clinics were each randomized to the intervention and control arm of the study as clusters in order to limit contamination bias. Inclusion criteria were women less than 20 weeks

pregnant and older than 15 years. All women meeting these criteria were included in the study because this was a pragmatic study design, favouring design choices that maximise applicability of the trial's results to usual care settings, in other words the study is generalisable to the general clinic settings in this area (Zwarenstein, cited in Marais, *et al,* 2010).

A total number of 194 women were interviewed for the Ceres Intervention Study. All pregnant women who met inclusion criteria (less than 20 weeks pregnant and older than 15 years) were included in the sample and those who reported that they were not drinking were also included in the study. The reason for this decision was that according to the literature women tend to underreport their drinking and the possibility existed that women could start to drink later on in their pregnancy (Hankin, 2002:62). Women attending the clinics were referred to the fieldworkers by the nursing staff once they had signed a preliminary consent form. The fieldworkers entered their names onto a list, saw them immediately or arranged appointments. All interviews for the intervention group were conducted by a trained social worker. A trained field worker conducted interviews for the control arm.

Ninety-eight women were allocated to the intervention arm of the study of which 97 participants were analysed for the primary outcome (a follow-up rate of 99%). Pregnant women in the intervention arm of the study received four intervention sessions (pre-test-post-test screening, information sharing, brief counselling and continuous monitoring) conducted by a social worker. They also received take home information packs and a self-help booklet and incentives in the form of a food parcel after each follow-up session. Ninety-six pregnant women were included in the control arm of the study, using similar criteria to that of the intervention group. A total of 82 participants were analysed for the primary outcome in the control arm (a follow-up rate of 85%). A field worker conducted two intervention sessions with the control group (pre-test-post-test screening and take home information packs as well as food parcels at both interviews).

Sample size justification was based on the following:
A 20% reduction in alcohol use and an intra-cluster correlation coefficient of 0.01 were used for sample size estimation. A sample size each of 97 women in each group, which were obtained by sampling 4 clinics per group, achieved 80% power to detect a post-intervention difference of 20% between the intervention and the control groups. The significance level of the test was 0.05 (Marais, *et al,* 2010).

3.5 The intervention

There were two interventions administered to each of the control and intervention arms of the Study. The control arm received only two sessions consisting of screening/assessment and take-home information while the intervention arm received four sessions with various intervention techniques. The table below provides a comparative summary on the implementation of the intervention of the Ceres Intervention Study. The intervention administered to the intervention arm is discussed in detail below.

Table 3.2: Summary of intervention implementation for the Ceres Intervention Study per intervention and control groups

Session	Intervention group	Control group
Session 1	Contracting Personal Assessment Questionnaire (PAQ, Appendix 1) AUDIT alcohol screening test (Appendix 2) Information sharing Brief interventions (BI) and Brief motivational interviewing (BMI) Introduced self-help booklet Collateral letter Incentive	Contracting PAQ AUDIT Take-home information Incentive
Session 2 (41 days later)	Alcohol Record Questionnaire (ARQ) incorporating the CAGE test (Appendix 3) Collateral interview Goal-setting and revision of self-help booklet BI and BMI Incentives	No intervention
Session 3 (47 days later)	ARQ and monitoring Collateral interview Revision of goals and self-help booklet BI and BMI Edinburgh Postnatal Depression Scale to measure mental wellbeing (Appendix 4) Bonding questionnaire (Appendix 5) Parenting information Incentives	No intervention
Session 4 (58 days later)	AUDIT ARQ Abuse Assessment Screening Test (AAST, Appendix 6) BI and BMI Collateral interview Contracting for Phase II Incentive	AUDIT Abuse Assessment Screening Test (AAST, Appendix 6) Contracting for Phase II Incentives

The intervention administered to the intervention arm consisted of various techniques which were delivered in four sessions over a course of nine months. Delivery of the intervention took place in community and clinic settings. The intervention method will be examined in more detail, starting with the first two sessions, which had specific techniques delivered only in these two sessions. Techniques used in the remainder of sessions (three and four) also overlap with session two which contained a combination of techniques from session one and session three and four.

The intervention method for sessions one and two aimed to:

- Provide general information and information on consequences,
- Prompt intention formation, and
- Prompt specific goal setting and barrier (risk) identification.

The two sessions were conducted six to seven weeks apart from each other and included the following techniques:

- General information concerning the mother and her unborn baby's health. The information included the following:
    - The importance of a sonar scan.
    - The development of the baby *in utero.*
    - The importance of following a healthy and balanced diet during pregnancy.
    - Warning signs during pregnancy.
- Gradual introduction to the topic of alcohol use during pregnancy together with information on healthy food, and the effect of smoking, and alcohol and drugs on the foetus. Information is provided in a neutral way, referring to pregnant women in general.
- Introduction of brochures and leaflets on the damaging effects of alcohol, smoking, and drugs on the foetus and explained what FAS/FASD is. Read with the pregnant woman through the information brochures, and used Brief motivational interviewing techniques to ask questions, to listen to answers and to provide further information.
- Providing visual information and bringing the information "closer" to the pregnant woman. Using a "flip chart" to show and discuss the following:
    - The brain of a healthy child and the brain of a child with FAS/FASD.
    - The effects of eating, drinking, smoking and drugs on the developing baby.
    - That alcohol is a drug.

  - What a standard drink is (by means of pictures) and the varieties of alcoholic drinks.
  - What an alcohol limit is.
  - That the best option for pregnant women is to abstain from using alcohol. No alcohol in pregnancy is the safest message.
- The Personal Assessment Questionnaire (PAQ) and screening tools to measure alcohol use disorders. Using the readiness to change ruler scale to assess readiness for change in terms of motivation and confidence (indicating self-efficacy or belief in self).
- Providing feedback on the level of risk measured in terms of the AUDIT Zone levels.
- Applying brief interventions (directive approach) and FRAMES in providing feedback, to teach responsibility, give advice, provide a menu of alternative strategies, to show empathy to client and to strengthen client self-efficacy (belief in her ability to succeed).
- Applying counselling skills to interact with pregnant women e.g.:
  - Building self-esteem and trust-relationships.
  - Building rapport.
  - Non-confrontational and quiet, eliciting interviewing style, known as the “spirit” of the BMI method.
  - Encouraging the pregnant woman and showing confidence in her ability to change her behaviour.
  - Showing real interest in the mother and her baby.
  - Soliciting commitment and challenging participation.
- Using BMI to challenge behaviour change by exploring readiness for change in terms of pre-contemplation, contemplation, action, and maintenance/relapse and discussed pros and cons of change.
- Introduction to the self-help booklet and assisting pregnant women to select goals for behaviour change e.g.:
  - Using the elicit-provide-elicit counselling technique (asking, listening, informing).
  - Using BMI – non-directive counselling style, guiding clients to consider pros and cons of behaviour change.
  - Interacting with pregnant women which started an inner-dialogue and moved them from a state of pre-contemplation to contemplation and action to select goals for behaviour change.

- Inviting feedback by using brief intervention methods (FRAMES – directive approach) and strengthening self-efficacy.

Sessions two, three and four were delivered approximately 41, 47 and 58 days apart, respectively and lasted 60 minutes per session. The intervention methods used here aim to:

- Provide social support and rewards, and
- Prevent relapse

The intervention method included the following techniques:

- Providing an opportunity to pregnant women to choose a collateral supporter. I wrote a letter to the collateral once the pregnant woman decided who she was going to approach to help her. I set a date, interviewed the collateral, and provided orientation to the programme and his/her role. Collaterals were chosen from partners, family and friends and assisted pregnant women to make changes in their social relations and habits (2nd session).
- After each follow-up interview with pregnant women in the intervention group, they received food parcels, washing powder, detergents, and various goods donated by a supermarket. Collateral supporters received smaller food parcels (2nd, 3rd & 4th sessions).
- The Alcohol Record Questionnaire (ARQ) was used to prevent relapse and to encourage abstinence. Brief intervention and brief motivational interviewing techniques were used to:
    - Help the pregnant woman to accept responsibility for her own behaviour change and to enlist help from family.
    - Use the self-help booklet, to read en re-read it and to constantly re-affirm her decision not to drink alcohol.
    - Place the focus on her unborn baby by providing information on bonding with her unborn child, and counsel her through her feelings and fears (3rd session).
    - Provide information on positive parenting skills (3rd session).
    - Test client for domestic violence and providing brief motivational interviewing and referral (4th session).
    - Test the pregnant woman for depression and counsel or refer to therapist (3rd session).

The intervention as a whole (sessions one to four) assisted clients to replace their old behaviour with new behaviour through interaction with the social worker, intra-action and inner dialogue.

3.6 Data collection

This section discusses the methods of data collection that were used, which mainly consisted of using questionnaires as tools for data collection.

3.6.1 Interview tools

The following data collection tools were used in the Ceres Intervention Study (shown in Table 3.3).

Table 3.3: Interview instruments in the Ceres Intervention Study

Tool	Variables	Purpose	Question Item
PAQ (Appendix 1)	Marital status	To ascertain relationship status, support and perceived stability of relationship	Question 13
	Drinking score	Provides drinking profile, risk factors and influence on behaviour change	Questions 27-28 and 31-33
	Socio-economic status	To determine the effects of socio-economic factors on behaviour change	Questions, 9-11 and 15-19
AUDIT (Appendix 2)	Alcohol problems and readiness to change	To measure women's motivation for change & belief that they can change	Questions 11 and 12 (last section; added by research team)
ARQ (Appendix 3)	Collateral support Self-help booklet Goal-setting	Protective factors, such as support, information and goal-setting	Question 9
Edinburgh Postnatal Depression Scale (Appendix 4)	Happiness, blame, worry, panic and fear, unhappiness, sleep disorder, sadness, self-infliction	Measures mental state over past seven days	Questions 1-10
Tool	**Variables**	**Purpose**	**Question Item**
Bonding questionnaire (Appendix 5)	Acceptance of the baby Interaction with the baby	To establish women's feelings about their unborn babies, whether they have planned their pregnancies	Question 1-5 Question 6-12 Question 13-20 Question 21-24

	Preparation for the baby Financial security for the baby	an are supported by someone	
AAST (Appendix 6)	Interpersonal violence	Influence of violence on drinking behaviour	Questions 2, 5, 6 and 9

The screening tools will now be discussed in more detail. Firstlyy, the AUDIT consists of ten questions and alcohol consumption is tested over the past year in terms of "alcoholic beverages" consumed (Babor & Higgens-Biddle, 2001:37). A total score of more than 8 is classified as hazardous and harmful alcohol use, as well as possible alcohol dependence. The first domain on the AUDIT relates to hazardous alcohol use (questions 1 to 3) and records frequency of drinking, typical quantity and frequency of heavy drinking. The second domain on the AUDIT includes dependence symptoms (questions 4 to 6) and records impaired control over drinking (increased salience of drinking and morning drinking). The third domain records harmful alcohol use (questions 7 to 10) and contains questions on guilt after drinking, blackouts, alcohol-related injuries and other people concerned about your drinking. Scores from 0 to 7 require alcohol education (Zone level I), scores from 8 to 15 (Zone level II) are most appropriate for simple advice focused on the reduction of hazardous drinking, while scores from 16 to 19 (Zone level III) suggests brief counselling and continued monitoring. AUDIT scores of 20 or above requires further diagnostic evaluation for alcohol dependence and falls within Zone level IV (Babor, Higgens-Biddle, Saunders & Monteiro, 2001:22). A review of the performance of the AUDIT found sensitivity ranged from 38% to 94% and specificity from 66% to 90% (Cherpitel, 2001:292). However, clinical factors relating to the patient's medical condition, family history of alcohol problems and perceived honesty in responding to the AUDIT questions, should be taken into account (Babor, *et al,* 2001:20). The AUDIT cut-off score may vary slightly depending on the country's drinking patterns, the alcohol content of standard drinks, and the nature of the screening programme. Clinical judgement should be exercised in the interpretation of screening test results to modify these guidelines, especially when AUDIT scores are in the range of 15-20 (Babor & Higgens-Biddle*,* 2001:12).

The AUDIT was found to be useful for measuring the intervention effect in this specific population and in previous studies because:

- it measures quantity as well as frequency of alcohol use;

- it performed adequately in black and white women and measures recent alcohol use;
- it compares favourably with the T-ACE (an instrument used for measuring alcohol consumption in pregnant women using questions on tolerance, annoyance, cut down and eye-opener, where two points are awarded for the tolerance question, and one point each for the other questions, for a possible total of five points);
- the AUDIT correctly identified 65 – 70% of current drinkers;
- it was developed to identify problem drinkers in primary care settings; and
- it was developed for early intervention and detection for harmful and hazardous drinking (Marais, *et al,* 2010).

The AUDIT was adapted by the research team to contain three sections, namely a rapid questionnaire to compare answers on alcohol and substance abuse questions with those provided by pregnant women to health care staff and entered onto the clinic record card with a plus (+) or negative (-) symbol (a standard card issued to all pregnant women visiting the antenatal clinic). The second section on the AUDIT contains the AUDIT questions and the last section contains a ruler scale to measure readiness for change. The AUDIT is illustrated below:

Table 3.4 AUDIT domains

AUDIT	**Domain**
Question 1-3	Hazardous drinking Frequency of drinking Quantity of drinks Frequency of heavy drinking
Question 4-6	Dependence symptoms Impaired control over drinking
Question 7-10	Harmful alcohol use, guilt after drinking, blackouts, alcohol-related injuries and other people concerned about your drinking.
AUDIT risk levels	**Intervention and associated risk**
Zone I (0-7)	Alcohol education – minimum risk
Zone II (8-15)	Simple advice – hazardous drinking
Zone III (16-19)	Simple advice plus BI and continued monitoring – harmful drinking
Zone IV (20-40)	Referral to specialist for treatment – chronic alcoholism

Source: Babor, Higgens-Biddle, Saunders & Monteiro, 2001

The second screening tool, the Personal Assessment Questionnaire (PAQ), provided demographic information on the family, health, education and alcohol drinking habits of the participants. The questionnaire was developed by the research team and used

to obtain specific information from participants in the intervention group as well as the control group. A set of fixed questions were asked in a set order to ensure that all respondents reply to exactly the same questions in exactly the same order. A fixed series of options, including rating scales were used. However, open-ended questions were included in the questionnaire and exact responses were captured and recorded on the questionnaire schedule which was later captured in an Excel data base and analysed using the Statistical Analysis Software (SAS) computer package.

The relationship between the researcher and the participant is of great importance and is based on trust. The participant shares highly confidential and private information and must feel comfortable and respected. The booklet "How to Prevent Alcohol-Related Problems – A Self-Help Booklet" (Babor, *et al,* 2001) was introduced to participants to assist them in reducing their alcohol consumption. The third screening tool, the Alcohol Record Questionnaire (ARQ), which was developed by the research team, is a monitoring tool and requires the participant to share how she has used the self-help booklet to assist her in reducing her alcohol consumption over a specific period of time, whether she could stick to her goals, clarifies the problems she encountered, and how the collateral person assisted her to drink less. Interview questions to the collateral person formed part of the monitoring process and were contained in the ARQ. The ARQ further included CAGE questions on: feeling to cut down on drinking, being criticised for drinking, feeling bad about drinking and needing an eye-opener in the morning after drinking. The interviewer recorded qualitative information in the exact words of the respondent but stuck to the interview schedule. Brief interventions formed part of the interviewing technique and required providing feedback, discussing responsibility, giving information and advice, choosing goals for abstinence and strengthen self-efficacy, and showing empathy (Babor & Higgens-Biddle, 2001:25). Brief motivational interviewing was used to guide the process of behaviour change (Rollnich, Mason & Butler, 2005:30).

The Bonding Questionnaire (BQ) formed part of the parenting skills training section of the programme and required a strong trust relationship with the participant as personal and private structured questions were asked in relation to her acceptance of the unborn child, interaction with the unborn child, preparation for the birth of the baby and financial security for her and the baby. In addition, the Edinburgh Postnatal Depression Scale was used to measure the mental wellbeing of participants as a measure for relapse control and the Abuse Assessment Screening Test (AAST) was used to measure exposure to interpersonal violence.

3.6.2 Interview process

Interview-administered schedules were used over self-administered schedules because according to the literature, interviewers obtain higher response rates, better cooperation and less “don’t knows”, and “no” answers, can probe for answers and guard against confusing questionnaire items and also observe respondents. It is important to pilot the interview schedule and make appropriate changes where needed (Babbie & Mouton, 2001:249-258). In the Ceres Intervention Study, interview schedules were piloted on 30 participants over a three-week period whereupon the necessary changes were made.

The project fieldworkers provided nursing staff at antenatal clinics with consent forms. Nursing sisters approached newly pregnant women and those under twenty weeks pregnant visiting the clinic, to take part in the study. They briefly explained the aim of the study to patients (to help mothers to give birth to healthy babies) and obtained written consent for inclusion in the project. The field workers collected letters of consent from nursing staff at the various clinics and scheduled appointments with participants through telephonic contact, home visits or visits at work. Interviews with the intervention group took place at clinics, homes of participants, at pack houses and places of work, on farms and under trees, but mostly in the car. Most of the clinics were overcrowded and provided little privacy for intervention sessions. I soon found that it was far more private, cost effective (less trips were made) and practical to conduct interviews in my car. In winter I provided protection against the cold (below 0 degrees Celsius) and in summer I covered the windscreen and provided shelter against temperatures of sometimes more than 40 degrees Celsius.

At the first interview with participants, follow-up appointment dates for all four sessions were written down on the space provided on the cover of their self-help booklet. This method proved to be a very successful way of handling the bookings. The follow-up rate for the intervention group was 99% (Marais, *et al,* 2010). The booking schedule was transferred from the manual document to a computer programme and updated on a daily basis. Other methods followed were written reminders delivered to the house of the participant and telephonic/sms reminders.

3.6.3 Field Notes

In the Ceres Intervention Study, field notes were mainly used to gather supplementary data to help interpret findings obtained through structured interview schedules. Observations were made about the context and setting of the target group, the community in which they live, the human and social environment of respondents, and health care staff at clinics. Field notes were also written onto interview schedules (discussed above). Notes were recorded immediately or directly after the interview and included observations about the respondents, the setting, social behaviour and activities.

3.7 Data analysis

The question is, “What facilitated the change in drinking behaviour in the Ceres study?” From the quantitative data analysis it is evident that there is a statistically significant difference between the post intervention alcohol use disorders identification test (AUDIT) scores of the control group and the intervention group. The intervention effect between the control group and the intervention group shows that the intervention definitely contributed to the change in drinking behaviour that was observed within the intervention group. By comparing quantitative data from the profiles of the intervention group and the control group, one would be able to establish who, in terms of various profile variables from the intervention group, changed more probably because of the intervention and who would most probably have changed after the brief first intervention that both groups received.

In the follow-up sessions with the intervention group, although perhaps quite infrequent and with too much time elapsed between interviews, I became aware of the complex nature of behaviour change and the influence of the therapeutic alliance, interactive relationships and interplay of personal, contextual and situational variables contained in the intervention process. The information, simple advice, brief counselling, and supportive interest were new and strange to the pregnant women. Most of them were from deprived circumstances, did not plan their pregnancies and received very little support from their partners and families. All these factors influencing behaviour change could not be captured by only comparing the quantitative results of the control group and the intervention group.

Additional data was collected during follow-up interviews. This data included field notes, programme notes and open-ended questions contained in the Alcohol Record

Questionnaires (ARQ) used in the first follow-up interview (only done with the intervention group). I abstracted questions 9(a) and 9(b) of the first follow-up ARQ from the Excel database and created a new document containing answers from respondents on these questions: 9(a) “what were the main stumbling blocks to your self-help plan?” and 9(b) “what were the main factors that helped you?” Following this, I noticed that general comments written down on the first ARQ provided more qualitative information related to the research question. I then made another abstract from the Excel database on “general comments”. Once quantitative results became available, I realised that an analysis of the change that took place in the intervention group would provide better answers to the research question. I then decided to combine quantitative and qualitative data and to include question 2 of the ARQ “has your drinking pattern changed in any way since our last meeting?” and to compare this together with data derived from the Personal Assessment Questionnaire (PAQ) within the change and no-change groups in the intervention arm of the study. To be able to compare the two groups in the intervention group further, I derived “readiness for change” data from the AUDIT measured in the first and last interviews. These documents formed the basis of the data analysis on how pregnant women changed their drinking behaviour during the Ceres Intervention Study. I used the Atlas.ti qualitative data analysis computer programme to store, manage and present the qualitative data.

Miles and Huberman (cited in Ryan & Bernard, 2000:781) note that “coding is analysis” in qualitative research and often involves reading through a manuscript for ‘first impressions’. In subsequent readings, the qualitative researcher attempts to develop concepts and codes on a higher level of abstraction. According to them it does not matter how the researcher actually does inductive coding, by the time the themes are identified and refined to the point where they can be applied to an entire section of text, a great deal of interpretative analysis has already been done Therefore, the process of coding is comparative to the process of analysis. By reading and re-reading the text, dominant themes started to emerge, based on the research question how pregnant women were able to change their drinking behaviour during the process of an intervention.

For the purpose of this study, I read the transcripts several times before manually coding the data with a pencil. I did this against the background of the literature study I have undertaken as part of this thesis. I started with some general themes derived from reading the literature, added more themes and sub-themes and merged some

of the themes as suggested by Willms, *et al,* (1990) and Miles and Huberman (1994) (cited in Ryan & Bernard, 2000:783).

The following steps were followed to identify themes:

First, themes and quotations were selected by manually underlining the text in the hard copy. Then, on the computer, the manually selected quotes were colour coded according to themes (a different colour was used for each theme with the name of the theme in brackets). Following this, the different selected and colour-coded quotations were copied into a document for selected code categories. Again a printout was made and each selected quote was manually coded within the different themes trying to stay as close to the text as possible. This was again transferred to the computer where codes and comments were inserted using the “insert comment” function. I did this preliminary analysis to provide me with some clues as to what to look for in the data. By doing this, I discovered the relation between risk and protective factors and change mechanisms started to emerge from the data. I also realised that in order to clarify the question further, it was necessary to record the contents and implementation methods of the intervention programme as this was not done before.

The next step was to open a new hermeneutic unit in Atlas.ti and the four primary documents (field notes, programme notes, general comments and ARQ 9a and 9b, described above) captured in MS Word were loaded into Atlas.ti. Using the research questions as well as the marked hard copies as guidelines, the relevant pieces of text were then selected and coded while writing memos and comments that could be used later on in the data analysis process. The data was repeatedly scanned and quotations were altered as the process became more tailored. Categories were grouped into “families”, hypertext links were made and links between text/or codes were developed and displayed in “family networks”. The qualitative data analysis process was used to gain more insight into the complex nature of the process of behaviour change as quantitative data did not provide sufficient information on the process of change that took place.

3.8 Reliability and validity

3.8.1 Verbal report measures

Interview schedules and questionnaires employed in the Ceres Intervention Study were carefully developed to ensure reliability and validity, given the extent to which verbal report measures were relied upon for subject eligibility and for assessment of matching variables and treatment outcomes. The pre-test-post-test AUDIT scores and correlation methods used to compare answers between similar questions on different questionnaire schedules, compare adequately to studies in this field. The Project MATCH Research Group (1996) - Matching Alcoholism Treatments to Client Heterogeneity – a research project undertaken in the United States of America to match clients with three different intervention therapies - reported that urine drug screens were highly consistent with self-reported drug use at baseline and follow-up. When discrepancies were observed it was more likely that clients reported drug use when the urine screen was negative. Similarly, clients tended to report more use of drugs and alcohol than did their collateral informants. Collateral support persons were also used in the Ceres study to monitor self-reports on drinking. It was further reported by the Project MATCH researchers that self-reports of drinking were also examined in relation to gamma glutamyl transpeptidase (GGTP- blood samples used to analyse and monitor liver enzymes). The study indicated that self-reported alcohol use was consistently higher for clients with abnormal GGTP test results. The Project MATCH researchers concluded that after extensive research on biochemical measures, they found that the reliability and validity data indicate that a high degree of confidence can be placed in the accuracy of the verbal report data obtained in their study (Project MATCH Research Group, 1996). Following these and other reports on the confidence placed in the accuracy of verbal report data as well as the cost involved in using blood samples and urine drug screens in the community, it was decided to only use verbal self-report measures and collateral reports to collect alcohol use data in the Ceres Intervention Study. Written notes on observations made during interviews and field notes were utilised to clarify quantitative data.

3.8.2 Testing for reliability of responses

To test for the reliability of answers provided by pregnant women to questions on drinking recorded on the PAQ and the AUDIT, a model consisting of three drinking groups was defined at baseline, depicting a non-drinker group, an unconfirmed

drinker group and a confirmed drinker group (shown in Figure 3.3 below). For this, the alcohol responses from the PAQ about current drinking was used: “Do you currently drink alcohol?” to assess whether they are reported drinkers and the first question on the AUDIT “How often do you have a drink containing alcohol?” was used to confirm/not confirm their drinking. It was felt that pregnant women may have underreported their drinking and therefore the model was developed to compare with the AUDIT scores.

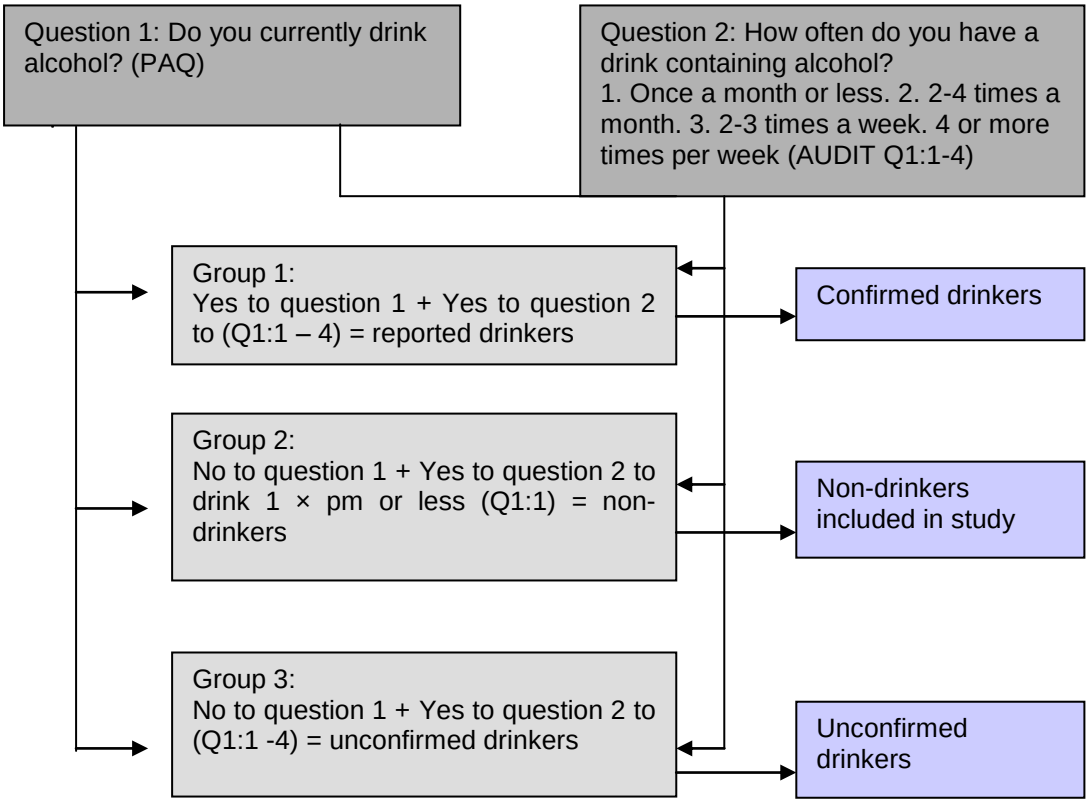
How the AUDIT questions and responses work, including the scoring of responses, for example:

Question 1: How often do you have a drink containing alcohol?

0 Never
1 Once a month or less
2 2-4 times a month
3 2-3 times a week
4 4 or more times a week

- If they responded “yes” to the question “Do you currently drink alcohol?”, and confirmed this by responding 1 to 4 to the question “How often do you have a drink containing alcohol”, they were considered as “confirmed drinkers”.
- If they responded “no” to “Do you currently drink alcohol”, and they confirmed this by responding 1 to “How often do you have a drink containing alcohol?”, then they were considered as “non-drinkers” but included in the study as mentioned before because of reasons of underreporting and the possibility of drinking later on in the pregnancy.
- If they responded “no” to “Do you currently drink alcohol?”, but responded 1 to 4 to “How often do you have a drink containing alcohol?”, then they were considered as “unconfirmed drinkers”.

Figure 3.3 Model of three drinking groups in the Ceres Intervention Study



The “unconfirmed drinkers” is a mixed group of women, either responding unreliably to “Do you currently drink alcohol?”, or women who stopped drinking when they became pregnant, or women who are truly past drinkers. According to the literature, past drinking is a strong indicator for drinking during pregnancy as they might start drinking again during pregnancy (Chang, *et al,* 2006:245-251). These three groups (1-3 above) correspond to the three groups discussed in Chapter 4. This indicator variable for the drinking groups was entered into the model as an interaction effect to assess whether the intervention effect (IE) is different for the three drinking groups. Results are reported in Chapter 4 and supported the decision to administer the full intervention (information, simple advice, brief counselling and continuous monitoring) to all the women in the intervention arm of the study, because any amount of alcohol could harm the foetus.

3.8.3 The interview schedules in the Ceres Intervention Study

A shortcoming of the study is that it was not planned to be a qualitative study and therefore qualitative observations are limited to ad hoc notes. Some of the qualitative

data was derived from answers on interview schedules, field notes made during the course of the study, and programme notes produced after the study.

It is important to point out the limitations and threats to the validity of the responses derived from interview and observation schedules. According to Babbie & Mouton, (2001:349) social desirability response sets where some respondents provide the interviewer with responses they believe are desirable or expected by the interviewer can influence the outcome of the study. In the Ceres Intervention Study, I correlated answers to previous answers and checked on information provided in earlier sessions. The trust relationship with the participant provided opportunities to probe for explanations to answers and to clarify confusing questions. My dual role as counsellor and researcher afforded an opportunity to probe deeper into the answers provided and the interactive interplay between counsellor and participants provided a platform for openness and honesty. I had to be constantly aware of interpretation bias and to seek objectivity in recording the information provided by participants. It was helpful to keep to the wording of the questions and to be trained in the contents and proper application of the screening questionnaires and interview schedules.

In the next chapter, results from both the quantitative and qualitative data are analysed and discussed.

Chapter 4

Data analysis and findings

4.1 Introduction

In this chapter the data will be analysed first to highlight differences between the control arm and intervention arm of the study and to gain insight into who changed and who did not change their behaviour in the intervention group. Second, for the purpose of this study, data in the change and no-change groups in the intervention arm of the study will be analysed to determine who changed their drinking behaviour and how this change occurred. The data will be linked with qualitative data derived from questionnaires, the implementation programme written up after the study and field notes made during the study. In addition, reference will be made to previous chapters as well as information derived from the literature.

In order to achieve abstinence from drinking during pregnancy, pregnant women have to change their drinking behaviour. This behaviour change is desirous but not easily attained. It is hoped that through the analysis of the data from the Ceres Intervention Study an understanding of aspects of the observed behaviour change will be uncovered. As seen from Chapter 2, behaviour change is complex and dependent on the interplay of various factors including the therapeutic components of the intervention, the working alliance between the client and the counsellor, and interpersonal and life-context factors. Studies on behaviour change reveal that certain methods and techniques can be used to assist pregnant women to change their drinking behaviour (Chang, *et al,* 2006; Bien, Miller & Tonigan, 1993; Hankin, 2002; Rollnick, Mason & Butler, 2005). Identifying risk factors associated with maternal drinking is pointed out as an important starting point for changing drinking behaviour. However, it is clear from the discussion in Chapter 2 (Morèn & Blom, 2003) that behaviour change is an interactive process between the pregnant woman (client) and the counsellor and that both parties contribute to the process of behaviour change within a complex and unique context.

4.2 Quantitative data analysis of the Ceres Intervention Study

The main objective of the Ceres intervention Study was to test the effect of a series of brief interventions with pregnant women on their alcohol consumption and drinking behaviour during pregnancy (Marais, Jordaan, de Waal, Poole, Viljoen, & Olivier, 2010). The difference in the scores on the Alcohol Use Disorders Identification Test (AUDIT), administered at pre- and post-intervention were used to measure the intervention effect.

4.2.1 Background and demographic characteristics of all pregnant women in the Ceres Intervention Study

Eighty-two percent of all women in the study were Coloured and the majority spoke Afrikaans. Of all the women in the study, a large group were less than 16 weeks pregnant (61%) while the rest of the women were not more than 20 weeks pregnant. Their mean age was 24.8 (SD = 6). Forty-three percent of the women were employed. Almost a quarter of the women lived on farms in the Ceres district and the rest in townships (Marais, Jordaan, de Waal, Poole, Viljoen, & Olivier, 2008:1). Almost a quarter of the women in the two groups (22%) had less than 8 years of schooling. Forty three percent of the women were unemployed at the time of the recruitment.

4.2.1.1 Comparison of intervention and control arms of the Ceres Intervention Study

There was a statistically significant larger proportion of isiXhosa-speaking women in the control arm of the study, and most of them lived in the same town and utilised the same clinic. As isiXhosa women differ significantly from Coloured women in terms of their drinking culture and patterns, statistical adjustments were made by the statistician from the Medical Research Council (MRC) in order to compare the post-intervention results from the intervention and control groups (Marais, *et al,* 2010). isiXhosa speaking women drank less and mostly only at an occasional festival or when they visited their families in the rural Eastern Cape. Most of them also preferred to give birth to their babies in the Eastern Cape where they traditionally live. Therefore, statistical adjustments were made to accommodate the Nduli Clinic (Clinic E) as cultural and language differences could skew results derived from the data (Marais, *et al,* 2010). Ethnicity accounts for the difference of 54% non-drinkers in the

control group as opposed to 27% non-drinkers in the intervention group (more women in the intervention group drank alcohol compared to the control group due to cultural differences explained).

The data reveals that, apart from ethnicity, home language and the presence of a partner who consumed alcohol, there was no statistically significant difference between women from the intervention and control groups (Table 4.1). About half of the respondents (49%) in the two groups indicated that they had a boyfriend but they were not living together.

Table 4.1: Comparison of control and intervention profiles at baseline

Profiles of women	Control n=96			Intervention n=98		
	N	Mean or %	Std. dev.	N	Mean or %	Std. dev.
Demographic Profile						
Afrikaans language group	65	68%		98	100%	
Coloured population group	64	67%		96	98%	
Employed	45	47%		38	39%	
Schooling less than grade 8	19	20%		24	24%	
In relationship but do not live with partner	43	45%		51	52%	
Age at 1st interview	96	25.3	5.8	98	24.3	6.3
Drinking Profile						
Age at first drink	71	17.9	3.8	83	16.9	2.5
Reported non-drinkers	52	54%		26	27%	
Heard of FAS	58	60%		52	53%	
Anyone close with alcohol problem	22	23%		56	57%	
Pregnancy profile						
Weeks pregnant	93	14.8	4.6	98	14.8	4.1
Number of times pregnant	96	2.1	1.1	98	1.9	1.1
Number of children	96	0.98	1.04	98	0.80	0.94
AUDIT Profile						
AUDIT score all women (completed pre-test only)	96	6.9	8.6	98	9.6	8.8
AUDIT score without Clinic E	64	8.7	9.0	98	9.6	8.8

Note: Standard deviations have been calculated only where appropriate

The two groups also statistically differ significantly in whether they had a partner or someone close to them who does not drink: only 23% of the women in the control group reported a partner or person close to them who drank as opposed to 57% in the intervention group. According to the literature, a partner or someone close who drinks is a high risk factor for drinking during pregnancy (May & Gossage, 2001:165). There was a 2.7 point difference in the Alcohol Use Disorders Identification Test (AUDIT) score between the groups. More than half of the respondents had heard of Foetal Alcohol Syndrome. On average the women in the two groups were 17 years old when they had their first drink. Forty percent in the sample indicated that they do not drink alcohol, but were included in the study due to reasons of underreporting and the possibility that they might start drinking later on in the pregnancy as discussed before.

4.2.2 Classification of pregnant women's drinking according to the AUDIT

According to their drinking classification (in terms of AUDIT zone levels), 70% of women in the intervention group only needed simple advice and education on the risks of alcohol use, while 30% needed more intensive counselling and monitoring or referral to a specialist for treatment (Marais, *et al,* 2008:1). However, in the Ceres Intervention Study all women in the intervention group received the full treatment for harmful drinking (information, simple advice, brief counselling and continued monitoring). The reason for this is that even a little alcohol could harm the foetus and it was the safest way to provide each woman with all the information and the full intervention. This could have had an impact on the high change rate (60%) that was observed in the intervention arm of the study and may have led to more women changing their drinking behaviour as opposed to other studies where women did not receive the full intervention. Women in the control arm of the study received the pre-test and post-test screening and information in take-home brochures.

4.2.2.1 Pre-intervention results: control and intervention groups

Data indicated that 57% of the women in the intervention group stopped drinking during pregnancy (this included those who needed simple advice and alcohol education). However, the data reveals that a large percentage (51%) of women in the intervention plus the control arm of the study were drinking at hazardous (21%), harmful (12%) and dependent (18%) levels and that their drinking could pose a threat

to the health of their unborn babies (Marais, *et al,* 2008:1). Table 4.2 below provides data from the first AUDIT at pre-test level.

Table 4.2: Pre-test AUDIT scores

AUDIT Zone levels					
Zone scores	**Frequency (N=194)**	**Percent**	**Std Error of Percent**	**95% Confidence Limits for Percent**	
Zone I: 0-7	107	55.1	3.7	41.1	55.8
Zone II: 8-15	37	19.1	3.7	14.2	28.6
Zone III: 16-19	20	10.3	3.1	6.1	18.6
Zone IV: 20-40	30	15.5	3.6	10.8	24.9

The AUDIT scores for all women, AUDIT score without clinic E and AUDIT score for analysed women reveal that pregnant women in both the intervention and control arm of the study used alcohol at hazardous levels (44.9%). The percentage is arrived at by adding up percentages in Zone II, III and IV, indicating hazardous and harmful drinking. The control group recorded a mean AUDIT score of 8.7 (without clinic E) while the intervention group recorded a mean AUDIT score of 9.6 (both falling within hazardous drinking levels). The hazardous drinking group in the intervention arm of the study was most receptive to simple advice and directive counselling (brief interventions) focused on the reduction of hazardous drinking.

4.2.2.2 Post-intervention results: control and intervention groups

A large proportion of women (60%) in the intervention group had a reduced AUDIT score after the intervention compared to only 41% of the women in the control group. While 10% of women in the control group increased their AUDIT score; no-one in the intervention group increased their score. The estimated differences between the group changes in the post-intervention AUDIT score (1.97) was significant (p=0.002), indicating that the AUDIT score of the intervention group dropped significantly more than that of the control group.

A model consisting of three drinking groups (Chapter 3) were defined at the post-intervention AUDIT, depicting a non-drinker group, an unconfirmed drinker group and a confirmed drinker group. The model was developed to compare answers to the question on the Personal Assessment Questionnaire, Do you currently drink alcohol, to question 1 on the AUDIT, and how often do you have a drink containing alcohol.
Entering the indicator variable (Do you currently drink alcohol? and, how often do you have a drink containing alcohol?) into the model showed a significant intervention

effect (f=4.56, p=0.012). The estimated difference in AUDIT scores between the intervention group for the confirmed drinker group is 2.7 times higher than the overall estimated difference, and is statistically significant (IE=5.28 p=0.0001). However, the estimated difference in AUDIT scores for the unconfirmed drinkers was not significant (IE=1.23 p=0.17). It follows that the group of women whose drinking was confirmed, benefited most from the intervention (Table 4.3) (Marais, *et al,* 2010).

Table 4.3: Comparison of post-intervention AUDIT scores between intervention and control group

Model Estimates and Standard Errors for post-intervention AUDIT scores*					
Three groups	**Control**	**Intervention**	**Intervention Effect*** **	**Statistic mean of differences (t); degrees of freedom**	**Probability level**
No drinking N=81	0.69 (0.55)	0 (-)	0.69 (0.85)	t=0.81;df=166	0.42
Unconfirmed drinking** N=81	1.86 (0.76)	0.63 (0.48)	1.23 (0.90)	t=1.37;df=166	0.17
Confirmed drinking** N=31	6.59 (0.86)	1.31 (0.99)	5.28 (1.31)	t=4.02;df=166	0.0001
Overall estimated difference N=179	**2.43**	**0.46**	**1.97 (0.64)**	**f=9.54;df=170**	**0.002**

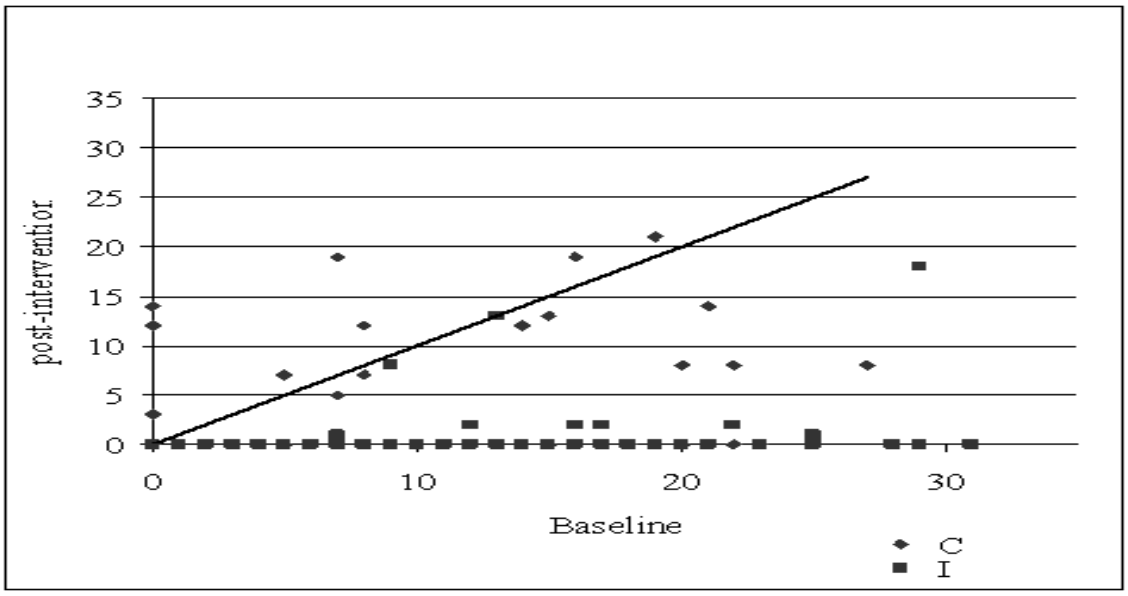
***estimates adjusted for baseline differences in AUDIT scores**

****current drinking is confirmed/not confirmed by the responses from the first baseline**

*****IE -intervention effect=control minus intervention (C-I)**

Figure 4.1 presents the 45º line of no change in scores, depicting the baseline and post-intervention AUDIT scores, separately for the control group and the intervention group. It is clear from this that 60% of women in the intervention group had a reduced AUDIT score after the intervention compared to their baseline score and that some (41%) of the control women also decreased their AUDIT score, although 10% of the women increased their score (Marais, *et al*, 2010). The increase in drinking amongst some members in the control group is in line with results of similar studies and most probably due to the complex nature of drinking behaviour.

Figure 4.1: Individual baseline by post-intervention AUDIT scores



The regression coefficient at the 85th quantile indicated that the mean AUDIT score for the intervention group is 5 points lower than the mean AUDIT score for the control group (t=5.2, p=0.0001) (Table 4.4). The quantile regression results thus confirm the mixed modelling results, supporting the suggestion that women who confirmed their drinking (or who acknowledged that they have a drinking problem) benefited most from the intervention.

Table 4.4: Quantile regression results

Quantile	Estimate IG – CG	Standard Error	Statistic of Mean differences	Probability level	Baseline value
85	5.25	1.01	5.20	0.0001	0.018
90	9.67	1.46	6.62	0.0001	0.029
95	9.07	2.37	3.84	0.0002	0.0001

However, the quantile regression results and the mixed modelling results do not explain the change in drinking behaviour that occurred in the intervention group, e.g. who changed their drinking or how they changed their drinking behaviour. Therefore, data from the change and no-change groups who received the intervention in the intervention arm of the study were analysed and will now be discussed.

4.3 Quantitative analysis: change and no-change groups in the intervention arm

The research question I want to address in this thesis is why 60% of pregnant women in the intervention group changed their drinking behaviour while 40% were unchanged. In order to address this question, quantitative data will be utilised to establish whether any independent variables included in the study helps to explain differences in behaviour change of the two groups. These variables include motivation to change; readiness to change; marital status; drinking profile; collateral support; interpersonal violence; socio-economic and demographic variables; knowledge of Foetal Alcohol Syndrome; religion and number of previous pregnancies.

4.3.1 Subjects selected from main dataset for analysis

The number of women in the intervention group who responded that they drank alcohol (according to their first AUDIT score) is 72. However, only 64 responses were analysed because eight of the responses were recorded as missing data due to incomplete answers. The first follow-up session took place approximately 41 days after the first session and during this session, 33% reported that they had changed their drinking behaviour while 67% remained unchanged (Table 4.5).

Table 4.5: Number of respondents who changed their drinking behaviour after first follow-up session

Change in drinking pattern (N=64)	Frequency	Percent
Yes	21	32.81
No	43	67.18
Total	**64**	**100**

The relationship between this reported change (or not) in behaviour and reasons or motivation for changing their behaviour, will be explored. These include the following variables derived from the interview schedules and tests:

Table 4.6: Variables derived from interview schedules and tests

Tool	Variables	Purpose	Question Item
AUDIT	Alcohol problems and readiness to change	To measure women's motivation for change & belief that they can change	Questions 11 and 12 (last section; added by research team)
PAQ	Marital status	To ascertain relationship status, support and perceived stability of relationship	Question 13
	Motivation to change	Previously tried to stop drinking, stopped drinking because pregnant, think can stop/drink less, previous change, someone to support change.	Questions 34, 35, 36, 43, and 44.
	Drinking score	Provides drinking profile, risk factors and influence on behaviour change	Questions 27-28 and 31-33
	Socio-economic status	To determine the effects of socio-economic factors on behaviour change	Questions, 9-11 and 15-19
ARQ	Change in drinking behaviour Collateral support Self-help booklet Goal-setting	Monitoring behaviour change Protective factors, such as support, information and goal-setting	Question 2 Question 9
AAST	Interpersonal violence	Influence of violence on drinking behaviour	Questions 2, 5, 6 and 9

Table 4.7 below shows women's responses to whether their drinking patterns changed since their last meeting, which was recorded during the first follow-up session. In the change group, 57% of the women were motivated to change as opposed to the no-change group where only 12% indicated that they were motivated to change their behaviour (probability level p=0.0004; statistic of mean differences t=3.79). The lack of support and the existence of a "silent partner" appear to attribute to the lack of change. Sixty-five percent of pregnant women in the no-change group compared to 33% in the change group were in a relationship but were not living together (p=0.023).

Table: 4.7: Analysis of responses to: Has your drinking pattern changed since our last meeting?

Univariate logistic regression n=64					
Variable	**Change n=21**	**No-change n=43**	**Standard Error**	**Statistic mean of differences (t)**	**Probability level**
Mean (SD) or n (%)					
AUDIT score at baseline	16.7 (8.27)	11.1 (6.48)	0.11 (0.04)	2.71	0.009*
Age	24.5 (4.93)	23.3 (6.13)	0.04 (0.05)	0.81	0.419
Social status	3.8 (1.87)	4.5 (1.89)	-0.22 (0.15)	-1.47	0.147
In relationship not living together	7 (33%)	28 (65%)	-1.32 (0.56)	-2.34	0.023*
Motivation	3.5 (0.93) (57.14%)	2.2 (0.85) (11.63%)	1.73 (0.46)	3.79	0.0004*
Drinking environment	3.5 (2.14) (90%)	2.0 (1.36) (86%)	0.51 (0.18)	2.88	0.006*
Interpersonal violence	1.1 (1.26) (48%)	0.2 (0.60) (14%)	1.00 (0.33)	3.05	0.003*
Baby planned	5 (25%)	12 (29%)	-0.22 (0.62)	-0.35	0.729
Think you have no problem with alcohol	13 (65.0%)	39 (95.1%)	-2.34 (0.86)	-2.71	0.009*
Will be easy to drink less	15 (75.0%)	38 (92.7%)	-1.44 (0.79)	-1.82	0.074
Had collateral to help (13 missing)	17 (85.0%)	27 (69.0%)	0.92 (0.72)	1.29	0.203
FAS knowledge	2.19 (0.98)	2.14 (1.30)	0.04 (0.22)	0.16	0.873
1st pregnancy	7 (33.3%)	24 (55.8%)	-0.93 (0.56)	-1.67	0.101
Goes to church/mosque regularly	7 (33.3%)	26 (60.5%)	-1.12 (0.56)	-2.00	0.05*
Multiple Logistic regression					
In relationship not living together			-1.87 (0.78)	-2.38	0.020*
Motivation			1.79 (0.47)	3.85	0.0003*

***Significant at the 5% level**

Motivation and readiness to change was tested and recorded in the first interview after a brief intervention. It was tested by using a ruler scale (AUDIT question 11 & 12) as well as using questions from the PAQ (refer to table 4.6 above). Answers were coded into 1 = less motivated and 2 = more motivated. Change was monitored and recorded by using the ARQ (question 2) in the second session. Data from the first and second sessions were analysed to illustrate the role of motivation to change and readiness to change in facilitating the change process. Motivation is a strong

indicator for change (The Project MATCH Research Group, 1996:7) and was the strongest predictor for change between the change and no-change groups. Readiness to change is described in the literature as a prerequisite for change and is accomplished through the interactive relationship with the counsellor, and extra-treatment factors such as life-context and client interpersonal traits (Rollnick, Mason & Butler, 1999:18; Moos & Finney, 1983:1036-1044). In addition, it is assumed that the large time-lapse of 41, 47 and 58 days between intervention sessions, might have negatively affected the no-change group's readiness to change.

Pregnant women from a worse drinking environment (90%) as opposed to a better drinking environment (86%) were more likely to change their drinking behaviour (P=0.006). The drinking environment of pregnant women (e.g. someone close to them who drinks, such as a partner, husband, boyfriend, parent or relative who drink), places women at risk of drinking. However, the opposite seems equally significant in that someone close to them who does not drink can be a protective factor and assist them not to drink.

Another statistically significant finding in this study is that women who experienced more interpersonal violence in their relationships (48%) as opposed to those who experienced less violence (14%) (p=0.003) were more likely to change. Data from the change group based on variables related to interpersonal violence (refer to table 4.8) were coded from 0 to 3 with 0 recording no violence and 3 recording worst violence. Scores for codes 1, 2, and 3 were added recording a total of 48% in the change group who experienced interpersonal violence. Data from the no-change group were similarly coded and added to arrive at 14% in the no-change group who experienced interpersonal violence. It is not possible to explain these complex phenomena, as the quantitative data does not provide explanations. Further qualitative studies would be needed to provide more insight. It may also be that women who are abused are more open to the support of the counsellor and are more motivated to change.

It is assumed that the support provided by the collateral person could have played an important role to assist pregnant women to change their drinking behaviour and to maintain abstinence. There is however no statistically significant relationship measured between the two groups. Eighty-five percent of the women in the change group were supported by collaterals as opposed to 69% in the no-change group.

The change group consisted of a significantly smaller percentage of regular churchgoers (33%) than the no-change group (61%) (p=0.05). This is a contradiction to the normal belief that people who are more religious are more likely to change their behaviour.

The no-change group were from a better socio-economic status as opposed to the change group who were from lower socio-economic circumstances. The level of socio-economic status was determined by coding questions 9 - 11 and 15 – 19 on the PAQ from 0 – 7. (with 0 = grade>9, 1 = further education, 2 = permanent employment, 3 = partner employed, 4 = telephone/television/car, 5 = family size, 6 = brick home and 7 = less than two bedrooms. The change group were less educated (4.76% to 23.26%) and plus minus 28% of the women in both groups were permanently employed although fewer partners were employed in the change group (9.52% to 25.58%). The change group were from much larger families (19.05% to 2.33%) and 9.52% occupied homes with less than two bedrooms as opposed to the no-change group who occupied larger homes.

According to Coulter & Ellins (cited in Michie, *et al,* 2008:17), disadvantaged populations benefit more from health behaviour change counselling than other groups, possibly because of less education and resources and a lack of awareness, so they had more to gain from health information. Their knowledge about Foetal Alcohol Syndrome did not have much of an influence on whether pregnant women changed their behaviour or not. This has an implication for intervention programmes as it is clear that awareness-raising is not enough (Roberts & Nanson, 2000). Of the women who changed their drinking behaviour at the first follow-up session, a third (33%) were in their first pregnancy and amongst those who did not change their drinking behaviour, more than half (56%) were in their first pregnancy. These proportions would change at subsequent follow-up sessions as more women change their drinking behaviour. According to the literature, women who are expecting their first child are more likely to choose abstinence as a goal as opposed to drinking less (Chang, *et al,* 2006: 419-423).

In the final multiple regression model, not living with a partner with whom she has a relationship, has a negative influence on the women's change in drinking relative to all other cohabiting or marital status (Odds Ratio: OR=0.16; Confidence Interval: 95%CI: 0.03 to 0.74). Having a stronger motivation has a positive influence on a

change in drinking (Odds Ratio: OR=6.01; Confidence Interval: 95%CI: 2.36 to 15.29).

Table 4.8 below provides information on the change that took place in the intervention group after each intervention session.

Table 4.8: Intervention group's changes in behaviour and AUDIT scores

Intervention group and drinkers (AUDIT score) at visit 1 (n = 72)						
Behaviour change groups	**Visit1 to Visit2**	**Visit2 to Visit3**	**Visit3 to Visit4**	**N=72**	**Percent**	**Mean AUDIT (range)**
Change in behaviour						
Group 1	Drink less	Drink less	Drink less	2	2.77	
Group 2	Drink less	Drink less	Stop	2	2.77	
Group 3	No change	Drink less	Stop	2	2.77	
Group 4	Drink less	Stop	Stop	2	2.77	
Group 5	No change	Stop	Stop	5	6.94	11.6 (7-17)
Group 6	No change	No change	Stop	10	13.88	12.2 (4-29)
Group 7	Stop	Stop	Stop	20	27.77	15.9 (2-31)
No change in behaviour						
Group 8	No change	No change	No change	29	40.27	10.5 (1-27)

AUDIT scores have been included where relevant

The complexity of behaviour change is clearly illustrated in table 4.8 and indicates that change is a gradual process that happens over time. One could have used the last follow-up to draw a contrast between the change and no-change groups but that would not have demonstrated the "true nature of change" as clearly.

In the analysis, the women who stopped drinking and the women who drank less were grouped together into the change group. Therefore, three groups in the intervention arm of the study were analysed, the no-change group, the group who drank less and the group who stopped drinking.

In Table 4.8 these groups are separately analysed to indicate the process of overall change. From the 72 women analysed, 40% did not stop drinking, while the remainder of women reported they either drank less (2.8%) or had stopped drinking (57%) by the end of the intervention. Those women who reported that they stopped drinking at the first follow-up visit, reported abstinence for the remainder of the intervention.

A mean AUDIT score for the different categories/groups are reported pointing to an average score over the range of different categories. Women who stopped drinking

after the first visit were on average 'harmful drinkers' (AUDIT Zone level 16–19, mean AUDIT score:15.9) while women who kept on drinking throughout the visits, were on average 'hazardous drinkers' (AUDIT Zone level 8–15, mean AUDIT 10.5). Those women who reported drinking less/no change in the first visit, but stopped drinking later on were also on average hazardous drinkers (mean AUDIT scores ranging from 11.6–12.2). It is important to notice that each group included women from all the different categories of the Zone levels. The same intervention (information, simple advice, brief counselling and continuous monitoring) was administered to all the women irrespective of whether they changed their drinking behaviour, were drinking less or whether they stopped drinking because of the tendency by pregnant women to underreport their drinking and the possibility of starting to drink later on in the pregnancy as pointed out in the literature review.

As indicated elsewhere, researchers found that pregnant women who showed the most change in drinking behaviour included those who were motivated and ready to change (Rollnick, Mason & Butler, 1999:18), were drinking at harmful levels (AUDIT scores between 16 to 19) as opposed to the women who drank at hazardous levels (AUDIT scores between 8 to 15), who had partners, husbands, boyfriends, family and friends who drank and whose drinking environment was more risky than those who did not change. They were more likely to have chosen abstinence as a drinking goal than drinking less (Chang, *et al,* 2006:419-424). Women who reported change in drinking behaviour were more exposed to interpersonal violence, were from low socio-economic circumstances, were in less supportive relationships and were not living with their partners. It thus appears as if women who were more at risk, showed greater changes in drinking behaviour. This interesting finding needs to be explored more in further studies.

Although the quantitative data described to some extent the characteristics of those women in the intervention group who changed and those who did not change their drinking behaviour, in absence of qualitative data the dynamics and process of change remain to a large part hidden. According to Moos & Finney (1983), alcohol abuse is an "inexorably progressive endogenous disorder" with treatment outcome mostly derived from socio-demographic, biogenetic and prior drinking characteristics inherent in the individual. However, these influential factors contribute to less than 20% of the difference in drinking and drinking-related outcome criteria (Moos & Finney, 1983:1036). Moos and Finney (1983) further point out that many individuals "mature out" of serious problem drinking, or recover from alcohol abuse without

formal treatment. In addition, approximately ten to twenty percent of problem drinkers who have attempted to enter treatment recover "spontaneously" (in Moos & Finney, 1983:1036). As mentioned before, to change alcohol drinking behaviour is a complex issue with many aspects relating to psychosocial factors, life-context, family and work settings, life-stressors, socio-demographic factors, personality, drinking characteristics and treatment factors (Moos & Finney, 1983:1038). In the next section, some of these factors will be discussed.

4.4 Counselling techniques and intervention methods as treatment components

The unit of analysis in the Ceres Intervention Study is "women's behaviour". In the quantitative data the behaviour of all women is analysed and a comparison between the behaviour of women in the intervention group and control group is made. In my study, the behaviour of women in the "change" and "no-change" group in the intervention arm of the study is explored to answer the question why some women changed their drinking behaviour while others did not change.

To explore the behaviour of women in the study further, the conceptual framework of the intervention process (Morèn & Blom, 2003) was used together with counselling techniques and methods used in the intervention process (Michie, *et al,* 2008) and finally, mediators and moderators were explored in terms of risk and protective factors (May & Gossage, 2001). Michie, *et al,* 2008, (Chapter 2) found in their review that providing general information, providing information on consequences, to prompt intention formation, specific goal setting and risk identification were the counselling techniques mostly used in health behaviour change interventions with participants from low-income groups. These techniques are comparable with the counselling methods and techniques used in the Ceres Intervention Study and compares as follows:

Table 4.9: Comparison of Intervention methods between the Michie-study and Ceres Intervention Study

Michie-study 2008		Ceres Intervention Study 2007/2008	Frequency in Michie study
1	Provide general information	Provide general information	85%
2	Provide information on consequences	Provide information on consequences	75%
3	Prompt intention formation	Prompt intention formation	70%
4	Prompt specific goal -setting	Prompt specific goal-setting	60%
5	Prompt barrier (risk) identification	Prompt barrier identification	55%

It appears that counselling techniques and methods used in the Ceres Intervention Study correlate with the most important ones in the Michie study (Michie*, et al,* 2008). These methods, together with brief interventions (BI) and brief motivational interviewing (BMI) methods are believed to work as mechanisms of change or mediators in behaviour change processes and could have had a positive impact on the behaviour change observed in the intervention arm of the study. These techniques were used interchangeably (refer to Chapter 2) and more or less in the following way: technique 1 (provide general information and information on consequences), technique 2 (prompt intention formation) and technique 3 (prompt specific goal setting and barrier/risk identification), were used during the first intervention session. Technique 3 (to prompt specific goal setting and barrier/risk identification) was used in the first and second follow-up sessions, while technique 4 (social support and rewards) and technique 5 (relapse prevention) were used in sessions two, three and four. Taken together over all sessions, change amongst 60% of the pregnant women was reported and can partly be attributed to counselling techniques used in the study.

A relationship was observed between motivation to change and the percentage of women who changed their drinking behaviour. The Alcohol Record Questionnaire (ARQ) and CAGE (cut, annoyance, guilt and eye-opener) were used to measure change in the follow-up sessions and the AUDIT was used in the last session. Brief motivational interviewing and brief interventions were used in combination with all the methods mentioned to enhance counselling and communication skills. The incidence of use of these techniques by other studies ranged between 45%-85% (Michie, *et al,* 2008:14). The assumption can be made that the techniques used in the Ceres study is compatible with techniques used in other studies and that the particular techniques used were those who are the most frequently used in similar studies and yielded the best results for health behaviour change interventions.

In recent years, alcohol intervention treatment directed at assisting pregnant women to change drinking behaviour, expanded to include additional intervention methods and techniques that enhance therapy, such as screening and brief interventions and brief motivational interviewing. To arrive at a better understanding of how the intervention programme in the Ceres Intervention Study was implemented by myself, I documented the implementation and delivery of the interventions (discussed in Chapter 2), identified the components of the intervention processes and the influence of extra-treatment factors as suggested by Moos and Finney (1983:1037). In addition to programme documentation, I decided to look for qualitative data recorded during the study. I found data that described what was helpful and not in helping women in their efforts to change their behaviour (data derived from the ARQ used in the first follow-up visit), general comments made by the women written down on the ARQ and field notes recorded during the study. The data on what was helpful or not to pregnant women helped me to identify risk and protective factors and behaviour change mechanisms as described in the literature. However, although the qualitative data helped to some extent to clarify the implementation process and behaviour change that was observed through the quantitative study, a limitation of the study is that it was not designed to gather qualitative data and therefore did not provide rich text.

Behaviour change is an extremely complex process and seems to be facilitated by treatment factors, the interactive relationship with the counsellor and factors within the psychosocial context of the client and her life world. Counselling techniques and intervention methods appear to be important treatment components to facilitate change as was observed within 60% of women in the intervention group who changed their drinking behaviour. These techniques and methods are not made explicit by the quantitative data, nor does it explain the implementation process and treatment delivery or how women changed their drinking behaviour. Therefore, in the next section, the focus is on how the intervention programme was implemented in the Ceres Study.

4.4.1 Counselling techniques

Counselling techniques are used to assist in the implementation of intervention models. Without techniques, implementation of any counselling theory or model is impossible to apply. Pippard and Bjorklund (2003:103), describe techniques as “where the rubber meets the road, where theory is translated into practice”.

Techniques are specific, repeatable, demonstrable, and measurable actions to be applied in appropriate contexts. A technique is a defined, goal-oriented behaviour performed in a practice situation by the counsellor (Pippard & Bjorklund (2003:103). Techniques are used to implement theory and to intervene and produce change in situations that range in difficulty from simple to complex. The more techniques a counsellor has to draw on, the greater the options available to address a growing variety of clients' situations (Pippard & Bjorklund (2003:103).

The list below provides a summary of some of the counselling techniques derived from the programme implementation documents used in the Ceres Intervention Study. The numbers indicate the number of the document, paragraph and line in the Atlas.ti qualitative data analysis computer programme.

- Building rapport [2:4] [22]
- Building self-esteem and trust relationship [2:33] [132]
- Non-confrontational relationship [2:18] [46]
- Building confidence and provide encouragement [2:36] [138]
- Challenge client to change behaviour [2:22] [48]
- Show real interest in the mother and her baby [2:10] [28]
- Solicit commitment and challenge participation [2:29] [60]
- Intra-action and inner dialogue [1:64] [81]
- Interaction with social worker [1:70] [17]
- Information sharing [2:2] [20]
- Provided information in a neutral way [2:39] [22]
- Gradually introduced the topic [2:14] [38]
- Visual challenge [2:41] [50]
- Brief Motivational Interviewing (BMI) and BI [2:32] [128]
- Start inner dialogue [2:6] [22]
- Elicit-provide-elicit [2:29] [26]
- Invite feedback [2:15] [38]
- Goal setting skills [2:38] [138]

The point of departure for analysing and discussing the role of intervention methods in behaviour change is the model used by Morén and Blom (2003:54). The model shows that behaviour change is facilitated by the way in which social workers and clients interact and communicate, referred to in the literature as a "dialectical

interplay". Clients respond to the methods, work modes, ideas and resources and new options for interpretation offered by the social worker. Clients' responses are influenced by their motivation and readiness, considerations, life-context, choices and supportive relationships. In order to describe the intervention process and methods that were used, a conceptual framework was developed based on the work of Morén and Blom (Table 4.10).

The implementation of the conceptual framework is discussed in Chapter 2. The conceptual framework of the intervention process illustrates how a dialectical interplay between the counsellor and the client uses intervention methods and techniques and client strengths and resources to bring about change. To be able to use a variety of counselling techniques enabled me to cope with the complex demand of implementing a research programme concurrently with administering counselling within challenging community settings.

Table 4.10: Conceptual framework of intervention process

Counsellor's Interventions	Dialectical Interplay	Client's Response
Methods	**Techniques**	**Readiness**
1. Provide general information/ information on consequences	Skilful information exchange (directive, guiding, interactive)	Pre-contemplation Contemplation
2. Prompt intention formation through: 2.1 Personal Assessment 2.2 Screening 2.3 Interactive & intra-active counsellor/client relationship 2.4 Brief Interventions (BI) 2.5 Brief Motivational Interviewing (BMI)	BI & BMI skills: simple open questions, listening, encouraging, verbal and non-verbal prompts, clarifying and summarising, reflective listening, monitor readiness for change, provide feedback Work Modes: Empathetic, building self-esteem and rapport, supportive, non-judgemental, respectful, individualising, trusting, non-confrontational, confidential, accepting, promoting self determination, challenging, friendly, kind and show real interest	Contemplation Ready to change Action
3. Prompt specific goal setting and barrier identification (risk factors) through: 3.1 Self-help booklet 3.2 Alcohol Record Questionnaire (ARQ) 3.3 Goal setting	BI & BMI skills: Elicit-provide-elicit technique (asking, listening, informing), identify risk and protective factors, prompt goal-setting, non-directive counselling style, consider pros & cons of change, invite feedback, set responsibility, give advice, show empathy and strengthen self-efficacy	Action/Maintenance through choosing protective factors
4. Social support and rewards: 4.1 Collateral support 4.2 Incentives	Information exchange BMI to engage support	Maintenance/ relapse prevention
5. Relapse Prevention 5.1 Monitoring – ARQ 5.2 BI & BMI 5.3 Information on parenting skills 5.4 Bonding Questionnaire (BQ) 5.5 Edinburgh Depression Scale (EDS) 5.6 Abuse Assessment Screening Test (AAST)	Screening BI & BMI techniques Information sharing skills	Maintenance/relapse or permanent behaviour change Emerging behaviour change depends on client's choices in response to the counsellor's offers

Adapted from Morén & Blom, 2003

The next section focuses on the influence of mediators and moderators on behaviour change.

4.5 Mediators and moderators of behaviour change in the Ceres Intervention Study

The characteristics of mediators and moderators of change are complex and can be situated in the same phenomena e.g. a risk factor (moderator) can become a protective factor (mediator). For example, a bad relationship with a counsellor can hamper (moderate) the process of behaviour change. Equally, a good relationship with a counsellor can facilitate or moderate change or a drinking partner can moderate change while a non-drinking supportive partner can mediate behaviour change.

4.5.1 Mediators

Mediators are mechanisms of change that have a positive influence on change, while moderators are mechanisms that have a negative influence on change.

4.5.1.1 Self-help booklet

The literature highlights the importance of identifying risk factors in the life context of pregnant women who consume alcohol. However, it is equally important to enable pregnant women to choose protective factors or alternatives to their drinking behaviour as pointed out by Chang, *et al*, (2006(a):419). In this study the self-help booklet played an important role in providing information that can assist clients to choose alternatives to drinking behaviour. The booklet motivated women to change their drinking behaviour. Quantitative analysis of the data reveals that motivation to change was the strongest indicator for behaviour change in the change group of the intervention arm of the study (57%) as opposed to those who were less motivated (12%) in the no-change group. Feedback received (see quote below) indicates how a woman used the booklet and how the booklet not only helped her, but also her partner who had a drinking problem.

The self-help booklet [1:58] [59]

Baie interessant. Leer jou baie. Ek en my vriend het dit saam deurgegaan. Hy drink ook. Dis goed. Leer en help jou.

English translation: *Very interesting. Teaches you a lot. My boyfriend and I went through it together. He is also drinking. It's good. Teaches and helps you.*

The self-help booklet: “How to Prevent Alcohol-related Problems” was developed by the World Health Organisation (Babor & Higgens-Biddle, 2001) as part of a brief intervention training manual. I translated and adapted the booklet into Afrikaans and named it: “My Spesiale Boekie”. I included a sketch and information on the development of the baby *in utero* and the effects of alcohol on the development of the foetus at different stages of development. A sketch to explain the damaging effects of alcohol on the body of the mother and resulting health problems were also added. At the back of the booklet, space and guidelines were provided for recording problems and goals for drinking less or to stop alcohol consumption. I added a record card to the booklet where pregnant women could record daily intake of alcohol. Space was provided on the cover page to record dates for follow-up appointments. The contents of the booklet pointed out in simple language what risky drinking is and how to choose alternatives to risky drinking behaviour.

4.5.1.2 Belief in self and decision to change

The excerpt below describes how one of the pregnant women used the booklet to make a plan or set goals to change her drinking behaviour. She wrote this in the back of her booklet:

Belief in self and decision to change [1:37] [180]

Plan: 1. 'n Gevaarlike situasie is om te drink. Om vir jouself te sê dat alkoholgebruik tydens swangerskap gevaarlik is. Die moeder stel haar baba in gevaar deur alkohol te gebruik. 2. Jy kan jou naaste vra om te help, of neem 'n besluit om die alkohol te los en vir niemand te sê nie. Jy sal jouself dan kan help, sonder enige helper. Ek het dit só gedoen, met my eie wil om op te hou drink.

English translation: *Plan 1. To drink is a dangerous situation. To say to yourself that using alcohol while pregnant is dangerous. The mother places her baby in danger if she uses alcohol. 2. You can ask a person you trust to help you or you can take a decision to stop drinking and not tell anybody about it. You can then help your self, without support from others. This is how I did it, with my own willpower to stop drinking.*

Choosing a drinking goal is very important and, according to the literature, choosing a goal of drinking less, is less attainable than a goal of abstinence.

Judging by the variety of alternatives to risk behaviour recorded in the first follow-up questionnaire (ARQ), the booklet possibly played an important role in assisting pregnant women to change their drinking behaviour. Risk and protective factors

identified as mediators in the Ceres Intervention Study and derived from the ARQ are listed below in Table 4.11. The risk and protective factors correspond with risk and protective factors described in the literature by May & Gossage (2001) and Chang, *et al,* (2006). If one compares the risk and protective factors, it is evident how clients chose alternatives to risk behaviour. Risk and protective factors can also act as mediators or moderators in the process of change.

Table 4.11: Risk and Protective Factors identified by pregnant women in Ceres study

Influential Element	Maternal Risk Factor	Maternal Protective factor
Health	Regular drinking Use of tobacco and dagga Premature babies or mortality from alcohol-related causes and other causes such as hypertension Inadequate nutrition Problems of abuse Differing birth due dates given by medical staff Attitudes of clinic staff Withdrawal symptoms	Stopped drinking Stopped smoking Ate healthy food and rest Switched to drinking juice Took a walk Feeling physically well because of not drinking Food parcel assisted with nutritional needs
Socio-economic status (SES)	Low SES Social transience (degeneration) Unemployment or marginal employment Poverty and lack of means Level of education Status of farm workers Poor and/or inadequate housing Friends who drink Mothers moved to Eastern Cape (former Transkei) for birth of baby Mothers moving around (instability)	Went back to school Engaged in supportive relationships with collateral, family and friends Obtained more stable accommodation
Drinking pattern	Early age at onset of regular drinking Frequent binge drinking (i.e. consuming five or more drinks per occasion 2 and more days per week) Frequent drinking (i.e., every day or every weekend) High blood alcohol concentration No reduction in drinking during pregnancy	Did not buy any alcohol Stopped smoking Went to friends who did not drink Told friends about decision to stop drinking and to stop smoking dagga Did not visit drinking places Got rid of old drinking friends Went to bed early when friends drink Changed friends Went home without drinking To have good reasons for drinking less/stop drinking Stayed at home Watched TV and movies Went shopping Worked in the house Listened to Gospel music Tried not to be bored Visited the library No longer walked in neighbourhood

Psychological profile	Low self-esteem/feeling a failure Depression Sexual dysfunction/abuse Conflict/anger/quarrels/arguments with husband, partner or family Boredom Self-medicate with alcohol Loneliness and tiredness	Positive self-talk and intra-action Handled anger Talked to boyfriend and shared problems Worked at it within herself Took decision to stop drinking Self-help booklet Positive thoughts of pregnancy and the baby Thought of baby's future Used information in booklet and pamphlets Read booklet many times Use of booklet empowered women to speak to other women Used information on alcohol Used suggestions in booklet on how to change behaviour Developed insight into drinking goal Booklet motivated to stop drinking Booklet helped to work out a plan to stop drinking and to handle dangerous situations
Family social traits	Alcohol misuse in family Alcohol misuse by the woman's male partner Tenuous marital status (i.e., cohabitation, never married, separated, or divorced, in relationship - not living together) Loss of children to foster or adoptive placement	Supportive husband/partner/mother Support from children, partner's mother, friends
Local culture/ Community	Relatively tolerant of heavy drinking Generational alcohol abuse	More aware of dangers of drinking during pregnancy. Collateral person supported mother not to drink.

Adapted from May and Gossage (2001) for the Ceres Intervention Study

4.5.1.3 Therapeutic alliance

The therapeutic alliance between the client and counsellor is described as a predictor of treatment outcome for outpatient clients (Connors, DiClemente, Dermen, Kadden, Carroll, & Frone, 1998:140). Therapeutic alliance and counsellor style assist the client to augment motivation for change. Motivation enhances self-efficacy - the belief a person holds that she can change her behaviour. Therapeutic alliance is a strong influence in the change process - the decision the counsellor makes to help the pregnant woman, to walk alongside her, to support her, to be consistent and reliable in follow-up and support, appears to be a very strong change factor.

The establishment of a working relationship between the client and counsellor has long been recognised as an important aspect of the behaviour change process. This

relationship has consistently yielded client responses to psychotherapeutic interventions in a number of different clinical settings (Connors, *et al*, 1998:139). Belding, *et al*, (in Connors, *et al*, 1998:139) concluded from their studies with methadone maintenance clients that the helping relationship may be more evident of treatment progress than of drug outcomes. However, while the therapeutic relationship has been scrutinised with regards to treatment success, there has been less focus on factors associated with the establishment of the therapeutic relationship itself. The limited information available suggests that both client and counsellor traits may contribute to the nature of the relationship (Connors, *et al,* 1998), although more client traits have been studied than counsellor traits. In a research review, Horvath (cited in Connors, *et al*, 1998:140) grouped client traits into three categories: interpersonal traits (e.g. family and social relationships), intrapersonal traits (e.g. motivation) and diagnostic traits (e.g. the category of illness and severity of illness). The results of this review suggest that both interpersonal and intrapersonal variables predict the therapeutic relationship, while diagnostic variables did not influence the therapeutic relationship in a negative way (Connors, *et al*, 1998:140).

There has been much less research done on therapist traits that might influence the therapeutic relationship. It is widely assumed that a positive therapeutic alliance requires a therapist with good relational capabilities and the ability to be empathetic and affirming (Connors, *et al*, 1998:140). A study with outpatient clients undertaken by The Project MATCH research Group, (1997a) positively predicted therapeutic alliance to client age, motivational readiness to change, socialization, level of perceived social support and counsellor age (a mean age of 39.2 years), and negatively predicted by client educational level, level of depression and meaning seeking. Counsellor ratings in the outpatient sample were positively predicted by the client being female and by level of overall alcohol involvement, negative consequences of alcohol use, and readiness to change. Data from The Project MATCH Research Group suggests that a number of client and counsellor traits predict the client's perception of the therapeutic relationship and that motivational readiness to change their drinking behaviour is the strongest predictor in relation to other variables in the study. It is concluded that motivated clients are more likely to be involved in the process of change and see the counselling setup in a more positive light. They also seem to be more engaged in the change process and see themselves working together with the counsellor in terms of setting goals, tasks and the bond of the working relationship (Connors, *et al*, 1998:147). Reflecting on the 57% of pregnant women in the Ceres Intervention Study who were recorded as being

motivated and ready for change, it is possible that the therapeutic alliance played a positive role in motivating pregnant women to change their drinking behaviour.
There are also moderators that influenced the behaviour change in the Ceres Intervention Study. These moderators will now be discussed.

4.5.2 Moderators of behaviour change

Moderators of behaviour change are described as those factors that hamper the process of change. As mentioned before, moderators can be interpersonal factors such as personal and family relations, intrapersonal such as a person's motivation to change or diagnostic factors referring to the severity of a person's illness. Many of the risk and protective factors are mentioned in Table 4.11. Moderators are a more inclusive term and include the myriad of factors that can influence change such as therapeutic alliance, counsellor style, milieu, etc. Some of the moderators that were observed in the Ceres Intervention Study are discussed in the next section.

4.5.2.1 Socio-economic situation

Many pregnant women in the study had very little support and lived in poverty, were part of a drinking culture and were faced with responsibilities beyond their resources and physical abilities.

Lack of food and means to survive [1:38] [186]
Hier is ernstige armoede. Die huis is verskriklik vuil, die mure is pikswart van die oop vuur wat binne die huis gemaak word en daar is geen plek om te sit nie. Hier is geen meubels nie, behalwe karige, stukkende items in die kamer. Daar is ook nie kos in die huis nie. Volgens die moeder is daar dikwels nie kos in die huis nie. Sy is baie bly oor die kospakkie maar is skaam oor die bure so skaamteloos na ons kyk. Ek probeer haar troos deur aan haar te sê hoe 'n belangrike persoon sy is en dat sy deel is van 'n baie belangrike studie. Sy het wasgoed gewas. Haar kinders is redelik versorg maar dit is duidelik dat hulle aan wanvoeding blootgestel word.[1:27] [90]
English translation: *Serious poverty is observed. The house is very dirty. The walls are pitched black from the smoke caused by an open fire in the corner of the room. There is no place to sit. There is no furniture, except for sparse and broken ones in the bedroom. There is no food in the house. According to the mother they often don't have food. She is very thankful for the food parcel but is ashamed because of the neighbours staring at us. I tried to console her by pointing out how important she is and how important the study is in which she is taking part. She has done the washing. Her children are adequately cared for but they appeared to be malnourished.*

Very few women actually owned their own homes or had a private living space of their own. Most of them lived with parents, relatives or a boyfriend in overcrowded conditions and were dependent on others for their survival. Most of the time they end up doing all sorts of chores for the family, including doing the family laundry by hand, cooking, cleaning and looking after children. Often there would be no food in the home for her and the children and she would take to the road to find something to eat.

Women on farms [3:14] [366]

It was reported by health care workers that pregnant mothers on farms do not visit the mobile clinic until late into their pregnancy. Often they want to keep their jobs and do not disclose that they are pregnant. They normally only come once they have to make a booking for the hospital. Standard procedure is that the mother is seen by the clinic sister when she is under 20 weeks pregnant, at 20 weeks, 26 weeks, 32, weeks and before she gives birth [1:38] [186].

Almost a quarter of the women in the study lived on farms in the Ceres district. Some of them attended mobile clinics connected to the study clinics. However, they often would hide their pregnancies because they needed the income and feared losing their jobs as they were frequently the only breadwinners.

Community factors [3:24] [586]

It is winter, there is snow on the mountains, it's cold and rainy and according to some of the health care workers, there is a decrease in patients visiting the clinics. We have also experienced a month long strike of health workers and teachers, impacting on our work due to absenteeism of health care workers and the presence of hundreds of children on the streets and in overcrowded homes [3:29] [603].

During the Ceres Intervention Study, many factors such as the strike of health-care workers and teachers and other events including polio campaigns and extreme temperatures were moderating factors that had a direct or indirect influence on the study.

4.6 Conclusion

In this chapter, data derived from the Ceres Intervention Study was discussed and analysed. Data on the differences between the intervention and control arms of the study were described. In my study the differences between the change and no-

change groups within the intervention arm were highlighted together with qualitative data derived from documents recorded during and after the study.

The data analysis reveals the importance of the intervention programme and how the programme worked. From the analysis it is clear that those women who were most motivated and ready to change, those from worst socio-economic circumstances who experienced worst interpersonal violence, and those who used alcohol at harmful levels, were more likely to change. Women who set a goal of abstinence as opposed to drinking less were more inclined to stop drinking. The intervention programme illustrated that the focus of the programme was on enhancing motivation and readiness for change by using specific therapeutic methods and that the “dialectical interplay” between clients and counsellor possibly attributed to the high levels of motivation recorded.

In chapter 5, the findings will be discussed and recommendations will be made.

Chapter 5

Findings, discussion and recommendations

5.1 Introduction

This chapter explicates and discusses the findings of the Ceres intervention study, makes recommendations for further studies and provides guidelines for the implementation of intervention programmes in the community and at primary health care levels. The chapter further reports on the intervention effect between the intervention and control arm of the study and, more specifically and in more detail, on the behaviour change that occurred within the intervention group (the change and no-change groups).

The Ceres Intervention Study is one of the first intervention studies with pregnant women that was undertaken in a community setting in South Africa, and was primarily sponsored by the Department of Social Development (DSD). The main objective of this study is to establish what facilitated the behaviour change that was observed and how this change came about. In order to achieve this objective, data from the intervention group and control group were firstly analysed to derive information on the intervention effect in the Ceres Intervention Study, and secondly, for the purpose of my study, two groups, the change and no-change groups in the intervention arm were analysed to determine what facilitated the behaviour change – who changed their drinking behaviour and how this change came about.

The main focus of my study then is on the description and understanding of behaviour change in terms of intervention methods, complex inter-personal factors, counsellor personality and style, and the complex life-context of pregnant women in the study.

5.2 General findings and main trends in the Ceres Intervention Study

Overwhelmingly, women in the study were from poor communities. They live in substandard overcrowded homes and informal dwellings where alcohol and substance abuse are accepted practices. These conditions impact negatively on the

women's behaviour, their self-esteem, health and nutrition, and emotional wellbeing. More than half were unemployed, which depicts the low level of socio-economic status of the women in the study and consequent feelings of powerlessness and motivation to change (Michie, *et al,* 2008:18). Some of the women were employed as fruit packers or fruit pickers. Many fear losing their jobs resulting in some women, especially on farms, hiding their pregnancies and only visiting the antenatal clinic when they have to make a hospital booking for the birth of the baby.

More than half of the respondents had heard of Foetal Alcohol Syndrome (FAS). Both the intervention and control groups took their first drink at a young age. Early onset of drinking is an important predictor of drinking later on in life (Grant & Dawson cited in Roberts & Nanson, 2001:17). Significantly more pregnant women in the intervention group indicated that they have somebody close to them who has a problem with alcohol. Having someone close with a drinking problem is rated as a high risk factor for alcohol consumption during pregnancy (May & Gossage, 2001:165). Taken together, more than half of the pregnant women in the study could be classified as hazardous drinkers according to the Alcohol Use Disorders Identification Test scores (AUDIT zone level 8-15) and included women who would binge drink over weekends or at occasional parties (Marais, *et al*, 2008:1).

Individual baseline by post-intervention AUDIT scores show that the majority of women (60%) in the intervention group had a reduced AUDIT score after intervention compared to their baseline score, while a significantly lower percentage (41%) of the control group also decreased their AUDIT score, however 10% of this group increased their score. A change was observed in 60% of women after the intervention. This change in the behaviour of the intervention group could be related to the effects of screening and assessment and provides some explanation to the 41% change that was observed in the control group.

Other studies confirm that screening and assessment are strong awareness-creating tools and cause a reduction in drinking as observed in the control arm of the study (Hankin, 2002:61; O'Connor & Whaley, 2007:252; Bien *et al,* 1993:318). The results showed that the full intervention was more effective than screening and assessment and written material alone (as used for the control group).

Individuals spontaneously recover from serious problem drinking without formal treatment (10% to 20%) which is another factor that could have contributed to the

change in drinking behaviour in both the control and intervention arm of the study (Imber, Schultz, Funderburk, Allen, & Flamer, cited in Moos & Finney, 1983:1036). Changing alcohol drinking behaviour is complex and includes inter-personal, life-context, drinking characteristics and treatment factors (Moos & Finney, 1983:1038).

All women in the intervention group received the full intervention for harmful drinking (information and simple advice, brief counselling and continued monitoring). As pointed out before, even a little alcohol could harm the foetus and it was the safest way to provide each woman with all the information and the full intervention. This could have had an impact on the high change rate (60%) that was observed in the intervention arm of the study and may have led to more women changing their drinking behaviour as opposed to other studies where less change was observed (Bien, *et al*, 1993:318).

To test for the reliability of answers provided by pregnant women, a model consisting of three drinking groups were defined at baseline, depicting a non-drinker group, an unconfirmed drinker group and a confirmed drinker group. The data was analysed and it was found that confirming drinking increases the estimates of the difference between the two groups and showed that women who are “honest” or more ready to acknowledge their drinking problem, are more ready to change their drinking habits. These findings are supported by other studies (O’Connor & Whaley, 2007:252-258; Handmaker & Wilbourne, 2001:219-229). Although readiness to change is not dependent on the pregnant woman alone, it is a result of interpersonal interaction between the client and the counsellor (Mash, 2003:593).

A large group of women changed their drinking behaviour after each intervention session. It seems that attendance of sessions and more than one intervention session is important especially where excessive drinking occurs (Miller cited in Dearing, *et al,* 2005:72). However, in the Ceres Intervention Study the follow-up time-lapses between the four interventions were 41, 47 and 58 days. The time lapse recorded is not considered an acceptable time lapse between interventions in normal practice where therapy sessions would be scheduled more likely on a weekly basis for six to twelve weeks (The Project Match Research Group, 1997a:13). Although this was a limitation, it is assumed that the rapport with the counsellor, the trust that the counsellor placed in the pregnant women, the information that was explained and provided and thoughts of being “checked up on”, not wanting to disappoint the counsellor who showed personal support, interest and encouragement, could have

motivated the women to change their drinking behaviour. It is also possible that pregnant women responded to each follow-up session as if it was a “first session”. It could be that the counsellor was putting more effort into building rapport and trust in “picking up” the relationship. Any relationship suffers if people do not see each other and have no contact and it is possible that the positive nature of the relationship created a more lasting intra-action.

The self-help manual and collateral support person also played a role in providing support and maintenance. However, behaviour change is complex and not easy to explain as is evident from this study. Understaffed and less perfect conditions accounted for long intervals between follow-ups. Accessibility to treatment centres and long waiting lists made it virtually impossible to refer women who tested positive for alcoholism. It is speculated that these women especially would have benefited from more frequent, weekly interventions and medical assistance.

Most of the women recruited were on average 15 weeks pregnant and pre-natal alcohol exposure could already have harmed the foetus. Often women are not aware of their pregnancy status and may continue to use alcohol during the first few months of their pregnancy. Even if they should stop drinking later on in the pregnancy, the foetus may still benefit, although it could have already been harmed (Chang, *et al,* 1999:1499-1508). Underreporting of drinking by pregnant women and not being aware of their pregnancies account for some of the reasons why self-defined non-drinkers were included in both arms of the study (Hankin, 2002:62). This information places a question mark on the feasibility of intervention programmes being implemented at antenatal clinics only. Intervention programmes need to be implemented at contraceptive clinics and should target women of child bearing age at schools and places of work as well.

5.3 Comparison of the Change and No-change groups in the intervention arm of the study

Motivation is a strong indicator for change and was the strongest predictor for change between the change and no-change groups. Several factors such as screening, assessment, information sharing, counsellor style and positive reinforcement contributed to motivate pregnant women to change their behaviour. Positive reinforcement included statements such as “I know you can do it”, “You are a wonderful person, you can do it”, “I like your openness and honesty about your

drinking, it is a great starting point", "Thank you for trusting me with your problem", "You are doing very well, I am proud of you" etc. This approach helped to strengthen self-efficacy and her belief in her self. An important motivator was to provide feedback on their drinking score. Most women were shocked when they realised that they were drinking at hazardous and harmful levels and what damage could have been done to the foetus because of their drinking. Information on the developmental phases of the baby *in utero* and how alcohol affects the foetus at different stages of development, appeared to be strong motivational information.

Readiness to change is a result of the confidence a person holds that she can change and is accomplished through the interactive relationship with the counsellor and extra-treatment factors such as life-context and client interpersonal traits (Rollnick, Mason & Butler, 1999:18; Moos & Finney, 1983:1036-1044). It is assumed that the large time-lapse between intervention sessions might have negatively affected the no-change group's readiness to change.

More than two thirds of the pregnant women in the no-change group were in a relationship but were not living with their partners. It is likely that they experienced less support, were probably living in worse socio-economic circumstances and depended on relatives and friends for support. It is also possible that they had not planned their pregnancies and harboured negative feelings towards their pregnancy and the father of the child. Under these negative circumstances, some women were pressurised by their families to have an abortion or to have their babies adopted. One or two women were also faced with the possibility of having an HIV positive baby.

The change group was drinking at statistically significant higher risk levels than the no-change group. It is possible that women in the no-change group overwhelmingly believed they could drink less because they were drinking at lower risk levels and chose "drinking less" as a goal as opposed to "abstinence". According to the literature, a goal of drinking less is less attainable than a goal of abstinence (Chang, *et al*, 2006: 419-424).

Pregnant women who experienced a worse drinking environment as opposed to those from a better drinking environment were more likely to change their drinking behaviour. A partner, husband, boyfriend, parent or relative who drinks, places women at risk for drinking (May & Gossage, 2001:165). However, the opposite seems equally significant in that someone close to them who does not drink can be a

protective factor and assist them not to drink. These contradictions in environmental and interpersonal factors contribute to the complex nature of behaviour change.

Significantly more women who experienced interpersonal violence in their relationships as opposed to those who experienced less violence were likely to change. Further qualitative studies would be needed to provide more insight into the complexities of behaviour change. It is speculated that women who are abused are more susceptible to the support of the counsellor and therefore more motivated to change.

No statistically significant relationship was observed concerning collateral support, due to some missing data. About a quarter of the women in the study engaged the support of a collateral person and many testified to the benefits of collateral support. I provided collateral supporters with orientation to the programme and interviewed them in follow-up sessions. However, it was not always possible to interview them due to their work commitments and other constraints.

Another statistically significant finding is that women who went to church more regularly were less likely to change than those in the change group. It is probable that they were not ready to acknowledge their drinking problem because of fear of being ostracised. Women who benefited more from the intervention often experienced less support, were low on social capital and from more deprived socio-economic situations. They probably never had anyone taking a personal interest in them and therefore reacted more positively to the support and empathy they received from the counsellor (Michie, *et al*, 2008:18)

Whether they knew what Foetal Alcohol Syndrome (FAS) was did not have much of an influence on whether they changed their behaviour or not. From the literature it appears that women who are expecting their first child are more likely to choose abstinence as a goal as opposed to drinking less (Chang, *et al*, 2006:419-423). However, in the Ceres Intervention Study women who were expecting their first child were less likely to change their drinking behaviour. This can possibly be related to the lack of support they experienced from their partners and the fact that only 23% of the pregnant women in the Study planned their pregnancies (Personal communications with Dr Sandra Marais, MRC, 2009)

Pregnant women in the no-change group were probably less able to set goals or to stick to their goals to drink less or stop drinking. Perhaps they failed to choose alternative behaviours (Chang, *et al,* 2006:419-424). Factors such as people close to them drinking and them being part of a drinking environment or an unstable relationship with a partner, or low socio-economic status may have influenced their decision to change their behaviour (May & Gossage, 2001:165). Their degree of cognitive impairment perhaps as a result from being exposed to alcohol *in utero* themselves may have influenced behaviour change (Kazdin & Nock, 2003:1116-1129). Pregnant women who were drinking at higher risk levels or tested positive for alcohol dependence, who had a longer drinking history and needed to be referred for specialist treatment, were more likely not to change their drinking behaviour (Hankin, 2002:62).

In conclusion, women who showed the most change in drinking behaviour included those who were motivated and ready to change and those who were more at risk. This is an important factor and needs to be explored more in further studies.

5.4 The role of behaviour change methods and techniques

The same intervention methods and techniques were administered to all the women in the Ceres Intervention Study because of the tendency by pregnant women to underreport their drinking and the possibility that they could start drinking later on during pregnancy (Hankin, 2002:62). The following techniques and methods were used interchangeably and compares favourably with intervention techniques used in other studies: Providing general information and information on consequences, prompt intention formation, prompt specific goal setting and barrier (risk) identification, provide social support and rewards and prevent relapse (Michie, *et al,* 2008:14).

Significant behaviour changes were recorded after each intervention session. Behaviour change emerged as a gradual process and as the intervention progressed, more techniques were integrated into the process. Brief motivational interviewing and brief interventions were used in combination with all the methods mentioned to enhance counselling skills.

During this study some, understanding and insight developed on moderators and mediators of behaviour change. Although the study was not designed as a qualitative

study, qualitative data gathered during and after the study provided insight into how behaviour change took place during the intervention. The literature does not provide much information on how change is arrived at. Some literature (May & Gossage, 2001:165) is clear on risk factors for pregnant women but few studies address alternatives or protective factors (Chang, *et al,* 2006:425). Future intervention studies should look at risk and protective factors in the lives of those people who display addictive behaviours.

Motivation for change is closely linked in this study to goal setting and choice (De Jong & Miller, 1995:730; Chang, *et al,* 2006:420). The self-help booklet helped women to select goals for behaviour change, to recognise risk factors in their own situation and to choose alternative protective behaviours. Women were allowed to set their own goals according to their own abilities and needs. Home visits were positively contributing to behaviour change. Pregnant women gave their full cooperation. They were very good in remembering follow-up dates and most of the time waited for my visit. Some women expressed the desire to have more frequent counselling sessions. Within the context of being understaffed and the commitments of pregnant women, the high follow-up rate could only be achieved together with meticulous planning, scheduling and mopping-up activities, careful case management and cooperation of the pregnant women. These work methods contributed to the trust relationship with clients (Walsh Dotson, Henderson, & Magraw, 2003:758).

Combining research activities and therapy in a community setting was challenging. It requires special skills to combine data collection instruments and counselling aspects. It was extremely difficult to keep to time limits as so much needed to be done during the intervention session. In addition, treating addictive behaviours in the community requires a holistic approach and engaging the continuum of care available in the community setting.

The therapeutic alliance and counsellor style are important in facilitating behaviour change (Dearing, *et al,* 2005:71). One of the prerequisites for change is an empathetic counsellor who enhances the self-efficacy of the client (self-efficacy is the belief the client holds that she can change, based on her motivation and confidence - equalling readiness to change) (Dearing, *et al,* 2005:71). Many women in the Ceres study did not have any support and were dependent on supportive counselling, guidance and encouragement throughout their pregnancy. The information they

received helped them to make informed decisions and to help other women. However, resources are limited within the South African context and counsellors are not readily available due to huge shortages of staff in social work and psychology professions. Lay counsellors are more and more being used in community settings but do not receive adequate training to enable them to cope with numerous psychosocial problems in the community. Staff at health care facilities in the Ceres Intervention Study did not have the time and/or were not trained to address problems related to alcohol addiction and behaviour change techniques.

5.5 Recommendations

In a developing country such as South Africa, social workers are working in a complex milieu and are confronted by extraordinary challenges at different levels of the client system. To develop successful interventions means to combine therapy and research in a fine balancing act in order to provide more scientifically based interventions. To achieve this, we need to measure progress and outcome, make changes, identify problems and address them within unique community settings and reflect our findings against data from the broader behaviour change field. Without this approach, the same mistakes will be repeated and scarce resources will be wasted.

In this study, recommendations for behaviour change intervention programmes will mainly refer to interventions in community settings and will include methodological factors, programme priorities, financial and cost effectiveness, administrative support, data processing and analysis and client support activities. The recommendations are based on findings from both other studies as well as the Ceres Intervention Study:

5.5.1 Methodological implications

5.5.1.1 Needs assessment

A needs assessment forms the basis for planning and implementation of intervention programmes. The Ceres Intervention Study was preceded by a feasibility study (2005) where members of the different communities and clinic settings provided extensive input. The study was guided and informed by previous FASD research studies in South Africa and abroad. It is therefore recommended to base programme planning on FASD surveillance data and to form partnerships with target populations to ensure that intervention programmes take into account socio-economic and

cultural contexts and build on people's strengths and capacities. A theoretical link should be established between the intervention and the outcomes (as in the case of the Ceres Intervention Study) and the reason why specific health behaviour is targeted, should be clear. The theoretical model should be justified through literature studies.

5.5.1.2 Programme planning

At programme planning level, it is recommended to assess barriers to change and then to decide which programme will be delivered and for how long. The Ceres Intervention Study was planned over a period of more than two years and every aspect of the programme was carefully planned. The programme includes a second phase and tests outcome at the level of the pregnant women, the baby and at the level of impact on the community in terms of less children being born with FASD. It is essential to describe the content of each programme and to decide on the processes and outcomes at individual, community and population levels and how this will be measured.

5.5.1.3 Programme priorities

In the Ceres Intervention Study cost-effective measures were very important and interviews and trips were scheduled and recorded, office space were improvised and only essentials were included in the budget. It is recommended that policy makers, research funders, researchers and health economists collect data for cost-effectiveness analysis. It is further recommended that the cost-effectiveness of primary preventions and community treatment programmes are evaluated versus rehabilitation centre and hospital treatments.

It is also recommended that key life stages or times when people are more likely to be open to change e.g. during pregnancy, starting or leaving school, in medical settings or during clinical interventions are used for promoting health behaviour change.

It is recommended that early intervention target pregnant women and women of child-bearing age and should be integrated into antenatal and contraceptive clinics at primary health care levels. Early intervention should be included in the school curriculum, and should be made part of workplace health and safety procedures.

Ineffective programmes should not be supported therefore proper programme evaluation is recommended.

5.5.1.4 Administrative support

Intervention programmes need administrative support and short-term and long-term support is recommended. Support with funding, logistical arrangements, preparation of programme material, administration of income and expenditure budgets and client incentives are recommended as this was an essential part of the success of the Ceres Intervention Study.

5.5.1.5 Data gathering, processing and analysis

It is recommended that data gathering, processing and analysis should be meticulously planned, recorded and processed. Interview schedules and measuring instruments should include variables that will provide best answers to the research questions and provide data on behaviour change outcomes. In the Ceres Intervention Study data processing was done on a daily basis.

5.5.2 Programme implementation

5.5.2.1 Individual support and motivation

The role of the counsellor is to support and motivate individuals to gain insight into the consequences of their health behaviour on a short, medium and longer-term basis. It is thus recommended that the individual is helped to look at the benefits of change and develop positive feelings about behaviour change; is taught how to plan change and identify “dangerous” or risk situations and making change possible by taking small and easy steps over time. A further recommendation is that the individual is taught how social context and relationships may affect behaviour change and how to plan strategies to prevent relapse (if – then, coping strategies). It is recommended that the individual is helped to make a decision to change or to make a commitment to change and to set clear specific goals for changing behaviour and to share their behaviour goals with others.

5.5.2.2 Community level support

It is recommended that intervention programmes identify and build on the strengths of individuals and relationships within communities to promote and develop positive parenting skills, build and improve self-efficacy, develop supportive social networks, promote resilience and build skills and access to resources.

5.5.2.3 Screening, assessment and monitoring of alcohol use disorders

It is recommended that screening and assessment for alcohol use disorders is made a standard procedure for all pregnant women attending antenatal clinics as well as for women visiting contraceptive clinics. Using a variety of screening and measuring tools enhances the chances to determine hazardous drinking patterns in pregnant women and to monitor drinking behaviour. The Alcohol Use Disorders Identification Test (AUDIT) is recommended as a reliable tool to detect harmful and hazardous drinking patterns with pregnant women and is suitable to be used in further intervention programmes. The CAGE is recommended as a useful tool to monitor drinking behaviour in follow-up sessions while brief motivational interviewing (BMI) and brief intervention (BI) techniques are recommended for counselling persons displaying addictive behaviours. A test on mediators and moderators can be developed and a questionnaire on client satisfaction is recommended for future programmes. It is advisable to explore the use of biochemical tests in further studies. However, it can prove to be costly and unattainable in developing countries where public healthcare services are precarious.

5.5.2.4 Follow-up intervention sessions

It is advisable that follow-up intervention sessions should be scheduled much closer and those clients who tested positive for hazardous and harmful drinking should be followed-up more regularly. Those clients who are on a waiting list or who cannot gain access to rehabilitation centres and who tested positive for alcohol dependence need weekly follow-up sessions and medical assistance together with BMI.

5.5.2.5 Counsellor training

In order to address the problem of alcohol consumption during pregnancy, it is recommended that more counsellors are trained as interventionists and more money and resources are made available for training and intervention purposes.

5.6 Conclusion

The Ceres Intervention Study illustrates how important circumstances are under which behaviour change can be facilitated, especially in under-privileged areas where interventions utilising counselling techniques are desperately needed. The intervention addressed the drinking behaviour of pregnant women and facilitated the change that was observed. The study highlights the importance of behaviour change in addressing addictive behaviours and that it is achievable even in underprivileged communities. It further reveals the need for scientifically designed interventions, and carefully planned programme implementation that can address the problem of generational alcohol abuse and Foetal Alcohol Spectrum Disorder (FASD) within the South African society.

At the time of completion of this study, information on the health outcomes of the babies in Phase I of the Ceres Intervention Study was not available. The next step is to ascertain whether FAS was present in any babies in the Study and to compare these with results from the different groups described in the Study.

Bibliography

Aase, J.M. 1994. Clinical recognition of FAS: Difficulties of detection and diagnosis. *Alcohol Health and Research World,*18:5-9.

Abel, E.L. 1995. An Update of Incidence of FAS: FAS is not an Equal Opportunity Birth Defect. *Neurotoxicology and Teratology,* 17(4):437-443.

Adnams, C., de Jongh, G., du Plessiss, R.M., Jurgens, J.P., Marais, A.S., Moletsane, T., Olivier, L. & Van der Heyde, Y. 2003. Management of Fetal Alcohol Syndrome at a Primary Health Care Level. Department of Health: Western Cape Province Provincial FAS Reference Group: Training Task Team (MCWH Sub-directorate) Unpublished training manual.

Adnams, C.M., Kodituwakku, P.W., Hay, A., Molteno, C.D., Viljoen, D. & May, P.A. 2001. Patterns of cognitive-motor development in children with fetal alcohol syndrome from a community in South Africa. *Alcoholism: Clinical and Experimental Research,* 25:557-562.

A Liquor Policy for the Western Cape. White Paper Final Draft. 17 March 2005. http://www.capegateway.gov.za

Allen, J.P., Litten, R.Z., Fertig, J.B. & Babor, T. 1997. Review of research on the Alcohol Use Disorders Identification Test (AUDIT). *Alcoholism: Clinical and Experimental Research,* 21 (4):613-619.

Armstrong, P., Lekezwa, B. & Siebrits, K. 2008. *Poverty in South Africa: A profile on recent household surveys*. Working papers 08/2007, Stellenbosch University, Department of Economics, 8-9.

Atlas.ti – *The Knowledge Workbench – V5.0 Quick tour for Beginners*, http://www.atlasti.com/downloads/Quick Tour.pdf. Accessed online: July 2008

Babbie, E. & Mouton, J. 2001. *The practice of social research*. Cape Town: Oxford University Press.

Babor, T.F. & Higgens-Biddle, J.C. 2000. Alcohol screening and brief intervention: dissemination strategies for medical practice and public health. *Addiction,* 95(5):677.

Babor, T.F., de la Fuente, J.R., Saunders, J. & Grant, M. 1989. *AUDIT: The Alcohol Use Disorders Identification Test: Guidelines for Use in Primary Health Care*. WHO/MNH/DAT 89.4, World Health Organization, Geneva.

Barron, M. & Kenny, D.A. 1986. The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical considerations. *Journal of Personality and Social Psychology* 51(6):1173-1182.

Bandura, A. 1986. *Social foundations of thought and action: A social cognitive theory*. Prentice Hall: Englewood Cliffa, N.J.

Bates, M.E. Bowden, S.C., Barry, D. 2002. Neurocognitive impairment associated with alcohol use disorders: implications for treatment. *Expert Clinical Psychopharmacol*ogy, 10: 193-212.

Bingo, N., Schuster, C., Fuchs, M., Isosub, S., Turner, G., Stone, R.K. & Gromisch, D.S. 1987. The influence of socio-economic factors on the occurrence of fetal alcohol syndrome. *Advances in Alcoholism and Substance Abuse,* 6:105-118.

Bien, T.H., Miller, W.R. & Tonigan, S. 1993. Brief intervention for alcohol problems: a review. *Addiction,* 88:315-336.

Bohn, M.J., Babor, T.F. & Kranzler, H.R. 1995. The Alcohol Use Disorders Identification Test (AUDIT): Validation of a screening instrument for use in medical settings. *Journal of Studies on Alcohol,* 56:423-432.

Bonthius, D.J., Carmichael Olsen, H. & Thomas, J.D. 2006. Proceedings of the 2006 annual meeting of the Fetal Alcohol Spectrum Disorders Study Group. *Alcohol*, (40):61-65.

Burd, L., Klug, M.G., Martsolf, J.T., Martsolf, C., Mengr, E.D. & Kerbeshian, J. 2006. A staged screening strategy for prenatal alcohol exposure and maternal risk stratification. *The Journal of the Royal Society for the Promotion of Health,* 126(2). *Health & Medical Complete*, p.86.

Bush, B., Shaw, S., Cleary, P. I., Delbanco, T. L., & Aronson, M. D. 1987. Screening for alcohol abuse using the CAGE questionnaire. *American Journal of Medicine,* 82:231-235.

Bulmer, M. & Warwick, D.P. 1983. Research Strategy. In: *Social Research in Developing Countries*, 27:30-40. John Wiley & Sons Ltd.

Cantania, J.A., Kegeles, S.M., & Coates, T.J. 1990. Towards an understanding of risk behaviour: An AIDS risk reduction model (ARRM). *Health Education Quarterly,* 17(1):53-72.

Carter, R.C., Jacobson, S.W., Molteno, C.D., Chiodo, L.M., Viljoen, D. & Jacobson, J.L. 2005. Effects on Prenatal Alcohol Exposure on Infant Visual Acuity. *The Journal of Pediatrics,* (147):473-479.

Census. 2001. Available online: http://www.demarcation.org.za [2008: December]

Chan, A. W. K., Pristach, E. A., Welte, J. W. & Russell, M. 1993. Use of the TWEAK test in screening for alcoholism/heavy drinking in three populations. *Alcoholism: Clinical and Experimental Research,* 17(6):1188-1192

Chang, G., McNamara, T.K., Orav, E.J. & Wilkens-Haug, L. 2006. Brief intervention for prenatal alcohol use: The role of drinking goal selection. *Journal of Substance Abuse Treatment*, 31(4):419-424.

Chang, G., McNamara, T.K., Orav, E.J. & Wilkens-Haug, L. 2006. Alcohol Use by Pregnant Women: Partners, Knowledge, and Other Predictors. *Journal of Studies in Alcoholism*, 67(2):245-251.

Chang, G., Wilkens Haug, L., Bernman, S. & Goetz, M.A. 1999. Brief intervention for the alcohol use in pregnancy: a randomized trial. *Addiction,* 94(10):1499-1508.

Chang, G., Behr, H., Goetz, M.A., Hiley, A. & Bigby, J. 1997. Woman and Alcohol Abuse in Primary Care. *The American Journal on Addictions,* 6(3).

Cherpitel, C.J. 2001. Screening for alcohol problems: a comparison instrument performance among black emergency department and primary care patients. *Journal of Substance Use,* 5:290-297.

Cherpitel, C. J. 1999. Screening for alcohol problems in the U.S. general population: a comparison of the CAGE and TWEAK by gender, ethnicity and service utilization. *Journal of Studies in Alcoholism,* 60:705-711.

Cherpitel, C. J. 1997. Comparison of screening instruments for alcohol problems between Black and White emergency room patients from two regions of the county. *Alcoholism: Clinical and Experimental Research,* 21(8):1391-1397.

Cherpitel, C.J. 1997. Screening for alcohol problems in the emergency room: A rapid alcohol problems screen. *Drug and Alcohol Dependence,* 40:133-137.

Conigrave, K.M., Hall, W.D. & Saunders, J.B. 1995. The AUDIT questionnaire: choosing a cut-off score. *Addiction,* 90:1349-1356.

Connors, G.J., DiClemente, C.C., Dermen, K.H., Kadden, R., Carroll K.M., & Frone, M.R. 1999. Predicting the therapeutic alliance in alcoholism treatment. *Journal of Studies in Alcoholism,* 61:139-149.

Croxford, J. & Viljoen, D. 1999. Alcohol Consumption by Pregnant Women in the Western Cape. *South African Medical Journal*, 89(9):962-965.

Dearing, R.L., Barrick, C., Dermen, K.H. & Walitzer, K.S. 2005. Indicators of Client Engagement: Influences on Alcohol Treatment Satisfaction and Outcomes. *Psychology of Addictive Behaviours,* 19(1):71-78.

De Jong, P. & Miller, S.D. 1995. How to interview for Client Strengths. *Social Work,* 40(6):729-735.

DiClemente, C.C. & Prochaska, J. 1998. Toward a comprehensive, trans-theoretical model of change: stages of change and addictive behaviours. In Millar, W.R., Heather, N. (eds.). *Treating addictive behaviours*, 2nd ed. Plenum, New York.

Doggett, C., Burrett, S., Michaels, C. & Osborn, D.A. 2003. Home visits during pregnancy and postpartum for women with an alcohol and/or drug problem. *The Cochrane Database of Systematic Reviews 2003*, Issue 4. Art. No.: CD004456.DOI: 10.1002/14651858.CD004456.

Ewing, J. A. 1984. Detecting alcoholism: the CAGE questionnaire. *Journal of the American Medical Association,* 252:1905-1907.

Fleming, M. & Baier-Manwel, L. 1999. Brief Interventions in Primary Care Settings. A Primary Care Treatment Method for At-Risk Problem and Dependent Drinkers. *Alcohol Research and Health,* 23(2).

Glaser, B & Strauss, A.L. 1967. *The discovery of grounded theory*. Chicago: Aldine.

Grencavage, L. & Norcross, J. 1990. Where are the commonalities among the therapeutic common factors? *Professional Psychology Research* and Practice, 21:372-378.

Handmaker, N.S. & Wilbourne, P. 2001. Motivational Interventions in Prenatal Clinics. *Alcohol Research and Health,* 25(3).

Hankin,J.R. 2002. Fetal Alcohol Syndrome Prevention Research. *Alcohol Research & Health,* Vol. 26, 1:58-65.

Hankin, J.R. 2002. Fetal alcohol syndrome prevention research. *Alcohol Research & Health.* Accessed online April 2008: http://www.encyclopedia.com/doc/1G1-90681221.html

Hankin, J.R., Sloan, J.J. & Sokol, R.J. 1998. The modest impact of the alcohol beverage warning label on drinking during pregnancy among a sample of African American women. *Journal of Public Policy and Marketing*, 17:61-69.

Hankin, J.R. 1994. FAS prevention strategies: passive and active measures. *Alcohol Research and Health, Vol* 18(1):62-66.

Harker, N., Kader, R., Meyers, B., Fakier, N., Parry, C. & Flisher, A.J. 2008. *Substance Abuse Trends in the Western Cape*. A review of studies conducted since

2000. Report prepared by: The SA Medical Research Council, Human Sciences Research Council, University of Cape Town and Dopstop.

Hays, R.D., Merz, J.F., & Nicholas, R. 1995. Response burden, reliability, and validity of the CAGE, Short Mast, and AUDIT alcohol screening measures. *Behavioural Research Methods, Instruments and Computers,* 27:277-280.

Higgens, J.P.T., & Green, S. (editors). *Cochrane Handbook for Systematic Reviews of Interventions* Version 5.0.2 [updated September 2009]. The Cochrane collaboration, 2008. Available from www.cochrane-handbook.org.

Hoyme, H.E., May, P.A., Kalberg, W.O., Kodituwakku, P., Gossage, J.P., Trujillo, P.M., Buckley, D.G., Miller, J.H., Aragon, A.S., Khaole, N., Viljoen, D.L, Jones, K.L. & Robinson, L.K. 2005. A practical clinical approach to diagnosis of fetal alcohol spectrum disorders: Clarification of the 1996 Institute on Medicine Criteria. *Pediatrics,*115:39-47. [PubMed: 15629980]

Jacobson, S.W., Choido, L.M., Sokol, R.J. & Jacobson, J.L. 2002. Validity of maternal report of prenatal alcohol, cocaine, and smoking in relation to neurobehavioural outcome. *Pediatrics,* 109:815-825.

Janz, N.K., & Becker, M.H. 1984. The Health Belief Model: A decade later. *Health Education Quarterly,* 11(1):1-47.

Jones, K. 2002. *The turn to a narrative method of knowing of persons: One method explored.* Nursing Times Research. Mary Seacole Research Centre. De Montford University.

Kazdin, A.E. & Nock, M.K. 2003. Delineating mechanisms of change in child and adolescent therapy: methodological issues and research recommendations. *Journal of Child Psychology and Psychiatry,* 44:1116-1129.

Kaskutas, L.A.. Bond, J. & Humphreys, K. 2002. Social networks as mediators on the effect of Alcoholics Anonymous. *Addiction,* 97:891-900.

Kaskutas, L.A. & Graves, K. 2001. Pre-pregnancy drinking: How drink size affects risk assessment. *Addiction,* 96:1199-1209. [PubMed: 11288475]

Kaskutas, L.A. & Graves, K. 2000. An alternative to standard drinks as a measure of alcohol consumption. *Journal of Substance Abuse*, 12:67-78.

King, A.C. 1994. Enhancing the Self-Report of Alcohol Consumption in the Community: Two questionnaire formats. *American Journal of Public Health,* 84:294-296.

Kreitman, N. 1986. Alcohol consumption and the prevention paradox. *British Journal of Addiction*, 81:353-363.

Kesmodel, U., Kesmodel, P.S., Larsen, A. & Secher, N.J. 2003. Use of alcohol and illicit drugs among pregnant women. *Scandinavian Journal of Public Health,* 31: 5-11.

Kumpfer, K.L., Turner, C., Hopkins, R. & Librett, J. 1993. Leadership and team effectiveness in community coalitions for the prevention of alcohol and other drug abuse. *Health and Education Research: Theory and Practice*, 8(3):359-374).

Kvigne, V.L., Leonardson, G.R., Borzelleca J., Brock, E., Neff-Smith, M. & Welty, T.K. 2003. Characteristics of Mothers Who Have Children with Fetal Alcohol Syndrome or Some Characteristics of Fetal Alcohol Syndrome. *The Journal of the American Board of Family Practice* 16:296-303.

Lambert, M.J. & Ogles, B.M. 2004. The efficacy and effectiveness of psychotherapy. In *Handbook of Psychotherapy and Behaviour Change*, ed. Lambert, M.J. 139-193. New York, NY: John Wiley and Sons.

Lawrie, T.A. *et al,* 1998. Validation of the Edinburgh Postnatal Depression Scale on a cohort of South African women. *South African Medical Journal, 88:1340-1344.* Afrikaans translation courtesy of Dr Simone Honikman.

London, L. 2000. Alcohol consumption amongst South African farm workers: A challenge for the post-apartheid health sector transformation. *Drug and Alcohol Dependence,* 59:199-206. [PubMed: 10891634]

London, L., Nell, V., Thompson, M.L. & Meyers, J.E. 1998. Health status among farm workers in the Western Cape – collateral evidence from a study of occupational hazards. *South African Medical Journal,* 88(9):1196-1101.

Longabaugh, R., Donovan, D.M., Karno, M.P., McCrady, B.S. & Tonigan, J.S. 2005. Active ingredients: how and why evidence-based alcohol behavioural treatment interventions work. *Alcoholism: Clinical and Experimental Research,* 29:235-247.

Magruder-Habib, K., Durand, A. M. & Frey, K. A. 1991. Alcohol abuse and alcoholism in primary health care settings. *The Journal of Family Practice,* 32(4):406-413.

Marais, S. & Jordaan, E. 2005. *Feasibility study on the possibility of introducing brief interventions to reduce alcohol consumption during pregnancy to women attending selected primary health care facilities in the Western Cape*: Project Report, MRC.

Marais, S. *Drinking during pregnancy: MRC News*, 2006:8-9.

Marais, S. 2006. *Prevention of Fetal Alcohol Spectrum Disorder through Brief Interventions for Pregnant Women: A Randomised Clinical Trial*. MRC Project Proposal.

Marais, S., Jordaan, E., de Waal, J., Poole, C., Viljoen, D. & Olivier, L. 2008. *Changing Drinking Behaviour through Screening and Brief Interventions*. Project Report: MRC, FARR & UNISA.

Marais, S., Jordaan, E., de Waal, J., Poole, C., Viljoen, D. & Olivier, L. 2010. The effect of Brief Interventions on the drinking behaviour of pregnant women in a high risk rural South African community: a cluster randomized trial. *Early Childhood Development and Care,* in Press.

Marshall, H. 2002. What do we do when we code data? *Qualitative Research Journal,* 2(1):56-70.

Mash, B. 2003. Motivating behaviour change in the diabetic patient. *CME*, 21(10):592-598.

May, P.A., Gossage, J.P., Brooke, L.E., Snell, C.L., Marais, A.S., Hendricks, L.S., Croxford, J.A. & Viljoen, D.L. 2005. Maternal risk factors for fetal alcohol syndrome in the Western Cape Province of South Africa: A population-based study. *American Journal Public Hlth*, 95:1190-1199.

May, P.A. & Gossage, J.P. 2001. Estimating the Prevalence of Fatal Alcohol Syndrome. *A Summary*. *Alcohol Research & Health*, 25(3):159-167.

May, P.A., Brooke, L.E., Gossage, J.P., Croxford, J., Adnams, C., Jones, K.L., Robinson, L. & Viljoen, D. 2000. Epidemiology of Fetal Alcohol Syndrome in a South African Community in the Western Cape Province. *American Journal of Public Health,* 90:1905-1912.

May, P.A. 1995. A multiple-level, comprehensive approach to prevention of fetal alcohol syndrome (FAS) and other alcohol-related birth defects (ARBD). *International Journal of Addiction,* 30:1549-1602. [PubMed: 8557409]

McKinstry, J. 2005. Using the past to Step Forward: Fetal Alcohol Syndrome in the Western Cape Province of South Africa. *American Journal of Public Health,* 95(7):1097, *Health and Medical Complete.*

Meschke, L.L., Holl, J.A. & Messelt, S. 2003. Assessing the risk of fetal alcohol syndrome: understanding substance use among pregnant women. *Neurotoxicology and Teratology* 25:667-674.

Michie, S., Jochelson, K., Markham, W. & Bridle, C. 2008. Low-income Groups and Behaviour Change Interventions. A Review of Intervention Content and Effectiveness. King's Fund London. Accessed online May 2009.

Michie, S. & Abraham, C. 2004. Identifying techniques that promote health behaviour change: Evidence-based or evidence inspired? *Psychology and Health*, 19:29-49.

Miller, W.R. & Tonigan, J.C. 1996. Assessing Drinkers' Motivation for Change: The Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES). *Psychology of Addictive Behaviours,* 10(2):81-89.

Miller, W.R., & Rollnick, S. 1991. *Motivational interviewing: Preparing people to change addictive behaviour*. New York: Guilford Press.

Miles, M.B. & Huberman, A.M. 1994. *Qualitative data analysis: An expanded sourcebook.* Thousand Oaks. Sage.

Moos, R.H. & Finney, J.W. 1983. The expanding scope of alcoholism treatment evaluation. *American Psychology,* 38:1036-1044.

Morén, S. & Blom, B. 2003. Explaining Human Change. *Journal of Critical Realism* 2:37-60.

Mouton, J. 1996. *Understanding social research*. Pretoria: J.L. van Schaik.

Mouton, J. 2001. *How to succeed in your Masters and Doctoral studies*. Pretoria SA: Van Schaik Publishers.

Mukherjee, R.A.S., Hollins, S., Abouh-Saleh, M.T. & Turk, G. 2005. Low level alcohol consumption and the fetus*. BMJ*, 330:375-6.

O'Connor, M.J. & Whaley, S.E. 2007. Brief Intervention for Alcohol Use by Pregnant Women. *American Journal of Public Health,* 97(2) 252. *Health and Medical Complete.*

Olivier, L. 2006. Planning Interventions for prevention of FASD: The role of the Western Cape Department of Health. Unpublished article.

Palmer, C. 1985. Fetal alcohol effects: Incidence and understanding in the Cape. *South African Medical Journal,* 68:779-780.

Parry, C.D.H. 2005. A review of policy-relevant strategies and interventions to address the burden of alcohol on individuals and society in South Africa. *South African Psychiatry Review*, 8:20-24.

Parry, C.D. 2004. *The need for a science-based approach to addressing substance abuse in the Western Cape.* Available online: http://www.sahealthinfo.org/admodule/alcdrug.htm [2004: August]

Pawson, R. & Tilley, N. 1997. *Realistic evaluation*. London: Sage Publications.

Pierog, S., Chandavasu, O. & Wexler, I. 1979. The Fetal Alcohol Syndrome: Some Maternal Characteristics. *International Journal of Gynecolgy and Obstetrics,* 16:412-415.

Pippard, J.L. & Bjorklund, R.W. 2003. Identifying Essential Techniques for Social Work Community Practice. *Journal of Community Practice*, 11(4):101-114.

Prevention and Treatment of Drug Dependency Act, Act 20 of 1992. Government Gazette, 13 March 1992. No 13837),

Prochaska, J.O., DiClemente, C.C. & Norcross, J.C. 1992. In search of how people change - applications to addictive behaviours. *American Psychologist* 47(9):1102-1114.

Rendall-Mkosi, K., London, L., Adnams, C., Morojele, N., McLoughlin, J., & Goldstone, C. 2008. Fetal Alcohol Spectrum Disorder in South Africa: Situational and Gap Analysis. Sponsored by the MRC, University of Pretoria, University of Cape Town and UNICEF.

Roberts, G. & Nanson, J. 2000. *Best Practices: Fetal alcohol syndrome/fetal alcohol effects and the effects of other substance use during pregnancy*. Health Canada.

Rollnick, S., Mason, P.D. & Butler, C. 2005. Health Behaviour Change. A Guide for Practitioners. Elsevier Limited. London.

Rollnick, S., Heather, N., Gold, R., & Hall, W. 1992. Development of a short Readiness to Change questionnaire for use in brief, opportunistic interventions among excessive drinkers. *British Journal of Addiction*, 87:743-754.

Rosskam, E. 2002. Women work to close the “occupational safety gender gap”. *World of Work*, International Labour Office, Geneva, No 36.

Rosenthal, J., Christianson, A. & Cordero, J. 2005. Fetal Alcohol Syndrome Prevention in South Africa and Other Low-Resource Countries. *American Journal of Public Health*, 95(7):1099-1101.

Rosenstock, I., Strecher, V. & Becker, M. 1994. The Health Belief Model and HIV risk behaviour change. In R.J. DiClemente, and J.L. Peterson (Eds.), *Preventing AIDS: Theories and Methods of Behavioural Interventions* (pp.5-24). New York: Plenum Press.

Russell, M., Martier, S. S., Sokol, R. J., *et al* 1994. Screening for pregnancy risk drinking. *Alcoholism: Clinical and Experimental Research,* 18 (5):1156-1161.

Schneider M., Norman R., Parry C., Bradshaw D., Plüddeman A., and the SA Comparative Risk Assessment Group. 2007. *South African Medical Journal*, 97(8):664-672.

Sohell, M.B., *et al* 1997-2001. Motivational intervention to reduce alcohol-exposed pregnancies – Florida, Texas, and Verginia. (http://www.findarticles.com)

Streissguth, A. 1997. Fetal Alcohol Syndrome: A guide for families and Communities. Baltimore: Brookes Publishing Company.

Stutton, K., Howe, C, & Battaglia, F. (eds.) 1996. Fetal Alcohol Syndrome Diagnosis, Epidemiology, Prevention, and Treatment. Washington, DC: National Academy Press.

The Project MATCH Research Group, 1997. Matching Alcoholism Treatments to Client Heterogeneity. Project MATCH Post-treatment Drinking Outcomes. *Journal of Studies on Alcohol,* 58:7-29.

The Project CHOICES Intervention Research Group, 2003. Reducing the Risk of Alcohol-Exposed Pregnancies: A study of a Motivational Intervention in Community Settings. *Pediatrics*, 111(5):1131-1135.

Tsai, J. & Floyd, R.L. 2004. Alcohol consumption among women who are pregnant or who might become pregnant – United States, 2002. MMWR, 53(50):1178-1181.

Tversky, D.A. 2001. *An evaluation of the health promotion activities for women at risk of alcohol intake during pregnancy at antenatal clinics in Stellenbosch*. Mphil Thesis. University of the Western Cape.

Viljoen, D. Personal notes. 2006.

Viljoen *et al* 2005. Fetal Alcohol Syndrome Epidemiology in a South African Community: A second study of a Very High Prevalence Area. Department of Human Genetics, Faculty of Health Sciences, University of Witwatersrand, National Health Laboratory Services. South Africa, and the Foundation for Alcohol Related Research. *Journal of Studies on Alcohol,* 66(5):593-604.

Viljoen D., Croxford J., Gossage J.P., Koditiwakku P.W. & May P.A. 2002. Characteristics of mothers of children with fetal alcohol syndrome in the Western Cape Province of South Africa: A case control study. *Journal of Studies on Alcohol*, 63:6-17. [PubMed: 11925060]

Viljoen, D., Craig, P., Hymbaugh, K., Boyle, C. & Blount, S. 2001. *Fetal Alcohol Syndrome – South Africa.* (http://www.cdc.gov/mmwr/preview)

Walsh Dotson, J.A., Henderson, D. & Magraw, M. 2003. A public health program for preventing fetal alcohol syndrome among women at risk in Montana. *Neurotoxicology and Teratology,* 25:757-761

Waterson, E.J. & Murray-Lyon, I.M. 1990. Preventing Alcohol related Birth Damage. *Social Science Medicine,* 30(3):349-364.

Warren, K.R. & Foundin, L.L. 2001. Alcohol-related birth defects – The Past, present, and future. *Alcohol Research and Health* 25(3): 153-158.
http://depts.washington.edu/fadu/FAS_Face.jpg

Wilk, A.J., Jensen, N.M., and Havighurst, T.C. 1997. Meta-analysis of randomized control trials addressing brief interventions in heavy alcohol drinkers. *Journal of General Internal Medicine,* 12:274-283.

Wilton, G. & Plane, M.B. 2006. The Family Empowerment Network: A Service Model to Address the Needs of Children and Families Affected by Fetal Alcohol Spectrum Disorders. *Pediatric Nursing*, 32(4):299-300.

Wojdyla, D. 2005. *UNDP / UNFPA / WHO / World Bank Special Programme of Research, Development and Research Training in Human Reproduction.* World Health Organisation.

World Health Organisation. The ICD-10 Classification of Mental and Behavioural Disorders: Diagnostic criteria for research, World Health Organisation, Geneva, 1993.

Appendix 1

STRICTLY CONFIDENTIAL

PERSONAL ASSESSMENT QUESTIONNAIRE:	**Ref No:**					
Date:						
A. DEMOGRAPHIC INFORMATION	Baby due date:					

Name:

1 ……

Date of Birth:

2 ……

Address:

3 ……

Tel. No:

4 ……

5 Nearest Clinic

1	Bella Vista
2	Annie Brown
3	Nduli
4	Tulbagh
5	Wolseley
6	Prince Alfred's Hamlet
7	Op die Berg
8	Breërivier

6 Home Language:

1	Afrikaans
2	English
3	isiXhosa

7 Ethnicity:

1	Black
2	White
3	Coloured
4	Indian

	5	Other	

8	How old are you? Age in years			

9	What is the highest standard/grade you have passed in school?	1	Grade:	
		2	Standard:	

10	Any further education after school? (e.g. diploma/other)	1	Yes	
		2	No	

11	Do you currently work for money?	1	Yes	
		2	No	

If yes, what do you do?

11.1 ……..

...……

.....

11.2	If 'Yes", What type of contract do you have?	-9	N/A - Does not have a job	
		1	Does not have a contract	
		2	Permanent	
		3	Seasonal	
		4	Casual	
		5	Other	

12	Where do you live permanently?	1	Town	
		2	Farm	

13	What is your marital status?	1	Married
		2	Unmarried
		3	Unmarried/live with partner
		4	Divorced
		5	Widowed

		6	In a relationship, but not living with partner	

14	How long have you been together? (Number of years)	-9	NA	

15	Does your husband/partner work for money?	-9	No husband/partner	
		1	Yes	
		2	No	

16 Do you have any of the following:

16.1	Telephone	Yes 1 / No 2	
16.2	Television	Yes 1 / No 2	
16.3	Motorcar	Yes 1 / No 2	

17	How many people including yourself live in your house?			

18	What type of house do you live in?	1	Brick house	
		2	Wendy house	
		3	Informal house/shack	
		4	Other	

4.a ……

……

19	How many rooms are used as bedrooms?		

B. INFORMATION ON HEALTH AND PREGNANCY

20	How many times have you been pregnant? (include still births and miscarriages)		

21	How many weeks are you pregnant		

now?

22 How many children of your own do you have? (live)

23 Have you ever heard of fetal alcohol syndrome or FAS?

1	Yes
2	No

24 Do you think that children who have been exposed to alcohol before birth are different than other children? If the answer is yes or sometimes, ask questions 26 & 27.

1	Yes
2	No
3	Sometimes
-4	Don't know

25 What would you say is different?

-4	Don't know
1	Is not different
2	Behaviour
3	Physical appearance
4	Struggle with schoolwork
5	Speech / hearing
6	Other

26 Do any of the children in your household display any of these symptoms?

-9	N/A - No children in HH
1	Yes
2	No

C. INFORMATION ABOUT DRINKING/SMOKING HABITS

(Explain standard drink to respondent)

27 Do you drink any alcoholic drinks at the moment?

If yes or sometimes, continue ……

1	Yes
2	No

3	Sometimes	

28 How old were you when you took your first drink?

-9	N/A - Never drank before	
Years:		

29 Why did you start drinking?

-9	NA	
1	Boredom	
2	Depression	
3	Friends	
4	To forget my problems	
5	Other, specify	

5.a ……

……

30 What kind of alcohol do you now prefer to drink?

-9	NA	
1	Beer	
2	Wine	
3	Spirits	
4	Home brew	
5	Papsak	
6	Ciders	
7	Other	

7.a ……

……

31 Does your current partner drink alcohol?

-9	N/A - No partner	
1	Yes	
2	No	

32 Do your partner, parents, relatives or close friends have alcohol problems?

1	No problems
2	Yes, Partner

3	Yes, Parents	
4	Yes, Relatives	
5	Yes, Close friends	

33 Do you drink alone or with partner, relatives or friends?

-9	N/A - Do not drink	
1	Alone	
2	Partner	
3	Friends	
4	Relatives	
5	Drinking scene	

……

……

……

34 Have you previously tried to stop drinking alcohol?

1	Yes	
2	No	

35 When you stopped the last time, what was the reason?

1	Because I'm pregnant	
2	Other, specify	

……

……

36 Do you think you can drink less or stop drinking? (Please note: This question is only applicable if respondent is drinking at this moment)

-9	NA - Not drinking currently	
1	I **can** stop drinking	
2	I **can** drink less	
3	I **cannot** stop drinking	
4	I **cannot** drink less	
5	Maybe I can stop drinking	
6	Maybe I can drink less	

37	Do you smoke cigarettes or tobacco at the moment?	1	Yes
		2	No

37.1	If yes, how many a day?	

D. INFORMATION ON SPIRITUAL ASPECTS

38	Do you believe in a Higher Power?	1	Yes
		2	No
		3	Unsure
39	What is your religious affiliation?	1	Christian
		2	Muslim
		3	Other
40	Do you go to church/mosque regularly?	1	Yes
		2	No
41	Do you think religion is important?	1	Yes
		2	No
42	Do you sometimes feel guilty towards God/Allah?	1	Yes
		2	No
		-9	N/A

E. READINESS TO CHANGE

43	Do you want to change your drinking behaviour? (compare AUDIT)	1	Yes
		2	No
		3	Maybe

-9	N/A -is not drinking currently	

44	Do you have anyone whom you trust, who would be able to support you through your pregnancy?	1	Yes
		2	No
		3	Maybe
		-9	N/A

Notes:

……

……

……

……

	Index to codes
-4	Don't Know
-7	No Answer/ Question not answered
-9	Not Applicable

Appendix 2

Streng Vertroulik

NAAM: _____Verw. No: _____

ADRES: _____Datum: _____

Tel. No:_____

Inligting van Kliniek Rekord Kaart

	Verbruiker	Staker	Nie-verbruiker
Tabak			
Alkohol			
Dwelms/ander middels			

SCREENING FOR ALCOHOL USE (THE AUDIT) (Onderhoud weergawe)

Lees die vrae soos dit geskryf is. Skryf antwoorde versigtig neer. Begin die AUDIT deur te sê, "Ek gaan u nou vrae vra oor u alkohol gebruik die afgelope jaar". Verduidelik wat 'n "standaard drankie" is en hoe om dit te bepaal. Kodeer die antwoorde volgens die "standaard drankie ". Plaas die korrekte nommer vir die antwoord bo die strepie.

1. Hoe gereeld drink u alkohol? **(0) Nooit (gaan na 9-10)** **(1) Maandeliks of minder** **(2) 2-4 keer per maand** **(3) 2-3-keer per week** **(4) 4 keer en meer per week** _____	**6. Hoe gereeld oor die afgelope jaar was dit vir u nodig om 'n regmaker in die oggend te drink ná 'n hewige drinksessie?** **(0) Nooit** **(1) Minder as maandeliks** **(2) Maandeliks** **(3) Weekliks** **(4) Daagliks of byna daagliks** _____
2. Hoeveel drankies met alkohol drink u gewoonlik op 'n keer? **(0) 1 of 2** **(1) 3 of 4** **(2) 5 of 6** **(3) 7,8, of 9** **(4) 10 of meer** _____	**7. Hoeveel keer die afgelope jaar het u skuldig en spyt gevoel nadat u gedrink het?** **(0) Nooit** **(1) Minder as maandeliks** **(2) Maandeliks** **(3) Weekliks** **(4) Daagliks of amper daagliks** _____
3. Hoe dikwels drink u meer as ses drankies op 'n keer? **(0) Nooit** **(1) Minder as maandeliks** **(2) Maandeliks** **(3) Weekliks** **(4) Daagliks of amper daagliks** _____	**8. Hoeveel keer die afgelope jaar kon u nie onthou wat die vorige aand gebeur het nie omdat u alkohol gedrink het?** **(0) Nooit** **(1) Minder as maandeliks** **(2) Maandeliks** **(3) Weekliks** **(4) Daagliks of amper daagliks** _____

4. Hoe gereeld die afgelope jaar het u ondervind dat as u begin drink kan u nie ophou nie? **(0) Nooit** **(1) Minder as maandeliks** **(2) Maandeliks** **(3) Weekliks** **(4) Daagliks of byna daagliks** _____	**9. Het u of iemand anders al seergekry as gevolg van u alkohol gebruik?** **(0) Nee** **(1) Ja, maar nie die afgelope jaar nie?** **(2) Ja, die afgelope jaar** _____
5. Hoe gereeld die afgelope jaar het u u pligte versuim as gevolg van u drank gebruik? **(0) Nooit** **(1) Minder as maandeliks** **(2) Maandeliks** **(3) Weekliks** **(4) Daagliks of byna daagliks** _____	**10. Was 'n familielid, dokter, vriend of ander gesondheidswerker al bekommerd oor u alkohol gebruik en het hulle al voorgestel dat u minder drink?** **(0) Nee** **(1) Ja, maar nie die afgelope jaar nie** **(2) Ja, die afgelope jaar** _____
AUDIT ZONE LEVEL: _____	**SKRYF TOTAAL VAN ITEMS 1-10 HIER** _____
11. Dink u dat u nou 'n probleem het met alkohol gebruik? **(a) Nee** **(b) Moontlik nie** **(c) Onseker** **(d) Moontlik** **(e) Definitief** **Ruler scale for readiness:** **a___b___c___d___e** **Motivation**	**12. Hoe moeilik sal dit vir u wees om oor die volgende paar maande minder alkohol te gebruik of om op te hou drink?** **(a) Baie maklik** **(b) Redelik maklik** **(c) Nie moeilik of maklik nie** **(d) Redelik moeilik** **(e) Baie moeilik** **Ruler scale for Readiness:** **a___b___c___d___e** **Confidence**
Moenie vrae 11 en 12 saam tel nie. Hierdie vrae gee 'n aanduiding van die kliënt se gereedheid of motivering om sy alkohol gebruik te verander. Dit stel jou in staat om te besluit op watter vlak intervensie benodig word.	

Appendix 3

Confidential Questionnaire: Follow-up

	1	2	3	4	5
Name:					
Ref No.					
Date:					

Alcohol Record Questionnaire (ARQ)

To be completed with respondent and collateral at every interview

A. General questions on Self-help Plan

1 Did you manage to record your daily intake of alcohol?

1	Yes	
2	No	
3	Sometimes	

2 Has your drinking pattern changed in any way since our last meeting?

1	Yes	
2	No	

3 If your drinking pattern has changed, are you drinking less, are you drinking more or have you stopped drinking?

-9	N/A	
1	Stopped drinking	
2	Drinking less	
3	Drinking more	
4	Same	

4 Did the information in the self-help booklet help you to drink less ?(Yes 1/No 2 / Maybe 3)

-9	N/A	
1	Yes	
2	No	
3	Maybe	

5 Did you make a plan as explained in the self help booklet, to drink less or to stop drinking?

-9	N/A	
1	Yes	
2	No	

6 Did you write your plan down in the self help booklet?

-9	N/A	
1	Yes	
2	No	

7 Could you stick to your self-help plan to drink less?

-9	N/A - Did not have a plan	
1	Yes	
2	No	
3	Sometimes	

8 How often did you consult your self-help plan to drink less?

-9	N/A - Did not have a plan	
1	Daily	
2	Once a week	
3	Twice a week/more	
4	Other; Specify	

4 …….

9 Did you have a collateral to help you stick to your self-help plan?

-9	N/A	
1	Yes	
2	No	

a) What were the main stumbling blocks to your self-help plan?

……

……

……..

b) What were the main factors that helped you?

……

……

……...

c) Could you share the self help booklet/information with other people?

-9	N/A	
1	Yes	
2	No	

c. i) If "Yes", with whom?

……

……

……

10 Did your collateral attend the meeting with you today?

1	Yes	
2	No	

11	If you did drink, when did you drink most of the time?	-9	N/A
		1	Stopped
		2	Weekdays
		3	Friday night
		4	Saturday
		5	Sunday
		6	Weekends
12	How much did you drink during the week? (Specify quantity)	-9	N/A - Did not drink at all
		1	1-2 Drinks
		2	3-4 Drinks
		3	5 or more drinks
		4	Other
		4	……
13	How much did you drink over weekends? (Specify quantity)	-9	N/A
		1	1-2 drinks per day
		2	3-4 drinks per day
		3	≥5 drinks per day
		4	≥5 drinks per occasion
		5	Other
			……
		5	……..
14	What kind of drinks containing alcohol did you drink?	-9	N/A - Did not drink
		1	Beer
		2	Wine

3	Spirits	
4	Home Brew	
5	Other	

……

5 ……..

15 How long did the drinking session last?

-9	N/A - Did not drink	
1	1 hour	
2	2 hours	
3	3-6 hours	
4	Other	

……

4 ……..

B. Questions to collateral:

16 a) Were you able to monitor respondents drinking?

-9	N/A	
1	Yes	
2	No	

b) If yes, how often did you monitor respondents drinking?

1	Daily	
2	Every second day	
3	Once a week	
4	Once on weekends	
5	Every two weeks	
6	Other	

……

6 ……..

c) Did you use the information in the self-help booklet to assist respondent to drink less?

-9	N/A	
1	Yes	
2	No	

d) Did you work together on a plan to change respondents drinking behaviour?

-9	N/A	
1	Yes	
2	No	

e) Could you assist respondent to stay away from tempting situations?

-9	N/A	
1	Yes	
2	No	

f) Could you assist respondent to drink less/stop drinking?

-9	N/A	
1	Yes	
2	No	

g) What were the main stumbling blocks

.....

.....

.....

h) What were the main factors that helped you?

.....

.....

.....

B. CAGE questions to respondent

(Ewing and Rouse, 1970)

17	During the past month, did you feel that you should cut down on your drinking?	1	Yes	
		2	No	
		3	Sometimes	
18	During the past month, did people criticise your drinking?	1	Yes	
		2	No	
		3	Sometimes	
19	During the past month, have you ever felt bad about your drinking?	1	Yes	
		2	No	
		3	Sometimes	
20	During the past month, did you ever needed an eye-opener (regmaker) to get rid of a hangover in the morning?	1	Yes	
		2	No	
		3	Sometimes	

Positive score of 2/3 = alcohol abuse/dependence; 4= dependence

One drink equals: Beer = 300ml; wine = 150ml; spirits = 50ml.

Appendix 4

EDINBURGH POSTNATAL DEPRESSION SCALE

Cox, J.L; Holden, J. M. & Sagovsky, R. (1987)

(Afrikaans Translation)

Naam: …… **Datum: ……**

Aantal weke swanger:……..... Weke **Telling:……**

Noudat u swanger is wil ons graag weet hoe u voel. Daar is ‘n keuse van vier antwoorde vir elke vraag. Omsirkel assebleif die antwoord wat die beste beskryf hoe u **gedurende die afgelope sewe dae** gevoel het, nie net hoe u vandag voel nie.

Gedurende die afgelope sewe dae:

1. **Kon ek die snaakse kant van dinge sien:**

So maklik soos ek altyd kon	**0**
Nie heeltemal so maklik nie	**1**
Definitief nie so maklik nie	**2**
Glad nie	**3**

2. **Kon ek met genot na dinge uitsien:**

So baie soos ek altyd het	**0**
‘n Bietjie minder as wat ek altyd het	**1**
Baie minder as wat ek gewoontlik het	**2**
Amper glad nie	**3**

3. **Het ek myself blameer wanneer dinge verkeerd gaan, al is dit nie my skuld nie:**

Ja, meeste van die tyd	**3**
Ja, soms	**2**
Nee, nie dikwels nie	**1**
Nee, nooit nie	**0**

4. Was ek bekommerd en ek weet nie hoekom nie:

Nee, glad nie	**0**
Omtrent nooit	**1**
Ja, soms	**2**
Ja, dikwels	**3**

5. Het ek bang en paniekerig gevoel en ek weet nie hoekom nie:

Ja, nogal baie	**3**
Ja, soms	**2**
Nee, nie so baie nie	**1**
Nee, glad nie	**0**

6. Het ek gesukkel om dinge te hanteer:

Ja, meeste van die tyd sukkel ek om dinge te hanteer	**3**
Ja, soms hanteer ek dinge nie so maklik soos gewoonlik nie	**2**
Nee, meestal hanteer ek dinge redelik goed	**1**
Nee, ek hanteer dinge so goed as wat ek altyd kon	**0**

7. Was ek so ongelukkig dat ek sleg geslaap het:

Ja, meeste van die tyd	**3**
Ja, soms	**2**
Nie dikwels nie	**1**
Nee, glad nie	**0**

8. Het ek hartseer en ongelukkig gevoel:

Ja, meeste van die tyd	**3**
Ja, nogal dikwels	**2**
Nie dikwels nie	**1**
Nee, nooit nie	**0**

9. Was ek so hartseer dat ek gehuil het:

Ja, meeste van die tyd	**3**
Ja, dikwels	**2**
Net soms	**1**
Nee, nooit	**0**

10. Die idée om myself leed aan te doen het al by my opgekom

Ja, nogal dikwels	**3**
Soms	**2**
Amper Nooit	**1**
Nooit	**0**

BAIE DANKIE

Appendix 5

Opvolg: 2

Questionnaire: Binding met die Ongebore Baba

Aanvaarding

1. Het u hierdie baba beplan? Ja/Nee

2. Hoe voel u oor die baba wat u verwag? Bly/baie bly/onseker/wil nie die baba hê nie.

3. Hoe voel u man/partner oor die baba wat u verwag? Bly/baie bly/onseker/wil nie die baba hê nie

4. Weet u wat die geslag van die baba is? Ja/Nee/wil nie weet nie/ Onseker

5. Het u al begin voorberei vir die baba se koms? Ja/Nee

Interaksie

1. Geniet u dit om te voel hoe u ongebore baba beweeg en skop? Ja/Nee/Soms

2. Laat u soms u man/partner voel hoe die baba beweeg en skop of luister hoe die hartjie klop? Ja/Nee

3. Laat u soms u kinders voel hoe die baba beweeg en skop of luister hoe die hartjie klop? Ja/Nee/N.v.t.

4. Praat en gesels u gereeld met u ongebore baba? Ja/Nee

5. Speel u soms rustige musiek vir u ongebore baba? Ja/Nee

6. Streel of vryf u gereeld oor u maag terwyl u met u baba praat? Ja/nee

7. Vryf u man/partner soms oor u maag en rug terwyl hy met die baba praat? Ja/Nee

Voorbereiding

1. Het u al voorheen geboorte gegee? Ja/Nee

2. Is u bang om geboorte te gee? Ja/Nee/Onseker

3. Weet u watter tekens om te verwag as u tyd kom om te kraam? Ja/Nee/Onseker

4. Rus u genoeg en gereeld tydens u swangerskap? Ja/Nee

5. Het u spesiale oefeninge gedoen tydens u swangerskap? Ja/Nee

6. Het u geoefen om stadig en diep asem te haal sodat u en u baba genoeg suurstof kan inneem? Ja/Nee

7. Het u met u klinieksuster gepraat oor hoe u vir borsvoeding moet voorberei? Ja/Nee

8. Gaan u man/partner u tydens die geboorte bystaan? Ja/Nee/N.v.t.

Sekuriteit

1. Is u soms bekommerd oor hoe u finansieel vir hierdie baba gaan sorg? Ja/Nee
2. Is daar iemand wat u en u baba sal onderhou terwyl u nie werk nie? Ja/Nee

3. Beplan u om dadelik na die baba se geboorte te gaan werk? Ja/Nee

4. Wie sal na u baba kyk indien u weer gaan werk? Ma/man/ouma/vriendin/bure

Compiled by Ceres Intervention Research Team, 2007

Appendix 6

SIFTINGSTOETS VIR BEPALING VAN GEWELD IN DIE HUIS

(Abuse Assessment Screen)

(Based on McFarlane, Parker, Soeken & Bullock, 1992 translated into Afrikaans and adapted by Ceres Intervention Research Team 2007)

Naam:…… Verwysings Nommer:…… …

1. **Is jy al ooit emosioneel of fisies mishandel deur jou man/vriend of iemand anders wat na aan jou is?**
   1. Ja
   2. Nee

2. **Die afgelope jaar: Is jy geslaan, geklap, geskop of andersins fisies beseer deur iemand?**
   1. Ja
   2. Nee

   b. Indien wel, deur wie?
   1. Man/ partner
   2. Eks-man
   3. Boyfriend
   4. Onbekende persoon
   5. Ander persoon (Spesifiseer)……..

3. **Skryf neer die aard van die geweld**

   ……
   ……
   ……
   …….....

   a. Hoe dikwels het dit gebeur?

   ……
   …….....

4. **Sou u sê alkohol speel 'n rol?**
   1. Ja
   2. Nee

5. **Sedert jou swangerskap, is u geslaan, geklap, geskop, of andersins fisies beseer deur iemand?**

    1. Ja
    2. Nee

    b. Indien wel, deur wie?

    1. Man/ partner
    2. Eks-man
    3. Boyfriend
    4. Onbekende persoon
    5. Ander persoon (Spesifiseer)…….....

    c. Wat doen hy?

    ……
    ……
    …….....

    d. Skryf neer hoe dikwels dit gebeur

    ……
    ……
    …….....

    e. Wat is die ernstigste besering:

    1. Dreigemente van besering (Insluitend die gebruik van 'n wapen)
    2. Slanery/stoot sonder besering
    3. Vuishou, skop, blou kolle, snye en pyn
    4. Aanranding, kneusings, brandwonde, gebreekte bene
    5. Kop- of interne beserings en ook permanente beserings
    6. Gebruik van 'n wapen, wond van 'n wapen

6. **Die afgelope jaar: Het enige iemand jou forseer in seksuele aktiwiteite**

    1. Ja
    2. Nee

    b. Indien Ja, Wie was dit?

    1. Man/ partner
    2. Ex-man
    3. Boyfriend
    4. Onbekende persoon
    5. Ander persoon (Spesifiseer)……..

c. Hoeveel keer is u geforseer?

……

……

7. Is u bang vir jou partner of die persoon waarna u hierbo verwys?

1. Ja
2. Nee

8. Is hy meer aggressief as hy alkohol gedrink het?

1. Ja
2. Nee

9. Raak u somtyds ook in geweld betrokke, met ander woorde slaan u partykeer terug?

1. Ja
2. Nee

b. Beskryf die aard van die geweld

……

……

……

……

c. Beskryf die ernstigheid van die beserings

……

……

……

……

10. Wil u hê ons moet u verwys na iemand wat kan help (Dit beteken dat ons vir iemand u situasie moet verduidelik)?

1. Ja
2. Nee